

# Glossary of Terms

# A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

## #3 Buffer Cooler

Helps cool air around the #3 Bearing Compartment.

## \$/EFH

Dollars per engine flight hour These are units used to establish certain Aftermarket pricing rates, where the airline would pay P&W a certain amount of money for every engine flight hour to maintain the engines.

## 3 Sigma

Represents the area under the Normal Distribution that lies between +/- 1.5 standard deviations on either side of the Process Mean. This represents approximately 86.64% of the area under the Normal Curve. We would expect roughly 86.64% of the total output for a process to lie within the 3 Sigma Spread.

*Refer to: Process Certification*

## 5 Why

A root causes analysis tool used to generate ideas and verify the root cause of a problem. This tool requires the users to continuously ask "Why?" until they have reached the assumed root cause of the problem.

*Refer to: Root Cause Analysis*

## 5th Stage Seal

A seal prevents air from flowing to places in an engine that do not require airflow. A 5th stage seal refers to the 5th stage of the high-pressure compressor (HPC) or 5th stage of the low-pressure turbine (LPT).

## 6 Sigma

Represents the area under the Normal Distribution that lies between +/- 3 Standard Deviations on either side of the Process Mean. This represents approximately 99.73% of the area under the Normal Curve. We would expect roughly 99.73% of the total output for a process to lie within the 6 Sigma Spread.

*Refer to: Process Certification*

## 6S

An ACE initiative that is the foundation of a visual workplace. 6S are short for Safety, Sort, Straighten, Shine, Standardize, and Sustain.

*Refer to: 6S/Visual Factory*

*Refer to: Process Certification*

*Refer to: Setup Reduction*

## 6S / Visual Factory

An ACE initiative that is the foundation of a visual workplace. 6S are short for Safety, Sort, Straighten, Shine, Standardize, and Sustain.

*Refer to: 6S/Visual Factory*

*Refer to: Product Cost Management*

## 6S Evaluation

Measures the implementation of 6S on a piece of equipment on a scale from 1 to 5 (5 = "World Class").

## 6S

Evaluations are performed as part of the 6S Weekly Audit and are often completed during a TPM event.

*Refer to: 6S/Visual Factory*

**6S Evaluation Sheet**

A standard sheet used to perform a 6S Evaluation.

*Refer to: 6S/Visual Factory*

*Refer to: TPM*

**6S Scorecard**

A document that lists the criteria that should be considered during a 6S Evaluation.

*Refer to: 6S/Visual Factory*

*Refer to: TPM*

**6S Weekly Audit**

An ongoing weekly meeting during which a 6S Evaluation is performed and issues are addressed.

*Refer to: 6S/Visual Factory*

**6S Weekly Shutdown**

Production within a cell stops for no more than one hour every week and all employees work to thoroughly clean one machine during this time.

*Refer to: 6S/Visual Factory*

**8th Stator Support**

Part of the supporting structure for the high-pressure compressor.

- A -

**AAI**

Acronym for **Accept As Is**. A situation where a customer accepts a part that is not of perfect quality, but acceptable in the customer's eyes.

*Refer to: Process Certification*

**Accounting System**

A system that tracks the detailed revenues and costs of a business.

*Refer to: Product Cost Management*

**Accounts Payable**

Amounts due for purchases made or services already received; also represents liabilities for which an invoice has been received and not paid.

**Accounts Receivable**

Amounts owed to a business by a customer due to the sale of a product or service.

**Accounts Receivable Collection Period**

Accounts receivable collection period measures the average number of days it takes to collect cash from customers and is computed as follows:  $\text{Average Accounts Receivable} / (\text{Annual Sales} / 365 \text{ days})$ .

**Accrual**

The recording of revenues and expenses for an accounting period for which no source documents exists. Accruals are fixed and determinable items that can be deducted for tax purposes.

**Accrual Basis**

A basis of income measurement under which revenues and/or expenses are a measurement of cash and noncash promises of payment.

**Accrual Method of Accounting**

Method of accounting in which revenue is recognized and recorded when earned, expenses are recognized when incurred and other amounts are recorded as they are incurred, without regards to the timing of related cash receipts and expenditures.

**Accrued Expense**

An obligation incurred but not yet paid.

**Accrued Liability**

An estimate of a liability that is "probable or estimable" in accordance with accounting guidelines. In other words, an accrued liability is a fund set aside for potential claims against a company or its products, also known as a reserve.

**Accrued Revenue**

Revenues earned for goods and services delivered in the current period for which payment will not be received until a later period, and for which there is no accompanying documentation.

**Accumulated Depreciation**

The total amount of depreciation expense recorded on the balance sheet from the period the plant and equipment was put into service.

**ACE**

Acronym for **Achieving Competitive Excellence**. An operating system that will help P&W achieve a level of quality and productivity improvement that will satisfy customers and allow P&W to produce increased workloads more efficiently.

*Refer to: 6S/Visual Factory*

*Refer to: TPM*

*Refer to: QCPC*

*Refer to: Process Certification*

*Refer to: Mistake Proofing*

*Refer to: Setup Reduction*

*Refer to: Standard Work*

*Refer to: Manufacturing Principles*

*Refer to: Supply Chain Principles*

*Refer to: Root Cause Analysis*

*Refer to: Inventory Management*

*Refer to: Delivery Performance*

*Refer to: ACE Overview*

*Refer to: Passport System*

*Refer to: Market Feedback Analysis*

**ACE Pilot**

Personnel who is responsible for working with a cell to help implement ACE.

**Acquisition**

To purchase the assets or controlling interest in another business entity.

**Acquisition Cost**

Cost incurred to purchase an asset. Also, the cost to purchase the assets of a company and consolidate its resources into the acquirer's operations, financials, and other records.

**Actual Manpower**

The number of operators assigned to a cell, business unit, etc.

*Refer to: Standard Work*

**Acute Problem**

Problems that occur suddenly and do not persist.

*Refer to: Root Cause Analysis*

**Adapter Plate**

An adapter plate (a.k.a. centering bung) is a metal plate that is placed on the machine table. This is used to guide the fixture onto the table automatically. This eliminates the need for manual alignment and centers to a very tight variance (.020).

*Refer to: Setup Reduction*

**Adjustment**

Bringing parts, tools or fixtures into a true or correct relative position.

*Refer to: Mistake Proofing*

**Advance Payment**

Payment made by a customer to P&W before actual work is completed on a product.

**Affordability**

A measurement of the potential return on an investment as compared to the initial outlay of capital and a company's ability to generate this required capital.

*Refer to: Supply Chain Principles*

**AFS**

Acronym for Assembly Floor Sheet. A sheet that lists the procedures for assembling a component or set of parts.

**Aftermarket**

Refers to services, such as Overhaul and Repair and Fleet Management, which are provided by P&W after the delivery of a manufactured product.

**Air Framer Removal**

A measure of the number of times the airframer removes an engine due to a defect.

*Refer to: Passport System*

*Refer to: Market Feedback Analysis*

**Air Seal**

Prevents air from leaking between vanes in each stage of the compressor stators or the turbine stators. Also called the compressor or turbine shroud.

**Aircraft Certification**

The process of certifying an aircraft by the Federal Aviation Administration.

**Aircraft on Ground (AOG)**

Aircraft unable to fly due to a service problem such as a non-functioning parts or engine.

**Airfoil**

Rotating blades and stationary vanes in the "hot" section (aft of the combustion area) of a gas turbine engine.

**Airframe Business Case**

Refers to when Pratt & Whitney examine whether or not a proposed new airplane seems to make business sense to the airframer.

**Airframer**

Airplane manufacturers (i.e., Boeing, Airbus).

*Refer to: Manufacturing Principles*

**Airframer Support Cost**

Payments to the airframer during development to defray development costs. The payments include the sharing of the flight test costs to certify Pratt & Whitney's engine on the airplane, sharing of airframer development costs, and sharing of the nacelle development costs (in the case that the airframer is doing nacelle development).

**Airline**

A company that owns a fleet of airplanes such as Delta or United and runs flight schedules to transport passengers from one location to another via these airplanes.

**Airplane Utilization**

The number of hours a year that an airplane is operated.

**Airworthiness**

Making sure that engines and aircraft continue to fly at reasonable levels of reliability.

**Airworthiness Directive**

A directive issued by the Federal Aviation Administration to an airline to repair an identified mechanical defect that affects flight safety; directives are usually issued for a class of engines or airframers.

**Allowable Cost**

Costs that can be charged to and recovered from a government contract. To be an allowable cost, a cost must be reasonable, allowable, in conformance with Cost Accounting Standards (CAS) and/or Generally Accepted Accounting Principles (GAAP), and within limitations set forth in a government contract. In contrast, any cost that is not allowable cannot be charged to and recovered from a government contract (i.e., interest, certain advertising).

**Altitude**

Height from the ground.

**Amortization**

The process of allocating the purchase cost of intangible assets (such as goodwill, patents, copyrights, trademarks, and software licenses) or leasehold improvements as an expense, over the periods during which a business benefits from the asset.

**Amortization of Goodwill**

The process of allocating goodwill over the periods during which a business benefits from the goodwill.  
Andon Signal Alarms or lights that signal when a problem has occurred or detail the current status of the workplace.

*Refer to: 6S/Visual Factory*

*Refer to: Mistake Proofing*

*Refer to: Manufacturing Principles*

*Refer to: Standardization and Commonality*

*Refer to: Delivery Performance*

**Annual Report**

A report generated by a business each year that includes its financial statements notes to the financial statements and other information of interest to investors, shareholders and other outside parties.

**AOG**

Acronym for **Aircraft on Ground**. Aircraft unable to fly due to a service problem such as a non-functioning parts or engine.

**Apprentice**

A person is learning a craft under a skilled worker.

*Refer to: Root Cause Analysis*

**Apprentice Statistical Engineer**

A person with a basic understanding of the principles of Statistical Engineering and has participated in one "Kill".

*Refer to: Root Cause Analysis*

### **Appropriate**

To restrict or earmark any resource (cash, raw material, etc.) for use as part of an identified cause; once a resource has been appropriated it is not available for other uses although it may still be physically available.

### **Arachnoid Chart**

Chart used to graphically display business case information.

### **ASM**

Acronym for Available Seat Mile. A measure of an airline's capacity.

### **Assembly**

A group of subassemblies and/or parts that are put together and constitute a major subdivision for the final product. An assembly may be an end item or a component of a higher level assembly.

*Refer to: Standardization and Commonality*

### **Assembly Floor**

Also known as fabrication. This is where the smaller product components are assembled into larger components.

*Refer to: Standardization and Commonality*

### **Assembly Floor Sheet**

A sheet that lists the procedures for assembling a component or set of parts.

### **Asset**

An economic resource used by a business to generate income and cash flow for the business.

*Refer to: Inventory Management*

### **Assignable Variation**

Variation that results from significant changes in a process (e.g., control dials set incorrectly). This type of variation generally can be corrected at the local level and can be removed without making substantial changes to the process. Synonymous with special variation and sporadic variation.

*Refer to: Process Certification*

*Refer to: Root Cause Analysis*

### **Asymmetry**

Asymmetry means that opposite sides of a part, tool or fixtures are not identical. These differences may be easy or difficult to notice.

*Refer to: Mistake Proofing*

### **Attribute Data**

Qualitative data that typically show only the number of articles conforming and the number failing to conform to a specified criterion. Examples include characteristics such as the presence of a required label, installation of all required fasteners, acceptability of a specification when measured on a go / no-go gauge. Results are recorded in a simple yes / no fashion.

*Refer to: Process Certification*

*Refer to: Process Capability*

### **Attribute Gaging**

Device which consists of evaluating whether an individual part or item has a particular feature (e.g., is the part defective or non-defective). The attribute measurements are usually summarized by noting the number of parts with the feature versus the number of parts without the feature.

*Refer to: Process Certification*

### **Attribute Part Characteristic**

Characteristics that do not immediately lend themselves to being quantified, such as color or markings.

*Refer to: Process Certification*

**Audit**

A formal examination and verification.

**Auditor**

An individual who provides an independent review of financial procedures and reports to ensure compliance to generally accepted business standards.

**Auto Time**

Auto time (also referred to as machine time) is the time taken to process a part through the automatic run cycle of a piece of equipment. For example, suppose it takes two minutes to load a ring on a CNC lathe, sixteen minutes for the machine run, and two minutes to unload the ring. Assume the operator waits at the machine while it runs. Then the entire time of twenty minutes would be considered the cycle time, and has sixteen minutes of Auto Time.

**Automated Operation**

A manufacturing operation that depends on robotic type processing. These operations generally have limited operator involvement.

**Autonomous Maintenance**

Minor repairs and inspections that operators complete independently without jeopardizing their own safety or the condition of the machine. Autonomous maintenance frees up skilled maintenance personnel to work complex maintenance tasks and creates a sense of ownership for equipment.

*Refer to: TPM*

*Refer to: ACE Overview*

**Availability (TPM)**

The actual availability of a machine divided by the planned availability of the machine.  $\text{Actual availability time} = \frac{\text{Planned Availability} - \text{Setup Time} - \text{Unplanned Downtime}}{\text{Planned Availability}}$

**Available Seat Mile (ASM)**

A measure of an airline's capacity.

**Available Time**

The number of minutes in a day available to produce parts. ACE and Continuous Improvement Events that shut down an entire cell, daily and weekly meetings, and personal time (e.g., breaks, lunch, etc.) are all factored into Available Time. Available Time is used to calculate Tact Time.

**Average Inventory**

The total number of pieces of inventory in a manufacturing unit, plus the number of pieces of inventory held by vendors to manufacture offloaded parts, multiplied by the standard cost of the part. The standard cost is the established cost of a part at the beginning of the year and is held constant throughout the year. It is not the same as the average part cost, which changes on a monthly basis.

**- B -**

**Balance Sheet**

A financial statement that lists the investments of a business entity (its assets) and the financing of those investments by creditors and owners (liabilities and equity) at a specific point in time. The balance sheet is also referred to as the Statement of Financial Position or Statement of Financial Condition.

**Balance Sheet Equation**

Assets = Liabilities + Owners' Equity

**Balanced Scorecard**

A tool used to evaluate an organization's performance on several criteria simultaneously.

*Refer to: Supply Chain Principles*

**Base Price**

The list prices of an engine in a given year.

**Baseline**

In QCPC, the average number of turnbacks that have been identified over a specified period. The baseline is established after a few weeks of identifying turnbacks to allow for the variation and increase that occurs. The baseline is usually the point from which a percentage decrease goal is established. In Process Certification, the performance of a process before Process Certification is conducted. This performance is compared with the results of the Process Certification effort to evaluate the effectiveness of the effort

*Refer to: TPM*

*Refer to: QCPC*

*Refer to: Process Certification*

**Baseload Tasks**

Program tasks that must be funded on a yearly basis. These tasks automatically take away from a Program Manager's discretionary budget.

**Batch and Queue Processing**

The mass-production practice of making large lots of a part and then sending the batch to wait in the queue before the next operation in the production process.

*Refer to: Setup Reduction*

*Refer to: Inventory Management*

*Refer to: Delivery Performance*

**Bearing Analysis**

Study that involves the detection of premature failure of bearings through the use of high tech equipment such as an ultra-probe. Machine can then be planned to be shut down to replace the worn bearings with minimal impact on production.

**Benchmarking**

The process of comparing company performance, products, practices, and services against industry leaders to assist the corporation in becoming "World Class".

*Refer to: Product Cost Management*

**Best and Final Offer (BAFO)**

A request from the government for a company's best and final offer during the Request for Proposals (RFP) process.

**Best of the Best (BOBs)**

Outputs of processes that are consistently excellent.

*Refer to: Process Certification*

**Bill of Materials (BOM)**

A list of all the subassemblies, parts and raw material that are needed to make a part assembly. The quantity of each is also listed.

*Refer to: Standardization and Commonality*

*Refer to: Delivery Performance*

*Refer to: Production Scheduling*

**Bill of Materials (BOM) Kit**

A kit consisting of the exact quantity of parts needed to build a module.

*Refer to: Standardization and Commonality*

*Refer to: Delivery Performance*

*Refer to: Production Scheduling*

**Bleed**

Refers to both overboard air bleeds and service bleeds. Overboard air bleeds facilitate engine starting and prevent compressor stall at high altitudes. Service bleeds provide low or high pressure for engine service functions and operate auxiliary equipment in the aircraft.

**Board of Directors**

The group of people elected by shareholders that are responsible for overseeing a corporation's operations on the shareholders' behalf.

**Book Income**

The amount at which an item is carried on accounting records and reported in financial statements. For example, the book value of a fixed asset is its original cost less accumulated depreciation.

**Boroscope**

An optical device used to inspect an inaccessible space (as an engine cylinder).

**Bottleneck**

A facility, function, department, or resource whose capacity is unable to meet the demand placed upon it. A bottleneck machine or workstation exists where jobs are processed at a slower rate than they are demanded.

*Refer to: Inventory Management*

*Refer to: Production Scheduling*

**Brainstorming**

An idea-generating technique that uses group interaction to generate many ideas in a short time. Criticism and judgment are withheld until after all ideas have been recorded.

*Refer to: Root Cause Analysis*

**Brass Tag Number**

The number used to identify a specific machine. Every machine has a unique brass tag number.

**Break-Even**

The point at which a business' sales revenues equal its costs. This is calculated by:  $(\text{Price} \times \text{Volume}) - [\text{Total Fixed Costs}] + (\text{Variable Costs} \times \text{Volume}) = 0$ .

**Break-Even Analysis**

Tool that analyzes the point at which a project will break-even, or have its net income equal to zero.

**Broach**

A cutting tool for removing material from metal or plastic to shape an outside surface or a hole.

*Refer to: Setup Reduction*

**Brush**

A type of operation typically performed on a part. Brush operations are generally used to remove surface irregularities, but can be used for other purposes in some cases.

**BT#**

Acronym is for Brass Tag Number. The number used to identify a specific machine. Every machine has a unique brass tag number.

**BU Manager**

Acronym for Business Unit Manager. The manager responsible for the cells within a business unit. See Business Unit.

**Budget Tasking**

See Financial Tasking. When the Finance Department challenges the assumptions and priorities in the proposed requirements-based budget. Program Managers are charged with prioritizing tasks and activities and cutting the budget in certain areas. Financial tasking assures that individual budgets are established at spending levels consistent with the overall profitability goals of Pratt & Whitney.

**Buffer Stock**

A quantity of stock planned to be in inventory to protect against fluctuations in demand and/or supply. In the context of master production scheduling, the additional inventory and/or capacity planned as protection against forecasting errors and/or short-term changes in the backlog.

*Refer to: Supply Chain Principles*

*Refer to: Inventory Management*

*Refer to: Production Scheduling*

**Buffer Strategy**

A strategy that utilizes buffer stock to maintain part flow. This strategy synchronizes otherwise un-synchronized operations.

*Refer to: Inventory Management*

*Refer to: Delivery Performance*

**Bull Whip Effect**

Phenomenon in which customer order information is distorted as it is transmitted up the supply chain.

**Business Agreement**

Agreement between Pratt & Whitney and its suppliers.

*Refer to: Product Cost Management*

**Business Case**

Refers to the compilation of all available data from cross-functional areas to determine if a business venture is a viable one that should be pursued.

*Refer to: Passport System*

**Business Planning**

Creating a statement of long-range strategy and revenue, cost, and profit objectives, usually accompanied by budgets, a projected balance sheet, and a cash flow statement. A business plan is usually stated in terms of dollars and grouped by product family.

*Refer to: Production Scheduling*

**Business Unit**

A sub-unit within a part center responsible for producing specific groups of parts.

*Refer to: Root Cause Analysis*

*Refer to: Delivery Performance*

**Business Unit Manager**

The manager responsible for the cells within a business unit. See Business Unit.

**Bypass Ratio (Bpr)**

The airflow through the fan stream divided by the airflow through the core. Total Airflow is equal to Fan Airflow + Core Airflow.

## - C -

### **Cactus Wires**

International e-mails from airline customers regarding customer service issues.

### **CAEP**

Acronym for Committee on Aviation Environmental Protection. A subgroup of the International Civil Aviation Organization (ICAO) responsible for environmental protection.

### **Campaign Negotiation**

The time period during an engine campaign when Pratt & Whitney and the customer decide on the conditions of an engine contract.

### **Cannibalization**

Using parts from an older engine (that is not in service) to replace parts on a newer engine.

### **Capable**

The extent to which a process is able to meet Engineering tolerance via Cpk measurements.

*Refer to: Process Certification*

*Refer to: Manufacturing Principles*

*Refer to: ACE Overview*

### **Capacity**

The capability of a system to perform its expected function or the potential output of a worker, machine, work center, plant, or organization per specified time period.

*Refer to: Supply Chain Principles*

*Refer to: Production Scheduling*

### **Capacity-Related Cost**

Those costs incurred when capacity is expanded or reduced (e.g., hiring more employees, purchasing more equipment, re-arranging cells).

*Refer to: Inventory Management*

### **Capital Budgeting**

A forecast for the purchase of capital assets. Also called Capital Planning.

### **Capital Expenditure**

Expenditures to acquire or improve capital, including improvements to leased assets. Capital expenditures may be made only after a properly authorized capital appropriation has been processed.

### **Capital Stock**

Shares in the ownership of a corporation. These shares are represented by stock certificates issued by a corporation to its shareholders.

### **Capture Rate**

The percent of the engine market that a particular engine manufacturer holds relative to other engine manufacturers.

### **Carbon Seal Support**

Carbon seals are used to seal parts of an engine from other parts (e.g., keeping different air pressures apart, sealing oil from air).

**Carrying Cost**

The cost of carrying inventory usually defined as a percentage of the dollar value of inventory per unit of time (generally one year). Carrying costs depend mainly on the cost of capital invested as well as the costs of maintaining the inventory, such as taxes and insurance, obsolescence, spoilage, and space occupied.

*Refer to: Inventory Management*

**CAS**

Acronym for Cost Accounting Standards. The set of rules on cost accounting for government contracts to ensure consistent accounting is completed by all contractors working with the government.

**Cash**

Money that is immediately available to the business, whether it is on-hand or deposited in a bank account.

**Cash Basis Accounting**

A basis of income measurement under which revenues and/or expenses are recognized when cash is collected or paid.

**Cash Equivalent**

Short-term, highly liquid investments that are treated as equivalent to cash in the preparation of cash-flow statements.

**Cash Flow**

Net cash provided by a business' operating, financing, and investing activities. For Financial Planning & Measurement purposes, cash flow is calculated as the change in Net Operating Assets (NOA) over a period of time plus net income. Increases in NOA are considered a cash outflow, decreases are considered a cash inflow.

*Refer to: Inventory Management*

**Cash Flow from Operations (CFFO)**

Cash Flow from Operations is equal to Net Income plus the change in Net Operating Assets. When measuring cash flow, Pratt & Whitney includes cash flow from operating and investing activities but does not include financing activities, as these are managed by United Technologies Corporation (UTC).

Cash Flow Statement - a financial statement that summarizes the affects of cash and cash equivalents on the operating, investing and financing activities of a business for a specific period.

**Category 1 Supplier**

A supplier who owns the design and production of a part/set of parts.

**CCB**

Configuration Control Board. Steering committee responsible for maintaining, updating, and communicating the configuration of an engine.

**Cell Flow Map**

Map that shows all processes that occurs within a cell; the cell process flow map summarizes all part flow maps so that data can be collected and analyzed at the aggregate level.

*Refer to: QCPC*

**Cell Leader**

A salaried employee responsible for managing the day-to-day operations of a manufacturing cell. A cell leader is also responsible for the well being of the employees in a cell.

**Cell-Wide ACE Event**

An ACE event, such as a Standard Work Kaizen event, that requires the participation of everyone in the cell. During, cell-wide ACE events, is the usually shut down temporarily.

**Centering Bung**

See "Adapter Plate" definition.

*Refer to: Setup Reduction*

### **Centerline**

The main, bases engine that is the first to be created in an engine line.

### **Certification**

Approval from the Federal Aviation Administration (FAA) that an engine is safe to fly.

### **Certification Cost**

Costs associated with getting an engine/airframe combination certified by the Federal Aviation Association (FAA). Payments are often made to the airframer as a reimbursement for expenses incurred during this process.

### **Certification Process**

The second process in the Design/Develop/Certification Phase. This process includes: testing production design hardware, validating airworthiness, showing specification compliance to airframers, delivering initial flight test engines to airframers and assisting airframers with aircraft certification.

### **CFFO**

Acronym for Cash Flow from Operations. Cash Flow from Operations is equal to Net Income plus the change in Net Operating Assets. When measuring cash flow, Pratt & Whitney includes cash flow from operating and investing activities but does not include financing activities, as these are managed by United Technologies Corporation (UTC).

### **Chamfer**

A beveled edge or an operation that creates a beveled edge.

### **Changeover**

The preparation of equipment for the production of the next scheduled item.

*Refer to: Setup Reduction*

*Refer to: Inventory Management*

*Refer to: Delivery Performance*

### **Changeover Time**

The actual time required preparing equipment for the production of the next scheduled item.

*Refer to: Setup Reduction*

*Refer to: Inventory Management*

### **Charter Part Council (CPC)**

The CPC is an integrated team that simplifies P&W's business by standardizing designs and processes across all product lines. Rule-Based Design (RBD) and Computerized Product Definition (CPD) are key initiatives employed by the CPC to accomplish this task. The CPC defines and controls "norms," or standards, and an Integrated Product Team (IPT) interfaces with the CPC and uses these norms as the basis for part and process design.

### **Charter Part Council (CPC) Norms**

Listing of preferred part numbers that designers should use to reduce the costs associated with multiple part numbers. Examples of these costs include excessive setups / changeovers, processing (machining and purchasing) and maintenance.

*Refer to: Standardization and Commonality*

### **Chronic Problem**

Problems that occur from a process that always produce some unacceptable product. A long-standing adverse situation that people have learned to live with and work around. Solution requires changing the process.

*Refer to: Root Cause Analysis*

### **Chronic Variation**

Variation that is inherent to a process (e.g. slight vibration in machine). This type of variation generally has little impact on the product. Synonymous with common variation and random variation.

**CIPT**

Acronym for Component Integrated Product Team. A work team that designs a particular component of an engine such as the engine's nacelle, compressor, etc.

**Class I Engineering Change**

A process, procedural, or design change that affects the form, fit, or function of a part.

*Refer to: Product Cost Management*

**Class II Engineering Change**

A process, procedural, or design change that does not affect the form, fit, or function of a part.

**CLM**

Acronym for **Closed Loop Machining**. A manufacturing method that automatically feeds performance data backs to a machine to help control the process.

*Refer to: TPM*

*Refer to: Process Certification*

*Refer to: Process Capability*

**Clue Generation**

Techniques and tools used in the Statistical Engineering discipline to gather information about the Y to learn something about the nature of the Red X.

*Refer to: Root Cause Analysis*

**CMM**

Acronym for Coordinate Measuring Machine. An electronic measuring machine used for the dimensional inspection of part blueprint characteristics. These machines are either manual or computer controlled.

*Refer to: Process Certification*

**CMMS**

Acronym for Computerized Maintenance Management System. The CMMS is a tool used to put a job into the system. It is the first step in getting a task done by any of the Pratt & Whitney trades people.

**Coating**

A manufacturing operation in which parts are covered with chemicals or other substances. Coatings are usually applied to act as protective barriers against heat, corrosion, and other factors that could cause damage to the surface of a part.

**COGS**

Acronym for Cost of Goods Sold. Also known as Cost of Sales (COS). The costs that are incurred from both the purchase of materials and the costs of "adding value" (i.e., machining and assembling that material into an engine or product) to a product or providing a service.

**Collaborator**

A company that shares in the revenues and risks of an engine program with P&W, yet P&W retains final business decision authority for the entire engine program.

**Collision Factor**

The confusion in a cell caused by operators crossing paths as they complete operations in a cell. If the Standard Work Groups are arranged in a way that operators are frequently crossing each other's paths, the collision factor is high.

*Refer to: Standard Work*

**Combustor Exit Temperature**

The temperature of airs exiting the combustor. (Generally in the vicinity of 2000 Degrees Fahrenheit).

**Commercial Engine Business (CEB)**

The division of Pratt & Whitney that produces commercial engines.

*Refer to: Standardization and Commonality*

*Refer to: Production Scheduling*

**Commercial Sold Overdue**

A delivery performance metric that tracks the number of commercial engines P&W did not deliver on time.

*Refer to: Delivery Performance*

**Committee on Aviation Environ. Protection (CAEP)**

A subgroup of the International Civil Aviation Organization (ICAO) responsible for environmental protection.

**Commodity**

An article of commerce or something that is useful or valued.

*Refer to: Supply Chain Principles*

**Common Core Part**

Parts that are used across engine programs (or for different engines). When engines are designed with the same parts, the lead-time to produce these engines is reduced because Purchasing can utilize volume discounts as they purchase more of the same part. Also, Manufacturing does not have to learn how to produce a new part.

*Refer to: Standardization and Commonality*

**Common Stock**

A form of ownership in a corporation. In comparison to preferred stock, common stock does not have a pre-defined dividends rate, and are last to be paid out in the liquidation of a business.

**Common Variation**

Variation that is inherent to a process (e.g. slight vibration in machine). This type of variation generally has little impact on the product. Synonymous with random variation and chronic variation.

**Competitive Position**

Refers to a business position in the marketplace relative to its competitors.

**Component Integrated Product Team (CIPT)**

A work team that produces a particular component of an engine such as the engine's nacelle, compressor, etc.

**Compressor Airfoil**

Compressor Airfoils exist in two forms: blades (rotating airfoils) or vanes (stationary airfoils). Compressor blades help to increase the pressure and temperature of incoming air by forcing it into later stages of a compressor. Eventually the air leaves the compressor and moves into the combustor where it ignites fuel. Compressor vanes direct the air pushed by a blade to the next stage of a compressor at an optimum angle.

**Computerized Maintenance Management System (CMMS)**

The CMMS is a tool used to put a job into the system. It is the first step in getting a task done by any of the Pratt & Whitney trades people.

**Concentricity**

Having a common center or being perfectly round. This is important to rings and other round parts.

**Concept Champion**

An individual that defends or maintains a cause or proposal.

**Conceptual Design**

An iterative process that provides the best alternative for product development. The conceptual design provides enough high level ideas to customers to determine if the engine satisfies customer requirements.

**Concession**

Incentives or inducements that Pratt & Whitney offer to a customer to win an engine order. This includes any discounts, free support equipment, reduced charge equipment, re-marketing, financing, etc.

**Conflicting Interprogram Priorities**

Refers to conflicts that arise when shared facilities (e.g. test facilities) or resources are needed by more than one program. Program Managers only have control over their particular program.

**Consignment Crib**

A small storage location for consigned inventory.

**Consignment Inventory**

Inventory located on P&W premises those P&W suppliers own. As soon as P&W needs this material, they electronically "wand" or scan in the serial number and send it into production. The wand or scanning of the part automatically triggers payment to the supplier.

*Refer to: Inventory Management*

*Refer to: Product Cost Management*

*Refer to: Delivery Performance*

*Refer to: Production Scheduling*

**Constant Dollars**

Term used to refer to monetary amounts that are not adjusted to account for the time-value of money (the fact that a dollar earned today is worth more than a dollar earned tomorrow). Often referred to as "real dollars." Constant Dollars = Nominal Dollars - Inflationary Premium.

**Consumable**

Supplies that a manufacturing unit needs to operate on a daily basis. Material consumed or exhausted in production or sale such as paint, drill bits, weld wire, cleaning material, grinding wheels, or fuel.

Refer to: Product Cost Management

**Containment Event**

When a part failure occurs and the engine fails to contain the debris.

**Contingent Liability**

A potential obligation that meets the following conditions: the occurrence of the obligation is uncertain but probable and future events will resolve this uncertainty.

**Continuous Flow Production**

Lot less production where products flow continuously rather than being proportioned into lots.

**Continuous Improvement**

The systematic and continuous elimination of wasted capital, material, time, and other valuable resources. Continuous improvements are usually small in scale, but when combined with others, generate significant benefits for an organization.

*Refer to: Mistake Proofing*

*Refer to: Standard Work*

*Refer to: Process Capability*

*Refer to: Root Cause Analysis*

*Refer to: ACE Overview*

**Contract Accounting**

The process of estimating all sales and costs associated with satisfying the obligations of an engine contract.

**Contract Performance**

This metric measures how good P&W creates engines on time according to contract dates.

**Contribution Margin**

The amount of sales revenue earned minus variable costs that have been incurred.

**Control Chart**

A graphic comparison of process performance data to predetermine computed control limits. The process performance data usually consists of groups of measurements selected in regular sequence of production that preserve the order. The primary use of control charts is to detect assignable causes of variation as opposed to random variations.

*Refer to: Process Certification*

**Control Plan**

A set of written strategies that defines the steps necessary to maintain control and capability of a process.

*Refer to: Process Certification*

*Refer to: Manufacturing Principles*

*Refer to: ACE Overview*

**Controllable Cost**

Controllable costs are costs that a Business Unit can impact through the business decisions it makes in scheduling work and manpower, handling materials, and maintaining machinery and tooling. Examples include Labor, Overtime, Consumables, Maintenance & Repair, Scrap Costs, and Vendor Assist Costs. Examples of uncontrollable costs might include overhead items such as the cost of utilities or occupancy of floor space.

*Refer to: Manufacturing Principles*

*Refer to: Product Cost Management*

**Controlled**

A process where each part measurement is predictable.

*Refer to: Process Certification*

**Controllership**

The maintenance of internal controls to ensure compliance with company policies and external regulations.

**Conversation Tree**

A computer program used to simulate a conversation.

**Coordinate Measuring Machine (CMM)**

An electronic measuring machine used for the dimensional inspection of part blueprint characteristics. These machines are either manual or computer controlled.

*Refer to: Process Certification*

*Refer to: Process Capability*

**Corporate Principles**

The rules or codes of conduct relating to Pratt & Whitney employees and business practices.

**Corporation**

A business entity created by law and bound by legal contract that, apart from its owners, can own assets and incur liabilities.

**Corrective Action**

Action taken to eliminate the causes of an existing non-conformity, defect, or other undesirable situation to prevent recurrence.

*Refer to: QCPC*

*Refer to: Setup Reduction*

*Refer to: Root Cause Analysis*

**COS**

Acronym for Cost of Sales. Also known as Cost of Goods Sold (COGS). The costs that are incurred from both the purchase of materials and the costs of "adding value" (i.e., machining and assembling that material into an engine or product) to produce a product or provide a service.

**Cost**

A monetary measure of the amount of resources expended for a particular purpose.

**Cost Accounting Standards (CAS)**

The set of rules on cost accounting for government contracts to ensure consistent accounting is completed by all contractors working with the government.

**Cost Allocation**

The process of assigning accumulated costs to a function or product to analyze costs in a meaningful way, and ensure the proper accounting treatment.

**Cost Behavior**

The way in which an organization's costs are affected by its activities.

**Cost Center**

An entity or unit of activity for which costs are captured and tracked (e.g., a business, function, or product line).

**Cost Driver**

An event or condition that affects costs (e.g., the number of units produced, the number of parts per unit, etc.).

**Cost Misses**

Cost differences resulting from actual cost exceeding planned or budget cost.

**Cost of Capital**

The minimum rate of return that is desired for an investment; this is what the company pays to acquire money.

**Cost of Goods Sold (COGS)**

Also known as Cost of Sales. The costs that are incurred from both the purchase of materials and the costs of "adding value" (i.e., machining and assembling that material into an engine or product) to produce a product or provide a service.

**Cost of Ownership**

Cost to airlines/airframers to maintain engines at a certain level of reliability.

**Cost of Quality**

1. The sum of costs of prevention, appraisal, and failure. The key financial measurement tools which ties process control and process optimization into a total process management effort.
2. The cost of conformance (achieving quality) plus the cost of conformance (waste).
3. A management system for tracking the costs of delivering quality products to customers, and identifying the processes that cost the most. Delivering a high quality product costs least when quality problems are prevented. Quality problems become increasingly more expensive as the product moves through the production process and problems are discovered by appraisal, internal failure, or external failure.

**Cost of Sales (COS)**

Also known as Cost of Goods Sold. The costs that are incurred from both the purchase of materials and the costs of "adding value" (i.e., machining and assembling that material into an engine or product) to produce a product or provide a service.

**Cost of Spare Parts Sales**

The costs that are incurred from both the purchase of materials and the costs of "adding value" to produce spare parts.

**Cost of Transition**

The cost of moving from one manufacturer's engine or another, or the cost of modifying an existing engine.

**Cost Plus Award Fee (CPAF)**

A contract type that allows for the reimbursement of allowable costs incurred and the assessment of a fee that is based on the relationship of total allowable costs to target (or evaluated) performance criteria.

**Cost Plus Fixed Fee (CPFF)**

A contract type that allows for reimbursement based on allowable costs plus a fixed-fee. The contract is adjusted based on the relationship of total allowable costs to the target cost.

**Cost Plus Incentive Fee (CPIF)**

A contract type that allows for the reimbursement of allowable costs incurred and the assessment of a fee that is based on the relationship of total allowable costs to target (or evaluated) performance criteria.

**Cost Plus Incentive/Award Fee (CPIF/CPAF)**

A contract type that allows for the reimbursement of allowable costs incurred and the assessment of a fee that is based on the relationship of total allowable costs to target (or evaluated) performance criteria.

**Cost Reduction**

The net benefit achieved in cost as a result of eliminated or simplified design features and/or manufacturing processes.

**Cost Type**

A contract type that allows for the reimbursement of allowable costs; cost growth under this type of contract may result in changes in the work effort being performed.

**Cost-Reimbursable Contract**

A contract type that allows for the reimbursement of allowable costs; there is no fee provision.

**Cost-Sharing Contract**

A contract type under which an agreed portion of allowable costs will be reimbursed.

**Countermeasure**

Enhancements made to equipment during TPM events. Countermeasures make it easier to monitor performance "at run time" (ex. Plexiglas motor covers) and make it easier to operate the equipment.

*Refer to: TPM*

*Refer to: Manufacturing Principles*

**CPAF**

Acronym for Cost Plus Award Fee. A contract type that allows for the reimbursement of allowable costs incurred and the assessment of a fee that is based on the relationship of total allowable costs to target (or evaluated) performance criteria.

**CPC Norm**

A "norm" defines the preferred configuration, material, and manufacturing process for a specific type of part to best satisfy the customer's needs.

**CPD**

Acronym for Computerized Product Definition. Using 3D solid modeling to design and define a part.

**CPFF**

Acronym for Cost Plus Fixed Fee. A contract type that allows for reimbursement based on allowable costs plus a fixed-fee. The contract is adjusted based on the relationship of total allowable costs to the target cost.

**CPIF**

Acronym for Cost Plus Incentive Fee. A contract type that allows for the reimbursement of allowable costs incurred and the assessment of a fee that is based on the relationship of total allowable costs to target (or evaluated) performance criteria.

**Cpk**

A capability index used to quantify how good a process output is in relation to the allowable tolerance.

*Refer to: Process Certification*

*Refer to: Process Capability*

*Refer to: Root Cause Analysis*

*Refer to: Delivery Performance*

**CRD**

Component Requirements Document. A document which lists all technical and other specifications for a component. This is agreed on by the MIPT and a CIPT of a program and is a binding contract.

**Credit Sale (or Sale on Account)**

A sale when a customer buys a product or service and agrees to pay by a future specified date.

**Creditor**

A person or business that lends money to (or extends the time for payment from) another person or business.

**Critical Spare Parts List**

List of spare parts for each machine that are critical to the performance of the machine. This list includes the spare part, the number of these parts used, the frequency of use, where the parts are procured, how long it takes to receive the parts and the cost of the spare part.

*Refer to: TPM*

*Refer to: Manufacturing Principles*

**Cross-Training**

Training operators to perform a variety of tasks, each requiring different skills. Cross-training creates a more flexible workforce.

*Refer to: Standard Work*

**Culture**

System of shared formal and informal values and beliefs of employees interacting with the organization's structure and systems which produces the behavioral norms, e.g., "The way we do things around here."

**Cumulative Cash Flow**

The sum of cash flow from one year to the next. For example, if cash flow in Year 1 is \$100 and \$200 in Year 2, then cumulative cash flow at the end of Year 2 is \$300.

**Current Asset**

An economic resource that is expected to be used or converted to cash within one year, or within the business' normal operating cycle (whichever is longer).

**Current Liability**

An economic obligation that is due within one year or within the business' normal operating cycles (whichever is longer).

**Customer Advance**

Cash received from customers prior to the shipment of goods or the performance of services.

**Customer Expectation**

The needs and wants most often voiced by the customer. They are features customers know they want but that have not yet become basic needs of the product. In many cases, these are the options offered and used for market penetration.

**Customer Satisfaction**

A key business success factor that is measured by a company's reliability, responsiveness, and rapport with the customer.

*Refer to: Market Feedback Analysis*

**Customer Satisfaction Center**

A Pratt & Whitney example of a Failure Analysis Clinic on its Assembly Floor.

*Refer to: Root Cause Analysis*

**Cycle**

A recurring pattern in process. When referring to an engine, this is the cycle of an engine taking-off and landing. When referring to a manufacturing process, this is the set of steps required for 1 operator to perform all tasks for 1 part.

**Cycle Time**

The sum of Manual, Walk, and Wait time required for an operator to complete one work sequence (cycle).

*Refer to: Standard Work*

*Refer to: Delivery Performance*

**- D -****D&C Rate**

Acronym for Delays and Cancellations Rate. Airlines track the number of times a flight is delayed or canceled due to engine trouble and report the delay to Pratt & Whitney. It is important to have a low D&C rate.

**D.I.V.E.**

A process used to uncover the root cause of a process inefficiency or problem and/or to improve a process. D.I.V.E stands for Define, Investigate, Verify and Ensure.

*Refer to: Root Cause Analysis*

**Daily Flow Rate**

The number of parts that must be produced per day to meet customer demand. Daily Flow Rate is used as the denominator in the Tact Time calculation ( $\text{Tact Time} = \text{Available Time} / \text{Daily Flow Rate}$ ).

*Refer to: Standard Work*

**Daily Toolbox Meeting**

A daily meeting during which the cell leader and operators discuss the game plan for the day. The cell leader also communicates the schedule and points out any out-of-the-ordinary events, such as a tour.

**Daily Walk Around**

A list of minor repairs and inspections that an operator performs on a daily basis. The Daily Walk Around helps reduce both planned and unplanned downtime and fosters a sense of "ownership" for the equipment.

*Refer to: TPM*

*Refer to: Process Certification*

*Refer to: Standard Work*

**Daily Walk Around Checklist**

A list of minor repairs and inspections that an operator performs on a daily basis. The Daily Walk Around helps reduce both planned and unplanned downtime and fosters a sense of "ownership" for the equipment.

*Refer to: TPM*

*Refer to: Manufacturing Principles*

**Datum**

A single piece of data.

*Refer to: Process Certification*

**Day-One Sourcing**

The inclusion of key suppliers up-front in the design process so parts can be designed to the capabilities of the supplier that will manufacture the parts.

*Refer to: Supply Chain Principles*

**Db Cum**

Acronym for cumulative decibels below the certification noise limits for an airplane/engine combination. The FAA imposes certification noise limits for three conditions during an airplane flight (1-on approach, 2-noise measured a certain distance from the side of an airplane at take-off power while still on the runway; called sideline, and 3-noise made during climb after takeoff at a certain distance from the airport, called cutback). Once an airplane/engine combination is certified relative to these limits, the manufacturer typically combines the amount the airplane is below the limit at each of the three conditions and reports them as a cumulative (cum) number for ease of reporting and advertising.

**Debarment**

When a company is prohibited from conducting further business with the government.

**Debt**

A business' current and non-current liabilities.

**Debt Rating**

A measurement of the amount of debt held by a business, used to evaluate potential financing.

**Decision Tree**

Shows decision alternatives, states of nature, probabilities of these states and conditional benefits and losses. Decision trees are used for making decisions under conditions of uncertainty.

**Defect**

A defect is any problem with the quality of a part.

*Refer to: TPM*

*Refer to: Mistake Proofing*

*Refer to: Manufacturing Principles*

**Defective Pricing**

Pricing that was based on faulty pricing assumptions or non-current data.

**Defects Per Million (DPM)**

The number of defects produced by a process per one million outputs of that process. A standard unit of measurement of product quality. It is calculated by taking the number of non-conforming characteristics (multiplied by 1,000,000) and divided by the total number of characteristics inspected for a specific period of time.

*Refer to: Process Certification*

**Deferred Tax Asset**

A tax benefit that will be realized at a later date.

**Deferred Tax Liability**

A tax cost that will be incurred at a later date.

**Delays and Cancellations Rate**

Airlines track the number of times a flight is delayed or canceled due to engine trouble and report the delay to Pratt & Whitney. It is important to have a low D&C rate.

*Refer to: Market Feedback Analysis*

**Demilitarize**

The retiring of a military product, or the process of changing a military product over to a commercial product.

**Demonstrated Lead Time**

The time required for a product to go from raw material to a finished good shipped to the customer. Demonstrated lead-time averages this time among all parts that have been produced for a certain time period. It does not include parts that have been scrapped, because scrapped parts have not "demonstrated" their lead-time.

*Refer to: Inventory Management*

*Refer to: Delivery Performance*

**Department of Defense (DOD)**

The branch of the United States Government responsible for maintaining the security of U.S. citizens.

**Depreciation**

The process of expensing the purchase cost of plant and equipment over a period of time called its useful life.

**Depreciation Schedule**

A table used by finance professionals to determine the depreciation expense to be used for each year of a capitalized asset's useful life.

**Depth Gage**

A gage that measures depth dimensions or linear features from a datum surface.

**DER**

Designated Engineering Representative. P&W employee approved by the FAA to perform inspections for them.

**Derivative**

Development of a new engine model based on a previously designed engine and sharing a common centerline. The PW4084 and PW4168 are derivatives of the base PW4000 engine.

**Design for Manufacturability (DFM)**

Focusing on how the product will be produced while designing it. This means understanding what tools and machinery will be used or already exists.

*Refer to: Process Capability*

*Refer to: Product Cost Management*

*Refer to: Delivery Performance*

**Design of Experiments (DOE)**

The arrangement in which an experimental program is to be conducted, and the selection of the versions of one or more factors or factor combinations to be included in the experiment. The purpose of designing an experiment is to provide the most efficient and economical methods of reaching valid and relevant conclusions.

*Refer to: Process Certification*

**Design to Cost**

Basing the design of a product on the cost that it takes to deliver.

*Refer to: Product Cost Management*

**Design Type Certification**

Certification to maintain engines.

**Design/Develop/Certification Phase**

The second phase in a program's lifecycle. This phase focuses on the detailed design of the engine, extensive testing, and engine certification and cost reduction.

**Designed Experiment**

A test or series of tests where changes are made to identify process input variables. This will help observe and identify corresponding changes in the output product response. It tests the interaction of variables.

*Refer to: Root Cause Analysis*

**Detail Inspection**

The inspection of most dimensional characteristics. Usually prior to a special coating, finish or assembly operation.

*Refer to: Process Certification*

**Diameter Gage**

A gage that measures diameters or circular features.

**Die**

A device used to shape, finish, or impress an object.

**Dielectric Oil Analysis**

Analysis conducted to determine impurities in the oil used primarily in EDM Machines.

*Refer to: TPM*

**Diffuser Case**

A chamber is surrounding the impeller of a centrifugal pump or compressor in which the kinetic energy of a fluid is converted to pressure energy.

**Diffuser / Combustor**

Receives air leaving the high-pressure compressor into an expanding diameter chamber to decrease the velocity of the air and increase static pressure in preparation for entry into the combustion chamber.

**Dimension**

A measurement (or coordinate) used for determining the precise spatial position or location for a part or operation. Dimensions include height, width, length and depth.

*Refer to: Mistake Proofing*

**Direct Cost**

A cost that can be specifically and exclusively identified and measured for a particular product or function, without a significant expenditure of time or effort.

*Refer to: Product Cost Management*

**Direct Labor**

Employees directly involved in manufacturing a product.

**Direct Material**

All materials that become a part of the finished product that can be specifically assigned to the product.

**Direct Material Variance**

The difference between the actual costs of material and the standard costs (which are used to value inventory). This variance is classified as part of the direct material cost of goods sold.

**Direct Operating Costs (DOC)**

All costs that are the direct result of running a business. For an airline, DOC includes flight crew, fuel, maintenance, depreciation, and insurance of the airplane.

*Refer to: Manufacturing Principles*

### **Direct-to-Cell**

A strategy used to deliver purchased parts and / or raw materials directly to a Pratt & Whitney manufacturing cell. This strategy lowers P&W's inventory costs.

*Refer to: Inventory Management*

*Refer to: Delivery Performance*

### **Disclosure Statement**

A document that discloses a company's accounting practices in accordance with Cost Accounting Standards (CAS).

### **Discount Rate**

The rate of return on an investment that is required by a business to undertake an investment. At Pratt & Whitney, business cases need the minimum of a 9% real (12% nominal) IRR for approval. Also called the hurdle rate.

### **Discounted Cash Flow (DCF)**

An approach to determine the benefit of an investment by identifying what a series of cash flows to be received in the future are worth today.

### **Discretionary Budget**

A type of budget where a manager has control over the amount of money that is spent on each task.

### **Discretionary Cost**

Costs that are not required to continue operations (as opposed to committed costs).

### **Distribution Center**

A warehouse with finished goods and/or service items. A company might have a manufacturing facility in one place and distribution centers in a number of other places.

*Refer to: Standardization and Commonality*

*Refer to: Inventory Management*

### **Dividend**

A distribution of earnings paid to the shareholders of a corporation; the Board of Directors determines dividend amounts.

### **DOC**

Acronym for **Direct Operating Costs**. All costs that are the direct result of running a business. For an airline, DOC includes flight crew, fuel, maintenance, depreciation, and insurance of the airplane.

### **DOD**

Acronym for Department of Defense. The branch of the United States Government responsible for maintaining the security of U.S. citizens.

### **Double-Declining Depreciation**

A method used to expense the cost of capitalized assets over their useful lives that recognizes twice the straight line depreciation amount in a shorter period of time.

### **Downstream Process**

A process that occurs after the current operation.

*Refer to: Process Certification*

*Refer to: Delivery Performance*

**DPM**

Acronym for Defects Per Million. The number of defects produced by a process per one million outputs of that process. A standard unit of measurement of product quality. It is calculated by taking the number of nonconforming characteristics (multiplied by 1,000,000) and divided by the total number of characteristics inspected for a specific period of time.

**Dr. Shingo's Single Minute Exchange of Dies**

A series of techniques for changeovers of production machinery in less than ten minutes.

*Refer to: Setup Reduction*

**Drag**

Financial: The method by which partners share in overhead expenses; to do this, P&W will withhold a contractually agreed-upon percentage of the collaborator's revenues. Aerodynamic: air resistance of an aircraft.

**Dress**

Testing process where the engine is connected to instrumentation (various sensors and wires) to record testing data. There are different dressing processes for each product line as the testing requirements differ.

**Drilling**

To make holes in hard substances by revolving or by a succession of blows.

*Refer to: QCPC*

*Refer to: Process Certification*

**Driver**

An activity or condition that has a direct influence on the operational performance or cost structure of other activities.

**Dual Source Agreement**

An agreement under which a customer agrees to purchase engines from multiple manufacturers.

**Durability**

The ability to be able to exist for a long time without significant deterioration.

*Refer to: Product Cost Management*

**Durable Tooling**

As opposed to perishable tooling, durable tooling is "permanent" tooling that is used to manufacture engine parts. Examples include fixtures, molds, and jigs.

**- E -****E&D**

Acronym for Engineering and Development. Refers to company-funded expenditures for the design and/or creation of new or improved engines, parts, or components.

**Eagle Services**

Business unit of P&W that focuses on Aftermarket operations.

**Earnings Before Interest and Taxes (EBIT)**

A measure of profitability based on business operating activities. It represents company profit before reductions for federal taxes, state taxes, and interest expense.

**Earnings Per Share (EPS)**

Earnings the company made per share of outstanding stock. This is calculated by dividing the company's profit by the number of outstanding shares of stock.

#### **EBIT**

Acronym for Earnings Before Interest and Taxes. A measure of profitability based on business operating activities. It represents company profit before reductions for federal taxes, state taxes, and interest expense are made.

#### **EC**

Acronym for Executive Council. An executive steering committee made up of the company president and the company's top managers.

#### **Economic Life**

The time period over which an amortizable asset has value.

#### **EDM**

Acronym for Electrical Discharge Machine. A process by which material is removed from a part electrically.

#### **Effective Perceived Noise decibels (EPNdb)**

Measurements of an engine's noise level.

#### **Efficiency**

A measure of actual output to expected output.

#### **EFH**

Acronym for Engine Flight Hours. The unit of measurement for the number of hours an engine is utilized in a given year.

#### **EH&S**

Acronym for Environment, Health and Safety. Pratt & Whitney's approach to ensuring a clean and safe workplace for all employees.

Refer to: Manufacturing Principles

Refer to: Inventory Management

Refer to: Product Cost Management

Refer to: Delivery Performance

#### **EIS**

Acronym for Entry into Service. The date an engine enters into service for the first customer. Can also be described as the first time an engine is used by an airline for its own use (e.g., profit, freight, etc.).

#### **Electrical Discharge Machine**

A machine which removes material from a part using electrical charges.

#### **Electronic Gage (e-gage)**

Measuring device that collects dimensional data of a part and automatically reads these measurements into a computer.

*Refer to: Process Capability*

#### **Element Task**

An individual task that is completed by an operator during a work cycle. "Element Task" appears on the Time Observation Sheet.

Refer to: Standard Work

#### **Elements of a World Class Economy**

Strategic Direction, Results of Company Efforts, Success Tree, Enterprise Model, Work Flows & Employees, and the Growth Environment.

**Elephant Chart**

A one-page data summary that effectively and easily shows how the component parts are performing in the field over a period of time. Elephant charts ensure focus on recurring problems by displaying historical reliability trends for the various failure modes of the most troublesome component.

*Refer to: Root Cause Analysis*

*Refer to: Passport System*

*Refer to: Market Feedback Analysis*

**EMP**

Acronym for Engine Management Program. A book sent to airlines (engine model specific) that outlines Pratt & Whitney's recommended maintenance/inspection procedures for each component to get the best performance from the engine. The EMP is updated yearly to include most recent experiences and is used as a supplement Engine Manuals, but does not replace them.

**Employee Benefits**

The cost of services and payments provided to employees in addition to wages or salaries, which include such items as medical coverage and pensions.

**Employee Satisfaction**

A key business success factor that is measured by job security, job satisfaction, rewards and recognition, opportunity for growth, and trust in management.

**Ending Inventory**

The value of inventory on the balance sheet at the end of an accounting period.

**Engine Campaign**

A marketing effort with an airline to sell engines.

**Engine Family**

A group of engine derivatives that share the same centerline.

**Engine Flight Hours (EFH)**

The unit of measurement for the number of hours an engine is utilized in a given year.

**Engine Management Program (EMP)**

A book sent to airlines (engine model specific) that outlines Pratt & Whitney's recommended maintenance/inspection procedures for each component to get the best performance from the engine. The EMP is updated yearly to include most recent experiences and is used as a supplement Engine Manuals, but does not replace them.

**Engine Manual**

A training manual that describes how to complete engine repairs.

**Engine Master Schedule**

The anticipated build schedule for engines based on customer orders.

*Refer to: Production Scheduling*

**Engine Services**

The division of P&W that services engines in the Aftermarket.

*Refer to: Standardization and Commonality*

*Refer to: Inventory Management*

*Refer to: Production Scheduling*

**Engine Unit Cost**

Also referred to as Unit Cost. The cost to produce one engine.

**Engine Value Analysis**

Used to look at noise control, emissions, fuel consumption, weight, maintenance cost, etc. because all of these affect an airline's business and consequently affect Pratt & Whitney's business plan.

**Engine/Propulsion System Service Policy**

Basic contractual protection for all new engines/propulsion systems to repair a failure which occurs in a definite initial period of operation.

**Engineering**

A functional area of Pratt & Whitney devoted to the design, development, and test of products at the company.

**Engineering & Development (E&D)**

Refers to company-funded expenditures for the design and/or creation of new or improved engines, parts, or components.

**Engineering and Drafting Expense**

The cost of engineering and drafting work subcontracted to outside firms.

**Engineering Change**

A change made to the design of a part or process.

*Refer to: Manufacturing Principles*

*Refer to: Inventory Management*

*Refer to: Product Cost Management*

*Refer to: Delivery Performance*

*Refer to: Production Scheduling*

**Engineering Escape**

A design error that means a part does not fulfill its function.

**Engineering Product Configuration Control Team**

This group of people assists the Integrated Product Teams with all aspects of Engineering changes, including classifications (Class I, II, etc.), document selections, change control, release, incorporation requirements, material disposition, part number management, change priority, establish pullable parts list, education and production release. These experts can be used as consultants or can participate in IPTs where necessary.

*Refer to: Standardization and Commonality*

**Engineering Source Approval (ESA)**

(1) A system established by the Engineering division for the control of certain parts, materials, and processes where characteristics vital to the performance or integrity of the parts, materials, or processes cannot be completely defined in a manner suitable for inspection purposes. They must, therefore, be assured by Procurement from sources, which have demonstrated, to the satisfaction of the Engineering Division, the ability to produce the necessary characteristics.

(2) A part drawing requirement that limits procurement of that part to source(s) approved by the Engineering Division.

*Refer to: Product Cost Management*

**Engineering Standard Work**

The approach for Integrated Program Deployment (IPD) which provides a documented process supported by consistent and repeatable instructions, and a method for recording results. These process and instructions shall be packaged in such a way as to provide readily understandable guidance to practitioners and evidence of use to management and technical reviewers.

**Enterprise Resource Planning (ERP)**

An integrated company-wide computer system that efficiently manages operational and financial data to provide information needed in support of effective operational decision making.

*Refer to: Standardization and Commonality*

*Refer to: Production Scheduling*

**Entry Into Service (EIS)**

The date an engine enters into service for the first customer. Can also be described as the first time an engine is used by an airline for its own use (e.g., profit, freight, etc.).

*Refer to: Product Cost Management*

**Environment, Health & Safety (EH&S)**

Pratt & Whitney's approach to ensuring a clean and safe workplace for all employees.

*Refer to: 6S/Visual Factory*

*Refer to: Manufacturing Principles*

*Refer to: Inventory Management*

*Refer to: Delivery Performance*

*Refer to: ACE Overview*

**Environmental Condition**

Physical circumstances within and around the workplace that can influence quality and workmanship. These include lighting, ventilation, temperature, housekeeping, and the direction and density of traffic.

**Environmental Kit**

Hardware for the engine to make it more environmentally friendly (reduce pollution). One example might be a kit to retrofit the engine with a different combustor, which would reduce their pollutants emitted.

**EPNdb**

Acronym for Effective Perceived Noise Decibels. Measurements of an engine's noise level.

**EPS**

Acronym for Earnings Per Share. Earnings the company made per share of outstanding stock. This is calculated by dividing the company's profit by the number of outstanding shares of stock.

**Equipment Management**

The function of procuring equipment, developing maintenance and repair plans and schedules, conducting equipment improvement events, and monitoring the status of an operating unit's equipment.

*Refer to: TPM*

**ERB**

Acronym for **Executive Review Board**. A group of managers that "own" a problem, will be responsible for its resolution, and will be impacted by the solution. Typical participants in the ERB include Part Center General Managers, Component Center Directors, and Program Office Executive, Supplier Executives, and Customer Service Executives.

**ESA**

Acronym for **Engineering Source Approval**. (1) A system established by the Engineering Division for the control of certain parts, materials, and processes where characteristics vital to the performance or integrity of the parts, materials, or processes cannot be completely defined in a manner suitable for inspection purposes and must, therefore, be assured by procurement from sources which have demonstrated, to the satisfaction of the Engineering Division, the ability to produce the necessary characteristics. (2) A part drawing requirement that limits procurement of that part to source(s) approved by the Engineering Division.

**Escalation Factor**

An amount that is applied to the base price of an engine to account for inflation.

**Escape**

A part, engine or other deliverable that does not meet (internal or external) customers' expectations. An escape is further designated as "significant" and "general." A significant escape requires field action recommended by Pratt & Whitney or is a customer complaint, which generates further field action. A general escape is any escape noted, internal or external, regardless of severity of consequence.

*Refer to: QCPC*

*Refer to: Process Certification*

*Refer to: Mistake Proofing*  
*Refer to: Manufacturing Principles*  
*Refer to: Process Capability*  
*Refer to: Standardization and Commonality*  
*Refer to: Root Cause Analysis*  
*Refer to: ACE Overview*

### **ETOPS**

Acronym for Extended Twin Operations. Additional certification issued by the FAA for aircraft with two engines that permits flight over water and away from the nearest airport for specified periods of time (often 180 minutes).

### **Exchange Rate**

The rate at which one country's currency can be exchanged for another country's currency.

### **Execution Reports / Schedule**

The schedule that Manufacturing and Assembly follows to execute production of daily customer requirements.

*Refer to: Inventory Management*  
*Refer to: Production Scheduling*

### **Executive Council (EC)**

An executive steering committee made up of the company president and the company's top managers.

### **Executive Review Board (ERB)**

A group of managers that "own" a problem, will be responsible for its resolution, and will be impacted by the solution. Typical participants in the ERB include Part Center General Managers, Component Center Directors, and Program Office Executive, Supplier Executives, and Customer Service Executives.

### **Expediting**

Rushing or chasing production or purchase orders that are needed in less than the normal lead time; taking extraordinary action because of an increase in relative priority.

*Refer to: Manufacturing Principles*  
*Refer to: Delivery Performance*  
*Refer to: Production Scheduling*

### **Expense**

A decrease in owners' equity that arises from the daily operations of a business or from the delivery of goods or services to customers.

### **Expensed**

A term used to describe the accounting treatment of a transaction that is booked to an expense account.

### **Experimental Sales**

Government funded programs to perform and sell P&W's development effort, based upon the labor, materials and overhead expended.

### **Exposure**

Openness to potential financial consequences of circumstances related to a business' operating environment.

### **Extended Twin Operations (ETOPS)**

Additional certification issued by the FAA for aircraft with two engines that permits flight over water and away from the nearest airport for specified periods of time (often 180 minutes).

### **External Setup Time**

The time when setup activities are performed while the equipment is running. Examples include transporting dies and retrieving tools.

*Refer to: Setup Reduction*

**External Time**

For Standard Work, external time is time for activities that can only be completed when the machine is not running. For Setup Reduction, external time is time for activities that can be completed when the machine is running.

**Externally Funded Program**

Programs funded by the government.

**Extraction**

The horsepower that is extracted from an engine, through an output shaft, to run airplane generators, hydraulic pumps, etc.

**- F -****FAA**

Acronym for Federal Aviation Administration. U.S. Governing agency responsible for the certification of new aircraft and the operations of commercial airports.

**Fabrication**

Manufacturing operations for components as opposed to assembly operations.  
*Refer to: Product Cost Management*

**Factory Overhead**

Non-direct costs incurred in the manufacturing process such as utilities and administrative costs.

**FADEC**

Acronym for Full Authority Digital Electronic Control. The "brain" of the engine. A system that monitors and controls the engine's flight characteristics.

**Failure Analysis Clinic**

A method to help deploy root cause analysis. They are walk-in facilities within a work area that are responsible for quickly identifying, investigating, correcting and verifying a problem.  
*Refer to: Root Cause Analysis*

**Failure Mode**

The classification or nature of a part failure.  
*Refer to: Passport System*  
*Refer to: Market Feedback Analysis*

**Failure Mode Effect Analysis (FMEA)**

A preventive analytical technique used by designers (product or process) to methodically study the cause and effect of failures before a design is finalized.  
*Refer to: Process Certification*  
*Refer to: Passport System*

**Fan**

Part of an engine that is located to the rear of the air inlet section of the engine's cold section. Increases thrust like a propeller. Reduces foreign object damage by deflecting it out through the back of the fan.

**Fan Pressure Ratio**

The pressure at the exit of the fan component divided by the pressure at the inlet to the fan.

**FAR**

Acronym for Federal Acquisitions Regulations. Uniform policies and procedures for product acquisition used by all executive agencies of the U.S. Government. These are the rules which govern how defense contractors price their product for sale to the U.S. Government.

**FAR 31**

Acronym for Federal Acquisitions Regulations Part 31. FAR 31 include specific determinations on over 50 cost items as to whether or not they are allowable.

**FAR 33**

Acronym for Federal Aviation Regulation Part 33. A regulation for the certification of just the engine.

**FAR 35**

Acronym for Federal Aviation Regulation Part 35. A regulation for the certification of both the engine and the aircraft.

**FASB**

Acronym for Financial Accounting Standards Board. A non-governmental body that sets authoritative rules for the general practice of financial accounting.

**FAST Model**

Acronym for Functional Analysis System Technique (FAST) Model. A map of the product or process being evaluated. It displays a product 's/process' function in a logical sequence and establishes a functional hierarchy and interdependence. It is the foundation that a Value Management event is based on.

**FAST-TRAC**

The ACE tool used for setup reduction. The acronym stands for Foresight, Attachment, Setting Conditions, Trial Runs and Adjustments, Training and Awareness, record and Recommend, Application, and Continuous Improvement.

*Refer to: Setup Reduction*

**Fastener**

A nut, bolt, pin, ring, washer, screw, or other device used to hold objects together.

*Refer to: Standardization and Commonality*

*Refer to: Production Scheduling*

**Fastener Blanking Strategy**

The process of using forging to create identical blanks for similar parts. For example, bolts within the same family (but different lengths) should be produced using the same blanks. These blanks are cut to specific lengths at their point of need.

*Refer to: Standardization and Commonality*

**Favorable Variance**

A difference between actual and expected results which has positive consequences for a business.

**Feature**

An accessory, attachment, or option.

*Refer to: Process Capability*

**Feature Tolerance**

Dimensional limits of a specified feature or characteristic.

*Refer to: Process Certification*

**Federal Acquisition Regulations (FAR)**

Uniform policies and procedures for product acquisition used by all executive agencies of the U.S. Government. These are the rules, which govern how defense contractors price their product for sale to the U.S. Government.

**Federal Aviation Administration (FAA)**

U.S. Governing agency responsible for the certification of new aircraft and the operations of commercial airports.

**Feed**

Refers to the rate at which a machine tool removes material from a part.

*Refer to: Process Capability*

**FIA**

Acronym for Fleet Introductory Assistance. Pricing and other concessions made in the negotiation of commercial engine contracts. FIA may take the form of cash or credits deducted from the gross engine price. FIA is awarded to the airline.

**Fielded Engine**

An engine which is produced and delivered for operational use.

**Fill Rate**

A metric that tracks Pratt & Whitney's ability to deliver engines (commercial or military) and spare parts to its customers. The percentage of line items on an order or a group of orders that can be filled (i.e., picked and shipped). The fill rate is the key to customer satisfaction.

*Refer to: TPM*

*Refer to: Manufacturing Principles*

*Refer to: Delivery Performance*

*Refer to: Production Scheduling*

**Final Assembly**

The name for the manufacturing department where the product is assembled.

*Refer to: QCPC*

*Refer to: Standardization and Commonality*

*Refer to: Delivery Performance*

**Final Assembly Removal**

A measure of the number of times Final Assembly has to send an engine back to repair a defect.

*Refer to: Market Feedback Analysis*

**Final Inspection**

The inspection of blueprint features not inspected at detail inspection. Usually takes place after a coating, finish, or assembly operation.

*Refer to: Process Certification*

**Financial Accounting Standards Board (FASB)**

A non-governmental body that sets authoritative rules for the general practice of financial accounting.

**Financial Tasking**

When the Finance Department challenges the assumptions and priorities in the proposed requirements-based budget. Program managers are charged with prioritizing tasks and activities and cutting the budget in certain areas. Financial tasking assures that individual budgets are established at spending levels consistent with the overall profitability goals of Pratt & Whitney.

**Financing Activities**

Activities that obtain resources from company owners, return resources to owners, or repay borrowed money.

**Financing Cash Flow Activity**

The section of cash flow statement, which indicates the flow of cash to and/or from providers of capital.

**Finished Good**

Product which has gone through the manufacturing process, including inspection, and is awaiting delivery or final sale.

*Refer to: Inventory Management*

**Finished Stores**

Finished stores contain many different types of inventory that are allocated to and managed by the owner of each delivery. This inventory includes factory finished stores, military spares, early engine and spare deliveries, and out of production hardware.

*Refer to: Inventory Management*

*Refer to: Production Scheduling*

**Firm Fixed Price (FFP)**

A contract under which the price is not subject to adjustment because of cost or performance; the contractor is obligated to perform the contract at the established price.

**First Engine to Test (FETT)**

The first prototype engine that is completed and ready to be tested. This is a major milestone in a program's life cycle.

**Fiscal Year**

A twelve-month period for which a business summarizes its financial results.

**Fishbone Diagram**

Also called a Cause and Effect Diagram. A Fishbone Diagram helps graphically illustrate the causes and effects of problems. It is a useful tool for group problem solving.

*Refer to: QCPC*

*Refer to: Process Certification*

*Refer to: Root Cause Analysis*

**Fit**

Engineering requirement concerning the way parts should interlock or fit together.

*Refer to: Process Certification*

**Fixed Asset**

Fixed and other assets are physical items expected to be used or held for longer than one year that can't readily be converted into cash.

**Fixed Cost**

A cost that does not change in direct proportion to production volume. For example, rent is a fixed cost.

*Refer to: Product Cost Management*

**Fixed Price**

Generally used in reference to a government contract, which has a set price and a specific set of deliverable items or milestones. Nearly all production contracts for the government are fixed price contracts.

**Fixed-Price Incentive (FPI)**

A contract type for which profit is made based on the relationship of the final negotiated cost to the target costs previously established.

**Fixed-Price with Economic Price Adjustment**

A contract type for which the contract's fixed price can be adjusted upward or downward if contractually specified contingencies (outside of the contractor's control) occur.

**Fixture**

Holding device that keeps a part in the correct location on a machine.

*Refer to: Process Certification*

### **Fixture Variation & Analysis**

Analysis to determine and control the variation of parts caused by fixture holding devices.

*Refer to: Process Certification*

### **Flange**

A projecting rim such as the rim of a wheel which runs on rails.

### **Fleet Introductory Assistance (FIA)**

Pricing and other concessions made in the negotiation of commercial engine contracts. FIA may take the form of cash or credits deducted from the gross engine price. FIA is awarded to the airline.

### **Fleet Management Program (FMP)**

An agreement in which an airline pays a fixed periodic rate to a service provider responsible for performance and management of all engine maintenance.

### **Flight Qualification Testing**

A series of tests conducted to ensure an engine can meet the demands of flight under various conditions.

### **Flow**

The progressive achievements of tasks along the value stream so that a product proceeds into the hands of the customer with no stoppages, scrap, or back-flows.

*Refer to: Manufacturing Principles*

*Refer to: Supply Chain Principles*

### **Flow Chart**

A block diagram that shows the input from suppliers, the steps in a work process and the output to the customer.

### **Flow Line**

The order of operations that a part must go through to move from raw material to finished product.

*Refer to: Setup Reduction*

*Refer to: Inventory Management*

*Refer to: Product Cost Management*

*Refer to: Delivery Performance*

*Refer to: Production Scheduling*

### **Flow Map**

Lists the operations required to produce a part (part flow map) or the processes a cell completes (cell flow map) and its corresponding flow map symbol. The symbol identifies what type of operation/process this is: process, process & inspect, inspect or weigh/count. A flow map is used as the basis for a QCPC Summary Chart to display turnback data and ratios.

**Refer to: QCPC**

### **Flow Rate**

The rate at which each unit of production is completed in units per minute.

### **Flyback**

The return of the scanning beam to its starting point at the completion of a radar trace.

### **FMP**

Acronym for Fleet Management Program. An agreement in which an airline pays a fixed periodic rate to a service provider responsible for performance and management of all engine maintenance.

**FMP Cost**

Costs associated with running a Fleet Management Program. Fleet Management Program is Pratt & Whitney's term for Power by the Hour, which refers to an agreement in which the airline pays a fixed periodic rate to a service provider responsible for performing all engine maintenance.

**FOCUS Team**

A team consisting of Pratt & Whitney and airlines where fleet-wide issues are discussed.

**Footprint**

The noise signature of an airplane/engine installation. It is defined by the total area (sq. ft) within which the noise is above a certain decibel level.

**Forecasting**

The process of projecting future financial results based on current trends, information, and feedback.

**Foreign Tax Credit**

A reduction to an U.S. taxpayer's total tax liability equal to the amount of tax paid to foreign governments; the U.S. government allows for this to avoid double taxing income earned by a company's foreign subsidiaries.

**Foresight**

The initial part of the Setup Reduction process that focuses on preparing for the setup (prekitting, planning, point of use storage, etc.). This is the 'F' in FAST-TRAC.

*Refer to: Setup Reduction*

**Forging**

An expensive technique used to create parts (e.g. bolts). This process begins with the raw material in a shape somewhat similar to the final product. It uses techniques to cut into the part out of the shape.

*Refer to: Standardization and Commonality*

**Form**

Engineering requirement concerning the shape of a part.

*Refer to: Process Certification*

**Form Variation**

Distortion or variation in the shape of a part. For example, a part may not be exactly round; it may be slightly rippled around the edges. This distortion is an example of form variation.

*Refer to: Process Certification*

**FPI**

Fluorescent penetrant inspection.

**FPR**

Acronym for Fan Pressure Ratio. FPR is the pressure at the exit of the fan component divided by the pressure at the inlet to the fan.

**Fringe Benefit**

Benefit offered to employees from their employers such as medical and dental benefits, vacation time, sick time, etc.

*Refer to: Product Cost Management*

**Fringe Cost**

Costs associated with medical and dental benefits, vacation time, sick time, etc.

*Refer to: Product Cost Management*

**Fringe Rate**

The total dollar amount of all employee benefits as a percentage of total labor cost.

**Fuel Burn**

The amount of fuel used by the engine - generally measured in terms of thrust specific fuel consumption (TSFC) - often quoted at airplane cruise conditions. It is important for this measure to be low to indicate good fuel efficiency and lower operating cost for the airlines.

**Full Authority Digital Electronic Control (FADEC)**

The "brain" of the engine. A system that monitors and controls the engine's flight characteristics.

**Full-Life Rotor**

The rotor in the high-pressure turbine.

**Function**

Engineering requirement concerning the way parts should work or perform.

*Refer to: Process Certification*

**Function Analysis System Technique (FAST) Model**

A map of the product or process being evaluated. It displays product 's/process' functions in a logical sequence and establishes a functional hierarchy and interdependence. It is the foundation that a Value Management event is based on.

**Function Matrix**

A tool which allows a team to develop relationships between processes and functions.

**Future Value of Money**

The amount that a dollar earned today will be worth in the future.

**FV&A**

Acronym for Fixture Variation and Analysis. Analysis to determine and control the variation of parts caused by fixture holding devices.

*Refer to: Process Certification*

**- G -****G&A**

Acronym for General and Administrative costs. Also known as Selling, General and Administrative (SG&A) costs. The indirect costs of supporting a program that are neither specifically identifiable with nor specifically assigned to production. G&A include marketing, legal, finance and executive salaries.

**GAAP**

Acronym for Generally Accepted Accounting Principles. Generally accepted guidelines for the preparation and presentation of financial statements which corporate enterprises must employ in preparing annual reports on profitability and financial status for stockholders and the investing public. Guidelines established by the Financial Accounting Standards Board (FASB).

**Gage**

An instrument used to measure an aspect (datum) of a part before or after that part has gone through the manufacturing process.

*Refer to: TPM*

*Refer to: Process Certification*

**Gage R&R**

Gage Repeatability and Reproducibility - a statistical study used to determine the source of measurement variation, if any.

*Refer to: Process Certification*

### **Gantt Chart**

A chart used for scheduling all tasks and milestones required completing a project.

### **GEB**

Acronym for Government Engine Business at Pratt & Whitney.

### **General and Administrative (G&A) Cost**

Also known as Selling General and Administrative (SG&A) costs. The indirect costs of supporting a program that are neither specifically identifiable with nor specifically assigned to production. G&A include marketing, legal, finance, and executive salaries.

### **General Ledger**

A compilation of all accounts used to report financial results in the business' financial statements. After transactions are journalized, they are posted to the General Ledger.

### **Generally Accepted Accounting Principles (GAAP)**

Generally accepted guidelines for the preparation and presentation of financial statements which corporate enterprises must employ in preparing annual reports on profitability and financial status for stockholders and the investing public. Guidelines established by the Financial Accounting Standards Board (FASB).

### **GFI**

Acronym for Gut Feel Index. A decision-making technique that quantifies teams members' feelings about the proposed ideas by assigning each a number from one to ten. The score reflects the degree of confidence the team member has in the idea achieving both its technical and economic expectations. The team's response is averaged and the average becomes the Gut Feel Index.

### **Giggle Tube**

Part of the high-pressure compressor.

### **Go/No Go Gage**

Attribute measurement by trial methods.

*Refer to: Process Certification*

*Refer to: Process Capability*

### **Goodwill**

The amount paid in excess of the fair market value when one company acquires another.

### **Goodwill Amortization Tax Benefit**

Since goodwill amortization is tax deductible, this is the monetary benefit received from amortizing goodwill.

*Refer to: Standardization and Commonality*

### **Government Engine and Space Propulsion**

The Division of Pratt & Whitney that produces engines for government and military customers as well as propulsion systems.

### **Green Y**

A performance distribution for either a failure mode or a non-conformance to a specification. The Green Y is something the customer cares about.

*Refer to: Root Cause Analysis*

### **Greenfield Approach**

A startup business venture (i.e., is starting a new business from the bottom up, not relying on an existing business).

**Grind**

To wear down, polish, or sharpen by friction.

**Gross Margin**

Sales revenue less all manufacturing costs, both fixed and variable.

**Gross Price**

The published price of an engine, also known as list price.

**Gross Sales**

An amount equal to the sales price of a product multiplied by the number of products sold.

**Guarantee**

Contractual obligations stating that a P&W powered aircraft will meet a specified performance or operating level.

**Gut Feel Index (GFI)**

A decision-making technique that quantifies team members' feelings about the proposed ideas by assigning each a number from one to ten. The score reflects the degree of confidence the team member has in the idea achieving both its technical and economic expectations. The team's response is averaged and the average becomes the Gut Feel Index.

**- H -****Height Gage**

A gage that measures height dimensions or linear features from a datum surface.

**High Pressure Compressor**

Receives air from the low pressure compressor and continues to compress the air as it passes through several stages of rotors and stators prior to entering the diffuser and combustor. The high-pressure compressor is driven by the high-pressure turbine.

**High Pressure Turbine**

Receives the exhaust from the burner and converts it into shaft horsepower to drive the high-pressure compressor.

**Histogram**

A representation of statistical data by rectangles whose widths represent class intervals and whose heights usually represent corresponding frequencies.

*Refer to: Process Capability*

**Hoist**

Used to lift or move heavy parts and fixtures onto machines or palettes.

*Refer to: Setup Reduction*

**Horizontal Market**

Competitors who sell the same products as P&W.

**Hospital**

A method to help deploy root cause analysis. Similar to Failure Analysis Clinics, Hospitals facilitate in identifying, correcting and verifying a problem. They are generally located external to the work area or offsite. They use sophisticated equipment and analysis and require highly skilled resources.

*Refer to: Root Cause Analysis*

**HPC**

Acronym for **High Pressure Compressor**. Receives air from the low-pressure compressor and continues to compress the air as it passes through several stages of rotors and stators prior to entering the diffuser and combustor. The high-pressure compressor is driven by the high-pressure turbine.

**HPT**

Acronym for High Pressure Turbine. Receives the exhaust from the burner and converts it into shaft horsepower to drive the high-pressure compressor.

**Hurdle Rate**

The rate of return on an investment that is required by a business to undertake an investment. At P&W, business cases need the minimum of a 9% real (12% nominal, which assumes a 3% inflation rate) IRR for approval. Also called the discount rate or cost of capital.

**Hush Kit**

Hardware added to the engine, which reduces noise.

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**ICAO**

Acronym for International Civil Aviation Organization. This organization seeks to develop the standards and procedures of international air navigation and to foster the planning and development of international air transport. The ICAO attempts to insure safe and orderly growth of international civil aviation.

**ID**

Acronym for Inside Diameter. The diameters of a cylindrical feature in the center of the cylinder. Expressed as a numerical value in units of measurement indicated on a drawing defining the size of a circular part feature.

**Ideal Manpower**

Also referred to as Theoretical Manpower. The minimum number of operators required to complete all of the tasks in a cell within Tact Time. Ideal Manpower equals the sum of all operators cycle times divided by Tact Time (rounded up).

*Refer to: Standard Work*

**IEN**

Acronym for Internal Engineering Notice. An IEN is of two basic types - Repair IEN and IEN Expedite. The Repair IEN affects Clean, Inspect, Repair (CIR) data, revision of part salability status or one-time exception to limits (overtemp, overspeed, damage, etc.) The IEN Expedite is used to revise engineering drawings associated with a Class I EC prior to validation of the EC.

**IFB**

Acronym for Invitation for Bids. An invitation put out by a company or the government requesting bids to provide a service or a product. This is also called a Request for Proposal (RFP).

**IFSD**

Acronym for In-Flight Shut Down. This occurs when an engine shuts down while an airplane is flying - either due to failure or because the pilot shuts it down due to some concern. The IFSD rate is typically measured in number of shutdowns per 1000 hours of flying. It is important for this rate to be very low (zero preferably).

**In-Flight Shutdown (IFSD)**

This occurs when an engine shuts down while an airplane is flying - either due to failure or because the pilot shuts it down due to some concern. The IFSD rate is typically measured in number of shutdowns per 1000 hours of flying. It is important for this rate to be very low (zero preferably).

*Refer to: Market Feedback Analysis*

### **In-House**

Refers to parts, which are made internally by Pratt & Whitney as opposed to being out-sourced to an external vendor.

### **Income Statement (P&L)**

A report of a company's revenues, associated expenses and losses, and resulting net income for a period of time. Also referred to as a profit and loss statement, statement of operations or statement of earnings.

### **Income Tax**

An amount that must be paid to a governing authority based on the payee's income level.

### **Independent Research & Development (IR&D)**

Research and development efforts that have a potential interest to the Department of Defense (DOD) and are funded by the government.

### **Indirect Cost**

A cost that cannot be specifically or exclusively identified and measured for a particular product or function without a significant expenditure of time and effort, and therefore is not directly measured.

*Refer to: Product Cost Management*

### **Indirect Hours**

Labor time spent that can't be identified and measured for a particular product or function. An example of hourly indirect labor includes material handling and machine maintenance. Examples of salary indirect labor include Quality and shop floor supervision.

*Refer to: Product Cost Management*

### **Indirect Labor**

The costs of personnel who do not work directly on the product but who are necessary for the manufacturing process.

### **Indirect Material**

Cost of material that does not become part of the finished product but that is required for the production process.

### **Indirect Support**

Personnel who do not work directly on the product but who are necessary for the manufacturing process.

*Refer to: Product Cost Management*

### **Industry Program**

Allowances offered to all operators of a specific engine type to correct a special problem or defect noted on engines in service. This can be contractual or non-contractual.

### **Inefficiency**

Any delay or difficulty in the execution of an operation or process. Delays can be time, resource, or effort related. Turnback tickets are submitted on inefficiencies since they represent an opportunity for improvement.

### **Inflationary Assumption**

The expected rate of inflation over the life of a program or venture.

### **Inflationary Premium**

The expected rate of inflation over the life of a program or venture.

**Inflationary Times**

A period in which the value of money falls, due to more being available. Prices tend to increase in inflationary times.

**Infrared Thermography**

A technique used to identify equipment problems by measuring the amount of heat given off by various equipment components. Irregular readings indicate excessive friction or the lack of proper function.

Refer to: TPM

**Inlet Temperature**

The temperatures of air entering the engine. Sometimes used in reference to engine components - combustor inlet, high compressor inlet.

**Input Symbol**

A part created by the previous (upstream) process that is put in to the current process. An input symbol is used to depict the beginning of a process flow.

**Input Variation**

Four sources of input variation are:

1. Tools & fixtures,
2. Measurements (gages are included here),
3. Machines,
4. Upstream processes.

Refer to: *Process Certification*

**Inspect**

Refers to an inspect step in a cell that examines the work of a process or several processes. This is denoted by a diamond flow map symbol.

**Inspect**

To critically examine a part or process to determine its variability. Employees can inspect a part manually or with x-ray machines.

**Inspection Methods**

The process required to inspect blueprint features. Usually written by the quality or manufacturing engineering departments.

Refer to: *Process Certification*

**Intangible Asset**

Rights or economic resources that have no material substance.

**Integrated Product Cell**

A cell that does not rely on anyone else to produce a product. It contains all needed processes within the cell. It begins with raw material and ends with a finished product.

**Integrated Product Management Team (IPMT)**

The highest level of management support for a program. The IPMT is made up of leaders from the company's various areas: finance, marketing, manufacturing, etc. The leader of the IPMT is the program manager.

Refer to: *Passport System*

**Integrated Product Team (IPT)**

Team responsible for a particular task in building a component.

Refer to: *Process Capability*

Refer to: *Standardization and Commonality*

Refer to: *Product Cost Management*

**Integrated Program Deployment (IPD)**

A cross-functional product design and development methodology, which encompasses all aspects of program and product life, cycle from strategy through service.

*Refer to: Supply Chain Principles*

*Refer to: Process Capability*

*Refer to: Product Cost Management*

*Refer to: Delivery Performance*

*Refer to: ACE Overview*

*Refer to: Passport System*

### **Interest**

Money paid for the use of money or earned on an investment.

### **Interest Expense**

Costs associated with all interest payments and accruals of interest, including interest on bank loans, notes payable, etc.

### **Interest Payable**

The amount of funds due to another party for the cost of using money.

### **Internal Diameter (ID)**

The diameters of a cylindrical feature in the center of the cylinder. Expressed as a numerical value in units of measurement indicated on a drawing defining the size of a circular part feature.

### **Internal Engineering Notice (IEN)**

An internal engineering notice is of two basic types - Repair IEN and IEN Expedite. The Repair IEN affects Clean, Inspect, Repair (CIR) data, revision of part salability status or one-time exception to limits (overtemp, overspeed, damage, etc.) The IEN Expedite is used to revise engineering drawings associated with a Class I EC prior to validation of the EC.

### **Internal Rate of Return (IRR)**

The discount rate that makes the net present value of the project equal to zero; in other words it is the rate of return on an investment that a company must receive in order for its initial outlay for the investment to be returned and for the earning of profit to begin. When examining IRR, it is important to consider whether the cash flows that are being evaluated are in real or nominal terms. Real cash flows of a proposed project/investment exclude any inflationary assumptions and result in a real IRR. Nominal cash flows contain an assumption about future inflation, are lower than real cash flows, and result in a nominal IRR.

*Refer to: Product Cost Management*

### **Internal Revenue Code (IRC)**

Code which regulates taxation in the United States.

### **Internal Revenue Service (IRS)**

A U.S. governing body responsible for maintaining income tax laws, collecting tax payments, and auditing tax returns for compliance.

### **Internal Setup Time**

The time when setup activities are performed while the machine is shut down. One example is the removing of dies.

*Refer to: Setup Reduction*

### **Internal Time**

In Standard Work, internal time is time for activities that can be completed when the machine is running. In TPM, internal time is time for activities than can only be completed when the machine is stopped. Antonym: External time.

### **International Civil Aviation Organization (ICAO)**

This organization seeks to develop the standards and procedures of international air navigation and to foster the planning and development of international air transport. The ICAO attempts to insure safe and orderly growth of international civil aviation.

### **Introductory Assistance Credit**

The type of credit offered to a customer typically purchasing an engine type for the first time.

### **Inventory**

Products or materials held for use in manufacturing other goods sold to customers.

### **Inventory Accuracy**

An organization has inventory accuracy when its planning systems accurately reflect the correct amount of inventory that is located on the shop floor.

*Refer to: Inventory Management*

*Refer to: Delivery Performance*

### **Inventory Turn**

A metric that indicates the number of times a business' total inventory is sold to customers; the higher the inventory turns, the more efficiently a company uses its inventory. One way to calculate inventory turns is to divide the average inventory level into the annual cost of sales.

*Refer to: Inventory Management*

### **Inventory Turnover**

The number of times a business' total inventory is sold to customers; the higher the inventory turnover, the more efficiently a company uses its inventory. One way to compute inventory turnover is to divide the average inventory level into the annual cost of sales.

*Refer to: Inventory Management*

*Refer to: Product Cost Management*

### **Inventory Turnover Rate**

The rate, which inventory turns over or needs to be re-ordered from suppliers.

*Refer to: Inventory Management*

### **Investing Cash Flow Activity**

The section of a cash flow statement which indicates a business' flow of cash due to the purchase or sale of a plant, property, equipment, and other long-lived assets (or, for companies that provide service, the granting and collecting of loan principal).

### **Invitation for Bids (IFB)**

An invitation put out by a company or the government requesting bids to provide a service or a product. This is also called a Request for Proposal (RFP).

### **Invoice**

A source document for a business transaction, which indicates the price and payment terms of a sale.

### **IPD Process**

Acronym for Integrated Program Deployment Process. A cross-functional product design and development methodology utilized from initial design through certification.

*Refer to: Supply Chain Principles*

### **IPMT**

Acronym for Integrated Product Management Team. The highest level of management support for an engine program. The IPMT is comprised of leadership from the company's functional areas: finance, marketing, manufacturing, etc. The leader of the IPMT is the program manager.

**IPT**

Acronym for Integrated Product Team. Team responsible for a particular task in building a component of a product.

**IR&D**

Acronym for Independent Research and Development. Research and development efforts that have a potential interest to the Department of Defense (DOD) and are funded by the government.

**IRC**

Acronym for Internal Revenue Code. Code which regulates taxation in the United States.

**IRR**

Acronym for Internal Rate of Return. The discount rate that makes the net present value of the project equal to zero. In other word, it is the rate of return on an investment that a company must receive in order for its initial outlay for the investment to be returned and for the earning of profit to begin. When examining IRR, it is important to consider whether the cash flows that are being evaluated are in real or nominal terms. Real cash flows of a proposed project/investment exclude any inflationary assumptions and result in a real IRR. Nominal cash flows contain an assumption about future inflation, are lower than real cash flows, and result in a nominal IRR.

**IRR Sensitivity Chart**

Chart used in the business case development process to determine the factors, which affect IRR. An IRR Sensitivity Chart identifies the amount the projected program element decreases or increases and how this subsequent change affects the IRR of the program. Within the chart, Factor Applied refers to the percentage by which the value of the business case driver is increased or decreased.

**IRS**

Acronym for Internal Revenue Service. A U.S. governing body responsible for maintaining income tax laws, collecting tax payments, and auditing tax returns for compliance.

**ISO Certification**

Meeting standards criteria from the ISO (International Organization for Standardization).

*Refer to: Supply Chain Principles*

**ISO-14001**

ISO 14001 requires the top management of each organization to define an EHS Policy. This policy must include a commitment to continual improvement and the prevention of pollution. In addition, it must include a commitment to comply with all applicable government legislation and regulations, as well as any standards set forth by voluntary EHS programs the organization may participate in. The policy provides a framework for setting and reviewing objectives and targets and communicates the organizations commitment to the EHS program

**ISO9001**

A set of standards and guidelines for product quality in the workplace. ISO 9001 is primarily concerned with "quality management".

*Refer to: Product Cost Management*

**Ito University**

A quality program being implemented across all divisions of United Technologies Corporation.

*Refer to: Root Cause Analysis*

**Jail Bars**

A phrase that refers to manual tasks that is required during the auto cycle of a machine. "Jail Bars" prevent the operator from leaving a machine during the auto cycle to complete other tasks. Eliminating "Jail Bars" improves the productivity of the labor force.

*Refer to: Standard Work*

**Jig**

Tool for holding component parts of an assembly during the manufacturing process or for holding other tools.

*Refer to: Setup Reduction*

**JIT**

Acronym for Just-In-Time. A philosophy of manufacturing based on continuous improvement of productivity and planned elimination of all waste. JIT encompasses the successful execution of all manufacturing activities required to produce a final product, from design engineering to delivery. The primary goals of JIT are to have only the required inventory when needed; to improve quality to zero defects; to reduce lead times by reducing setup times, queue lengths, and lot sizes; and to accomplish all these things at a minimum cost.

**Job Ticket**

Details the requirements for a product as determined by the customer, Engineering, and Manufacturing. Starts the flow down to a product plan and documents the job description between the Executive Committee and the IPMT.

*Refer to: Passport System*

**Jobs**

Equipment problems or improvements that are identified during TPM events. Ideally, these "jobs" are completed during the TPM event itself. Otherwise, it is important to track the completion of these jobs after the TPM concludes.

*Refer to: TPM*

**Joint Venture**

A partnership between two or more persons, corporations, or other entities formed for the purpose of carrying out a project.

**Journeyman**

An experienced and reliable worker who has learned a trade.

*Refer to: Root Cause Analysis*

**Journeyman Statistical Engineer**

A person with a proven capability to employ Statistical Engineering to solve technical problems and has a minimum of 2 "Kills".

*Refer to: Root Cause Analysis*

**Just-In-Time (JIT)**

A philosophy of manufacturing based on continuous improvement of productivity and planned elimination of all waste. JIT encompasses the successful execution of all manufacturing activities required to produce a final product, from design engineering to delivery. The primary goals of JIT are to have only the required inventory when needed to improve quality to zero defects, to reduce lead times by reducing setup times, queue lengths, and lot sizes, and to accomplish all these things at a minimum cost.

*Refer to: Standard Work*

*Refer to: Manufacturing Principles*

*Refer to: Inventory Management*

*Refer to: Product Cost Management*

*Refer to: Delivery Performance*

*Refer to: Production Scheduling*

## - K -

### **Kaizen**

Japanese term meaning continuous improvement. Characterized by making small, gradual improvements, doing the little things better. The benefit is reaped by the accumulation of doing several small things better. Kaizen events at P&W bring together a multi-disciplinary team to improve the efficiencies of shop and office processes. When applied to the workplace, kaizen means continuing improvement involving everyone--managers and workers alike.

*Refer to: Supply Chain Principles*

*Refer to: Product Cost Management*

### **Kanban**

A communication system used to label parts with all information necessary for production (for example, part number, quantity, time, method, order) and transportation (quantity, time, destination, method and receptacle). In manufacturing, Kanban is a system using cards, slips of paper, a signal on a visual board, or some other form of communication to help perform pull manufacturing. In Japanese, Kanban means, "card." Also called Kamban.

*Refer to: 6S/Visual Factory*

*Refer to: Manufacturing Principles*

*Refer to: Delivery Performance*

*Refer to: ACE Overview*

### **KCA**

Kit Consolidation Area. Area on the shop floor where materials/parts are located. Organized by kit or grouping of parts.

### **Key Characteristic**

A specific feature that requires special attention to achieve maximum benefit from reduced variation.

*Refer to: Process Certification*

### **Key Process Input (KPI)**

An input to a process that has a significant effect on the Key Process Outputs (KPOs) of that process.

*Refer to: Process Certification*

*Refer to: Process Capability*

*Refer to: ACE Overview*

### **Key Process Output (KPO)**

The output of a process that is critical to one or more downstream processes.

*Refer to: Process Certification*

*Refer to: Process Capability*

*Refer to: ACE Overview*

### **Kit**

The components of a parent item that have been pulled from stock and readied for movement to a production area.

*Refer to: Inventory Management*

*Refer to: Production Scheduling*

### **Kit Cart**

Rollaway carts that hold kits used to perform a task. For example, a filtering kit cart contains all of the supplies and tools necessary to fit a filter on a machine.

*Refer to: 6S/Visual Factory*

*Refer to: Manufacturing Principles*

### **Kitting**

The collection of parts required to build a specific product. These parts are packaged together and delivered to the Assembly floor as kits. These kits help reduce Assembly's lead times as they enable faster assembly of parts.

*Refer to: Standardization and Commonality*

*Refer to: Product Cost Management*

*Refer to: Delivery Performance*

**Known Uncertainty**

Uncertainties, which will most, likely occur and therefore need to have resources allocated for them (e.g., airplane crashes/accidents).

**KPI**

Acronym for Key Performance Indicator or Key Process Input. An input to a process that has a significant effect on the Key Process Outputs (KPOs) of that process.

*Refer to: Process Certification*

**KPO**

Acronym for Key Process Outputs. The output of a process that is critical to one or more downstream processes.

*Refer to: Process Certification*

**KWIK Engineering Change**

The simplest type of Class II Engineering Change. It is used when minor Class II E/C's is required and need to be implemented simply and efficiently. KWIK changes are not intended to affect the form, fit, or function of a part.

**- L -**

**Labor and Standard Operating Cost (LASOC)**

The standard minutes required performing a specific manufacturing operation. Determined by operation for each part number by Manufacturing Engineering. These standard minutes are part of the establishment of the standard cost for a part.

*Refer to: Product Cost Management*

**Labor Rate**

Includes fringe rate.

**Labor Year**

One employee working full time for one year.

**Large Commercial Engines (LCE)**

Refers to the large engine industry segment those designs and markets high-thrust jet engines for commercial aircraft applications. Used at P&W to identify a major operating unit comprised of the Commercial Engine Business, Overhaul & Repair Operations and Turbo Power and Marine.

**Large Military Engines (LME)**

Refers to the operating unit, which sells engines to the government.

**Laser Thermometer**

A hand held instrument that operates with a laser beam to pick up hot spots in equipment or electrical boxes that gives a warning that potential failure is imminent.

*Refer to: TPM*

**Launch**

Pratt & Whitney generally use the term to mean the moment in time when the Strategy Council decides to invest in an engine program.

### **LCE**

Acronym for Large Commercial Engines. Refers to the large engine industry segment those designs and markets high-thrust jet engines for commercial aircraft applications. Used at P&W to identify a major operating unit comprised of the Commercial Engine Business, Overhaul & Repair Operations and Turbo Power and Marine.

### **Lead Time**

Time required for a product to go from initial concept to completion. For Standard Work, the total elapsed time from the release of raw materials to the completion of a finished product. Lead-time equals the sum of all cycle times (auto and manual minus manual internal time) plus the time that the part sits waiting and being transported. Thus, lead-time includes time for order preparation, queuing, receiving, inspection, transport, etc.

*Refer to: TPM*

*Refer to: QCPC*

*Refer to: Setup Reduction*

*Refer to: Standard Work*

*Refer to: Manufacturing Principles*

*Refer to: Supply Chain Principles*

*Refer to: Process Capability*

*Refer to: Standardization and Commonality*

*Refer to: Inventory Management*

*Refer to: Delivery Performance*

### **Lean Manufacturing**

Production approach based on using multi-skilled workers, highly flexible machines and very adaptable organizations and procedures to manufacture an increasing variety of products while continuously decrease costs.

*Refer to: Mistake Proofing*

*Refer to: Standardization and Commonality*

### **Learned Out**

The point at which the recurring unit cost levels off vs. cumulative delivered quantity, or when the technology or process is "mature." (i.e., P&W have learned all that it can about a technology or process).

### **Learned-Out Cost**

True cost of an engine after initial engines are produced and the production process is streamlined.

### **Learning Curve**

Describes the normal cycle of costs in introducing a new product into production. The cost of the new product is higher at the beginning of production and is reduced quickly after working the inefficiencies out of the new process. Learning curves assume a specific rate of learning; for example, an 85% learning curve assumes that costs decrease 15% each time production volume doubles.

*Refer to: Product Cost Management*

### **Lease**

A contract by which one party rents goods to another party, (for example land, buildings, or cars).

### **Lessons Learned**

These are lessons a team has learned usually attempting to solve a problem. By communicating lessons learned, employees share ideas and improvement strategies. Sharing these ideas also may reduce the time it takes to fix problems.

*Refer to: QCPC*

**Level 1 Machine**

Critical machines that drive the throughput of a cell. These machines do not have backups available if they break down, therefore, break downs result in work stoppages and delivery delays. Level 1 machines should undergo extensive TPM events before less critical (Level 2 and 3) machines.

*Refer to: TPM*

**Level 2 Machine**

Share most of the characteristics of Level 1 machines, however, Level 2 machines have backups available if they break down. Level 2 machines should undergo TPM events after all Level 1 machines.

*Refer to: TPM*

**Level 3 Machine**

Easy-to-operate machines that are important, but not critical to the performance of a cell because many backups are available. Level 3 machines should undergo TPM events after all Level 1 and 2 machines.

*Refer to: TPM*

**Level Loading**

A process that evenly distributes work over sequential time periods.

**Level Schedule**

A schedule that spreads orders out so that the amount of work to be done in sequential time periods is distributed evenly.

*Refer to: Production Scheduling*

**Liability**

A business' economic obligation to another company or person, which can be viewed as a claim against the business' assets.

**Life Cycle Cost**

Total costs for a product line from concept through design, validation, marketing, production, and post-delivery support; includes costs of ownership-purchase price plus the subsequent costs of operation and maintenance.

*Refer to: TPM*

**Limited Life Part (LLP)**

Part that is certified for a limited amounts of time, after that time it needs to be replaced.

**Line Item Spare Part**

A spare part that is procured / manufactured and sold as its own item. These parts are not combined and sold as a kit or part of an engine module.

*Refer to: Production Scheduling*

**Liquid**

Refers to assets that can easily be converted into cash for use by the business.

**Liquidity**

The ability of a business to pay off its debts. Having sufficient cash to meet short-term claims.

**List Price**

The price which an airframer pays for an engine. List price is based on the engine's pounds of thrust, engine features and value an engine provides to a customer. It does not include any FIA offered to the customer.

**LLP**

Acronym for Limited Life Part. Part that is certified for a limited amounts of time, after that time it needs to be replaced.

**LME**

Acronym for Large Military Engines. Refers to the operating unit, which sells engines to the government.

**Locating Datum/Surface**

The surface of a part that sits on the machine as the part is being machined or the feature that is used to position the part on the machine.

*Refer to: Process Certification*

*Refer to: Process Capability*

**Locating Diameter**

A diameter that is used as a basis for locating a part on a machine for a given operation.

**Lockout or Lockout/Tagout**

An important step of a TPM event. During Lockout/Tagout, the machine is shut down and prepared for the TPM event. The goal of this step is to eliminate the potential for injury during the TPM event.

*Refer to: TPM*

**Long Term Agreement (LTA)**

An agreement between two parties to ensure a long-term relationship that benefits both parties.

*Refer to: Manufacturing Principles*

*Refer to: Standardization and Commonality*

*Refer to: Delivery Performance*

**Long-Term Debt**

Liabilities that are not due within the current year.

**Long-Term Liability**

Any debt that must be repaid by a business more than one year from the date of the balance sheet. This is normally a loan from a financial institution that may be secured by various assets on the balance sheet.

**Loss Provision**

A liability for which a loss reserve is established when projected contract costs exceed the projected contract revenues.

**Lost Time Incidence Rate**

Number of recordable injuries resulting in one day or more of employee time lost (not including the day of the injury).

*Refer to: Manufacturing Principles*

**Lot**

A definite quantity of some product accumulated under conditions that are considered uniform for sampling purposes.

**Lot Size**

The number of pieces of a particular part number planned for production before changing-over to the next part number.

*Refer to: Setup Reduction*

**Low Hanging Fruit**

Refers to a QCPC turnback list project that can be immediately completed in less than 30 minutes. Fixing low hanging fruit is important to the QCPC process since it keeps everyone seeing the progress of their efforts.

*Refer to: QCPC*

**Low Pressure Compressor (LPC)**

Located in the forward section of an engine and compresses the air as it passes the fan prior to entering the high-pressure compressor.

**Low Pressure Spool**

Pratt & Whitney engines have two shafts, which run, down the center of the engine and spin at different rates. The low-pressure spool contains the hardware for the fan, low pressure compressor (LPC) and low pressure turbine (LPT). It spins at a slower rate than the high-pressure spool and is the N1 rotor spool.

**Low Pressure Turbine (LPT)**

Receives the residual exhaust from the high-pressure turbine and converts it into shaft horsepower to drive the low-pressure compressor.

**Low Variability**

Measures of the extent to which observations or distributions are spread out or dispersed in relationship to some target or center. In Process Certification, variability is interpreted as the extent to which observations are spread out from the mean of the data in question.

*Refer to: Manufacturing Principles*

*Refer to: Process Capability*

**Lower Control Limit (LCL)**

The Lower Control Limit.

**Lower Specification Limit**

The Lower Specification Limit is typically equal to nominal - tolerance. It can be found in the technical requirements.

*Refer to: Process Certification*

**LPC**

Acronym for Low Pressure Compressor. Located in the forward section of an engine and compresses the air as it passes the fan prior to entering the high-pressure compressor.

**LPT**

Acronym for Low Pressure Turbine. Receives the residual exhaust from the high-pressure turbine and converts it into shaft horsepower to drive the low-pressure compressor.

**LTA**

Long Term Agreement. An agreement between two parties to ensure a long-term relationship that benefits both parties.

**- M -****Machine Capability**

The uniformity of product, which a process is capable of producing which, can be expressed numerically. ex: Cpk

*Refer to: TPM*

**Machine Tool Services (MTS)**

Machine Tool Services employees are Pratt & Whitney employees primarily responsible for machine maintenance.

*Refer to: TPM*

*Refer to: Process Certification*

*Refer to: Process Capability*

### **Maintainability**

To keep in an existing states or preserve from failure.

### **Maintenance Cost**

The cost of up-keeping property or equipment.

### **Maintenance Material Cost (MMC)**

The cost of replacement parts required to maintain engines (generally does not include capitalized material, such as major upgrades and life limited parts), quoted in terms of dollars per engine flight hour.

### **Make or Buy Decision**

Decisions that are made regarding the sourcing of a new part. If P&W decides to produce a product itself, this is referred to as a "make" decision. If P&W decide to purchase the part from an outside source, this is referred to as a "buy" decision.

### **MAM or Management Authorized Material**

Acronym for **Management Authorized Material**. Inventory acquired in excess of requirements for firm customer orders to support anticipated orders, protect against un-established suppliers, take advantage of price breaks, hedge exotic material prices or protect delivery schedules for proposed engineering changes.

### **Management Information System (MIS) Support**

A manual or computerized system that anticipates the wide use of data for management planning and control purposes. Accordingly, the data are organized in a database and are readily available to a variety of management functions.

### **Manual External**

- 1) For Standard Work, tasks performed when a machine is not running;
- 2) For Setup Reduction, tasks that can be performed while the machine is running because they do not require work inside the machine.

*Refer to: Setup Reduction*

*Refer to: Standard Work*

### **Manual Internal**

- 1) For Standard Work, tasks that are performed while a machine is running;
- 2) For Setup Reduction, tasks, which cannot be performed while a machine is running because they require work inside the machine.

*Refer to: Setup Reduction*

*Refer to: Standard Work*

### **Manufacturability**

A measure of the design of a product or process in terms of its ability to be produced easily, consistently, and with high quality.

*Refer to: Supply Chain Principles*

*Refer to: Process Capability*

### **Manufacturing**

A functional area of Pratt & Whitney devoted to the production and delivery of engines and spare parts to both government and commercial customers.

*Refer to: Standardization and Commonality*

### **Manufacturing Cell**

In a manufacturing cell all the skills and machines are in close proximity for making a given part.

**Manufacturing Control Action Board**

Chaired by Operations Unit Management and normally consists of personnel both inside and outside the unit (e.g., manufacturing, process engineering, quality, design engineering). This team conducts an investigation into the root cause determination and / or determines and implements corrective action.

*Refer to: Process Certification*

**Manufacturing Cost**

Amount of money required to produce an engine.

**Manufacturing Cycle**

The time period between the purchase of raw materials and the sale of those materials in the form of finished goods.

**Manufacturing Quality Instructions (MQI)**

Work instructions for the operator to follow for a particular operation in the manufacturing process.

*Refer to: Process Capability*

**Man-year**

One employee working full time for one year.

**MAR**

Materials as Requested. Similar to JIT where parts and materials are supplied when needed.

**Marciano Chart**

A disciplined method of applying lessons learned from previous products to create superior new products. Marciano Charts compare proposed new designs to similar older designs to help design-out potential problems. They also help define best practices and enable Engineering to design superior new products based on lessons learned from previous products.

*Refer to: Passport System*

*Refer to: Market Feedback Analysis*

**Margin**

The difference between sales and specified expenses.

**Market Capture**

The percentage of all possible business that P&W earn as compared to its competitors. Also referred to as Market Share.

**Market Demand**

The amount of desire those P&W customers have for a particular product or new engine.

**Market Share**

The percentage of all possible business that P&W earn as compared to its competitors. Also called Market Capture.

**Market Size**

The number of potential customers who may want to purchase a product.

**Market Value**

The price at which something can currently be bought and/or sold in the market place.

**Master Production Scheduling**

Building a schedule for those items assigned to the master scheduler. The master scheduler maintains this schedule and, in turn, it becomes a set of planning numbers that drives material requirements planning. It represents what the company plans to produce expressed in specific configurations, quantities, and dates. The master production schedule is not a sales forecast that represents a statement of demand.

*Refer to: Production Scheduling*

### **Master Scheduler**

The job title of the person who manages the master production schedule.

*Refer to: Production Scheduling*

### **Master Statistical Engineer**

A person with a high level capability to employ Statistical Engineering to solve technical problems and also to teach Statistical Engineering to others. Master Statistical Engineers have a minimum of 9 "Kills" spanning a wide spectrum of technical problems within their industry and have coached a minimum of 2 kills.

*Refer to: Root Cause Analysis*

### **Matching Concept**

An accounting guideline stating that net income under the accrual basis of accounting is determined by linking (matching) expenses incurred with the related revenues.

### **Material**

Elements necessary for doing or making something.

*Refer to: Production Scheduling*

### **Material as Required**

A manufacturing approach in which raw materials and inventory are only obtained when needed.

*Refer to: Mistake Proofing*

*Refer to: ACE Overview*

### **Material Overhead**

The cost of all indirect activities for procuring, handling and inspecting materials.

### **Material Requirements Planning (MRP)**

A set of techniques that uses Bill of Materials, inventories data, and master production schedules to calculate the requirements for materials. It makes recommendations to release replenishment orders for material.

*Refer to: Product Cost Management*

*Refer to: Delivery Performance*

*Refer to: Production Scheduling*

### **Material Review Board (MRB)**

An organization within a company, often a standing committee that has a job of determining the disposition of items that has questionable quality or other attributes.

*Refer to: Supply Chain Principles*

### **Mature Engine**

An engine that is nearing retirement; learned out costs have been achieved.

### **Mature Phase of Engine Program**

Phase in an engine's life cycle when the engine is in service and is generating spare parts revenue.

### **Maximum Take-Off Weight**

The heaviest a plane can be at take-off time.

### **MCAB**

Acronym for Manufacturing Control Action Board. Chaired by Operations Unit Management and normally consists of personnel both inside and outside the unit. (e.g. manufacturing, process engineering, quality, design engineering, etc.). This team conducts an investigation into the root cause determination and/or determines and implements corrective action.

**Mean**

The mean, or average, is the central tendency of the data. It equals the sum of all of the observations divided by the total number of observations. If 20, 30, 40, and 50 are four observations, then the mean of those observations =  $(20+30+40+50)/4 = 140/4 = 35$ .

**Mechanical Engineer or ME**

The person within manufacturing responsible for developing a quality process plan for the manufacture and inspection of parts, which include instructions for manufacturing and inspecting parts to all engineering/manufacturing drawing and quality requirements. The plan should be a cost effective manufacturing approach to produce and assess parts in the process of manufacture.

**Memorandum of Understanding (MOU)**

A legal document signed at the launch of a program.

**Military Engines Business**

The division of Pratt & Whitney that produces military engines.

*Refer to: Standardization and Commonality*

*Refer to: Production Scheduling*

**Military Sold Overdue**

A delivery performance metric tracking the number of military engines P&W did not deliver on time.

*Refer to: Delivery Performance*

**Milk Run System**

A system run with a regular route for pickup of mixed loads from several suppliers. For example, instead of each of five suppliers sending a truckload per week to meet the weekly needs of the customer, one truck visits each of the suppliers on a daily basis before delivering to the customer's plant. Five truckloads per week are still shipped, but each truckload contains the daily requirement from each supplier.

*Refer to: Standardization and Commonality*

*Refer to: Inventory Management*

*Refer to: Delivery Performance*

**Milling**

To cut grooves in a metal surface.

*Refer to: QCPC*

*Refer to: Process Certification*

**Minor Stoppage**

Minor breaks in machine production due to the accumulation of chips that need to be removed, gaging parts, minor breakdowns, etc.

*Refer to: TPM*

**MIPT**

Acronym for Model Integrated Product Team. Part of P&W's integrated program deployment (IPD) process. MIPT's contain team members from Programs, Manufacturing, and Finance that focus on one particular engine model and guide decisions/programs for that model.

**Mission Length**

A mission is usually one flight cycle - or from takeoff to landing. Mission length is the time duration of the mission.

**Mistake**

An action which results in a defect.

*Refer to: Mistake Proofing*

**Mistake Proof**

To design a manufacturing or setup activity in a way to prevent an error from resulting in a product defect.

*Refer to: Mistake Proofing*

### **Mistake Proofing**

The development of techniques designed to prevent errors that can result in a product defect or safety incident.

*Refer to: 6S/Visual Factory*

*Refer to: QCPC*

*Refer to: Process Certification*

*Refer to: Mistake Proofing*

*Refer to: Setup Reduction*

*Refer to: Manufacturing Principles*

*Refer to: Supply Chain Principles*

*Refer to: Root Cause Analysis*

*Refer to: Inventory Management*

*Refer to: Product Cost Management*

*Refer to: Delivery Performance*

*Refer to: ACE Overview*

*Refer to: Market Feedback Analysis*

### **Mixed Cost**

A cost, which is made up of both variable and base, cost elements. Over a specific range of activity, the base cost amount remains constant, while the variable cost amount changes with volume.

### **Mixed Model Production**

Parts from separate engine models produced on a single production line.

*Refer to: Setup Reduction*

### **MMC**

Acronym for Maintenance Material Cost. The cost of replacement parts required to maintain engines (generally does not include capitalized material, such as major upgrades and life limited parts), quoted in terms of dollars per engine flight hour.

### **Model Contract**

A draft of a contract sent out by the government when issuing a Request for Proposals (RFP) or an Invitation for Bids (IFB).

### **Model Integrated Product Team (MIPT)**

Part of P&W's integrated program deployment (IPD) process. MIPT's contain team members from Programs, Manufacturing, and Finance that focus on one particular engine model and guide decisions/programs for that model.

### **Module Center**

Pratt & Whitney's organizational strategy that combines product and process knowledge (Engineering and Manufacturing) in the same location.

*Refer to: Process Capability*

*Refer to: Product Cost Management*

*Refer to: Delivery Performance*

*Refer to: Production Scheduling*

### **Module Fill Rate**

A Pratt & Whitney metric used to measure an operating unit's ability to satisfy engine orders (commercial or military) each month in full (i.e., all items on an order must be shipped before the order is considered delivered).

### **Monthly Fill Rate**

Synonymous with Monthly Schedule Performance. The percentage of total customer demand (including overdue parts) delivered to the customer in the previous month. This includes any offloaded parts that a vendor delivers to customers.

**MOU – see Memorandum of Understanding****MPA**

Materials Processing Area. Area on a factory floor where materials/parts are located before use.

**MPS**

Acronym for Master Production Schedule. A schedule for those items assigned to the master scheduler. The master scheduler maintains this schedule and, in turn, it becomes a set of planning numbers that drives material requirements planning. It represents what the company plans to produce expressed in specific configurations, quantities, and dates. The master production schedule is not a sales forecast that represents a statement of demand.

*Refer to: Delivery Performance*

**MQI**

Manufacturing Quality Instructions. Work instructions for the operator to follow for a particular operation in the manufacturing process.

**MRB**

An acronym for Material Review Board. An organization within a company, often a standing committee that has a job of determining the disposition of items that has questionable quality or other attributes.

*Refer to: Supply Chain Principles*

**MRP**

Acronym for Material Requirements Planning. A set of techniques that use Bill of Materials, inventory data, and master production schedules to calculate the requirements for materials. It makes recommendations to release replenishment orders for material.

*Refer to: Delivery Performance*

**MRP Schedule**

The output of Material Requirements Planning (MRP).

*Refer to: Delivery Performance*

*Refer to: Production Scheduling*

**MRP Start Date**

Materials Resource Planning start date. It is the date that MRP assigns to each customer order signaling when to begin producing the product.

*Refer to: Delivery Performance*

**MTOW**

Acronym for Maximum Take-Off Weight. The heaviest a plane can be at take-off time.

**MTS**

Acronym for Machine Tool Services. Machine Tool Services (MTS) employees are Pratt & Whitney employees primarily responsible for machine maintenance.

**MTU**

A European turbine-making company.

**Muda**

Japanese word for waste.

**Multiple Regression Analysis**

A method that studies the correlation between two variables is using mathematical models. These models graph a response variable as a function of one or more predictor variables.

*Refer to: Root Cause Analysis*

**Mutual Fund**

An investment vehicle that invests money of its shareholders in a diversified group of the stocks of other corporations.

**- N -****N2 Rotor**

The high spool, containing hardware for the high-pressure compressor and high-pressure turbine that spins faster than the N1 Rotor.

**Nacelle**

External covering of the engine designed to maximize airflow to the fan prevents icing and assist with the aerodynamics of the aircraft.

**Nacelle Drag**

Aerodynamic drag (friction or resistance) on the engine nacelle during flight. It is important to minimize the nacelle drag, as it wastes energy and results in high fuel burn.

**NASA – see National Aeronautics and Space Administration.**

**Nastran Modeling**

Nastran is a computer code that calculates stresses in a piece of hardware. Modeling is building a computer model or representation of the hardware to be run in the Nastran code.

**Nasty Test**

A step in the Mistake Proofing process where a person tries to bypass or break the mistake proofed process or device. This test should validate that the mistake proofed device / process is 100% reliable and is the best device / process to use.

*Refer to: Mistake Proofing*

*Refer to: Setup Reduction*

**National Transportation Safety Board (NTSB)**

The governing organization for transportation safety in the United States.

**Nautical Mile (NMI)**

A unit of length used in sea and air navigation based on the length of one minute of an arc of a great circle. A nautical mile is equal to 1,853 meters, or about 6,076 feet.

**NCM**

Acronym for Non-Construction Material. A cost that cannot conveniently or economically be assigned to specific units or batches of units; a factory overhead cost (e.g., cooling oils, wires, and fixtures).

**NDA**

Acronym for Non-Developmental Aircraft. Commercial aircraft purchased and customized for military use.

**Net Book Value**

The balance of an account, less any reduction through contra accounts. For example, the net book value of a depreciated asset is the original purchase price less any depreciation that has already been expensed.

**Net Cash Flow**

Cash flow for a period net of changes in working capital and depreciation.

**Net Engine Pricing**

The base price of an engine escalated to time of delivery (gross price) less any Fleet Introductory Assistance (FIA) associated with the sale of the engine.

**Net Income**

A business' total revenues less total expenses for a given time period.

**Net Loss**

A business' total revenues less total expenses for a given time period, when expenses are greater than revenues.

**Net Operating Assets (NOA)**

All is operating assets minus any operating liabilities. Represents assets and liabilities directly related to P&W's principle operating business.

**Net Operating Assets (NOA) Turnover**

Measurement calculated by dividing sales by average net operating assets (4-point average). Represents the number of times a company converts net operating assets to sales usually over a one year period. The higher the ratio the more efficiently assets are being managed.

**Net Operating Profit After Taxes (NOPAT)**

The profit a company has remaining after all taxes have been paid.

**Net Present Value (NPV)**

A cost-benefit analysis method that measures the projected cash flows of a proposed investment/project relative to the initial investment. It then adjusts those cash flows to account for the time value of money. The NPV method applies a rate of discount, often called the hurdle rate, to return future cash flows to the present time period.

*Refer to: Product Cost Management*

**Net Price**

Engine price after any discounts that an airline pays.

**Net Sales**

Sales volume times price, less any sales returns or allowances.

**New Part Number**

A number assigned to a part that is introduced as a result of an engineering change to existing parts.

**New Parts Warranty**

Basic contractual protection for all new parts.

**Nitrogen Oxide (NOx)**

A type of airplane emissions.

**Nmi**

Acronym for Nautical Mile. A unit of length used in sea and air navigation based on the length of one minute of an arc of a great circle. A nautical mile is equal to 1,853 meters, or about 6,076 feet.

**No. 1 Engine Tailpipe**

The tailpipe of an engine at the number one position on an aircraft.

**NOA**

Acronym for Net Operating Assets. All is operating assets minus any operating liabilities. Represents assets and liabilities directly related to P&W's principle operating business.

**Noise Fees**

Landing fees based on the noise produced by the airplane that can have a significant affect on airline operating costs.

**Nominal**

The target or ideal for production. For processes with bi-lateral tolerances, it is typically in the middle of the Upper Specification Limit and the Lower Specification Limit.

*Refer to: Process Certification*

*Refer to: Manufacturing Principles*

*Refer to: Process Capability*

**Nominal Discount Rate**

A rate used in Net Present Value analysis to discount cash flows that are adjusted for inflation.  $\text{Nominal Discount Rate} = \text{Real Discount Rate} + \text{Inflationary Premium}$ .

**Nominal Dollars**

Cash flows over multiple years that take inflation into account. Sometimes referred to as "then-year dollars."  
 $\text{Nominal Dollars} = \text{Real Dollars} + \text{Inflationary Premium}$ .

**Non-Conformance**

The failure of a characteristic to conform to the requirements specified in the contract, engineering drawings, specifications or other product description.

*Refer to: Process Certification*

*Refer to: Delivery Performance*

**Non-Construction Material (NCM)**

A cost that cannot conveniently or economically be assigned to specific units or batches of units; a factory overhead cost (e.g., cooling oils, wires, and fixtures).

**Non-Current Asset**

An economic resource that is expected to be held by a business for a time period in excess of the current year or operating cycles.

**Non-Current Liability**

An obligation that is due beyond the current year or operating cycle.

**Non-Destructive Testing (NDT)**

Refers to all forms of testing that do not destroy the part such as x-ray and fluorescent penetrant inspection.

**Non-Machine Assembly**

Assembly used in an engine. The components in this assembly are purchased from suppliers, but built on Pratt & Whitney's Assembly floor.

*Refer to: Production Scheduling*

**Non-Normalized**

The actual data that is not restored to the single piece. A non-normalized Operations Bar Chart will show the time required for an entire batch.

*Refer to: Standard Work*

**Non-Overdue Workstop**

Workstops are declared when P&W fails to deliver a product on-time to its customers. Non-overdue workstops occur when customers mis-communicate or mis-calculate their own requirements making it nearly impossible for P&W to deliver the products on-time.

*Refer to: Delivery Performance*

**Non-Product Cost**

Also called period costs; costs that are not directly related to the production of goods or the purchase of products to be resold.

**Non-Recurring Cost**

A cost that is incurred one time. An example of a non-recurring cost is start-up tooling.

**Non-Value Added**

An activity within a process that does not add value to the end product (something a customer would not knowingly pay for), but does add cost in such forms as people's time and used materials.

**Non-Value-Added Cost**

A cost or activity that can be eliminated without affecting the value of the product or service to the customer.

**Normal Distribution**

A symmetrical, bell-shaped frequency distribution underlying control charts for variable data. When measurements have a normal distribution, about 68.26% of all individual data points lie within plus and minus one standard deviations of the mean, about 95.44% lie within plus and minus two standard deviations of the mean, and about 99.73% lie within plus and minus three standard deviations of the mean. These percentages are the basis for control limits and control chart analysis (since subgroup averages are normally distributed even if the output as a whole is not), and for many capability decisions (since the output of many industrial processes follows the normal distribution).

**Normalized**

Adjusted to reflect the data for a single piece. A normalized Operations Bar Chart will provide information on a single piece even if it is run in a batch.

Refer to: Standard Work

**NOx**

Acronym for Nitrogen Oxide. A type of airplane emissions.

**NPI**

New Part Introduction. Process by which a new part is designed and developed.

**NPV**

Acronym for Net Present Value. A cost-benefit analysis method that measures the projected cash flows of a proposed investment/project relative to the initial investment. It then adjusts those cash flows to account for the time value of money. The NPV method applies a rate of discount, often called the hurdle rate, to return future cash flows to the present time period.

**NPV Sensitivity Chart**

Chart used in the business case development process to determine the factors which affect Net Present Value (NPV). An NPV Sensitivity Chart identifies the amount the projected program element decreases or increases and how this subsequent change affects the NPV of the program. Within the chart, Factor Applied refers to the percentage by which the value of the business case driver is increased or decreased.

**NTSB**

Acronym for National Transportation Safety Board. The governing organization for transportation safety in the United States.

**Numerical Control (NC)**

A means of operating a machine tool automatically by the use of coded numerical instructions. Also known as NC tape.

Refer to: Process Capability

**Numerical Control (NC) Program**

This programs the machine self-check and probe (setup, tool and final inspection probing) calibration cycles, and standard cutting tools, groups of operator interventions, defines feeds and speeds, controls features, and defines the method of manufacture.

*Refer to: Process Capability*

**- O -****O&R Cost**

Acronym for Overhaul and Repair Costs. The costs associated with the disassembly, repair and reassembly of engines and engine modules.

**OAS**

Acronym for Outer Air Seal. Also called the compressor or turbine shroud. Prevents air from leaking between vanes in each stage of the compressor stators or the turbine stators.

**Obsolescence**

The state of no longer being of use. For example, technology becomes obsolete when new, improved versions are released.

**Obsolete**

Lacking product value due to a model or style change or technological development.

**OD**

Acronym for Outside Diameter. The diameters of a cylindrical feature on the outside of the cylinder. Expressed as a numerical value in units of measurement indicated on a drawing defining the size of a circular part feature.

**OEE**

Acronym for Overall Equipment Effectiveness.

**OEM**

Acronym for Original Equipment Manufacturer. The original company to fabricate a part. Part Manufacturer Approved (PMA) vendors make parts that were developed by an OEM; they are not the OEM.

**OEW**

Acronym for Overall Engine Weight. The weight of the engine on the wing of an aircraft.

**oF**

Symbol for degrees Fahrenheit, a measure of temperature.

**Off Shift**

Often used when referring to 2nd and 3rd shifts.

**OMM**

Acronym for Operating Manager's Meeting. Review at which P&W executives present P&W's current and forecasted financial condition to UTC corporate leaders. Formal OMM's are held three times a year and one informal OMM is held in December.

**On Account**

Term describing a purchase made at one point in time for which payment is not due until a later point in time.

**On-Machine Probing**

Process for collecting dimensional measurement data from a part on a machine. This process allows the part to remain on the machine, whereby eliminating any measurement variation that may occur from moving the part and using more manual measurement processes.

*Refer to: Process Capability*

**One-Piece Flow**

The ideal production method in which units are individually processed at each operation.

*Refer to: Mistake Proofing*

*Refer to: Setup Reduction*

*Refer to: Standard Work*

*Refer to: Product Cost Management*

*Refer to: Delivery Performance*

*Refer to: ACE Overview*

**Operating Cash Flow Activity**

The section of a cash flow statement which indicates the flow of cash to and/or from a business from daily operations, such as the purchase of raw materials and sale of products or services.

**Operating Cycle**

The time period during which cash is converted to finished goods and services, the sale is recorded, and cash is collected from the customer.

**Operating Expense**

The fixed and variable costs incurred to manufacture a product. Items included in operating expenses are direct and indirect labor, factory overhead, material overhead, vendor and durable tooling, and part center-specific period costs.

**Operating Manager's Meeting (OMM)**

Review at which P&W executives present P&W's current and forecasted financial condition to UTC corporate leaders. Formal OMM's are held three times a year and one informal OMM is held in December.

**Operating Margin**

The difference between sales and expenses not including interest and taxes. Also known as Earnings Before Interest and Taxes (EBIT).

**Operation (Standard Work)**

An activity or activities performed on a product by a single machine.

**Operations Bar Chart**

A Standard Work tool that illustrates the capacity of each operation in a cell compared to Tact Time. Sequential Operations Bar Charts show the tasks (manual and auto time) in the order they are completed for each operation. Operations Bar Charts can be shown either normalized or not normalized.

*Refer to: Setup Reduction*

*Refer to: Standard Work*

**Operations Bar Chart (Normalized)**

A normalized Operations Bar Chart shows the time taken for each operations based on a single piece. If an operation has a batch size of two and takes eight minutes, the normalized Operations Bar Chart would show time per piece, which would be four minutes.

*Refer to: Setup Reduction*

*Refer to: Standard Work*

**Operations Work Instructions**

Work instructions written by an Manufacturing Engineer which outline all the steps an operator should take as part of a process.

**Operator**

An individual in a manufacturing environment responsible for production on a machine or completing manual operations (e.g., welding).

**Operator Certification**

An initiative in which operators are responsible for performing quality inspections of parts that their operation has just completed.

*Refer to: QCPC*

**OPMT**

Operations Program Management Team.

**OPR at TOC**

Acronym for Overall Pressure Ratio at Top of Climb. OPR at TOC is the air pressure at the exit of the engine's high pressure compressor divided by the inlet air pressure.

**Order-to-Ship Lead Time**

The time it takes to deliver a product to a customer from the date of a firm customer contract order to delivery.

*Refer to: Manufacturing Principles*

*Refer to: Delivery Performance*

**Original Equipment Manufacturer (OEM)**

The original company to fabricate a part. Part Manufacturer Approved (PMA) vendors make parts that were developed by an OEM; they are not the OEM.

*Refer to: Product Cost Management*

*Refer to: Market Feedback Analysis*

**ORO**

Acronym for Overhaul and Repair Operations. Services that Pratt & Whitney provides to airline customers after engine delivery: engine teardown and rebuild, parts repair and inspection, fleet management, and used parts sales.

**Other Income**

Income, other than sales, that is generated from activities apart from the central operations of a business, including income from investments and financing activities, licensing and technical service agreements.

**Outer Air Seal (OAS)**

Also called the compressor or turbine shroud. Prevents air from leaking between vanes in each stage of the compressor stators or the turbine stators.

**Output Symbol**

Output is the resulting part produced from the current process. Output symbols are used to depict the end of a process flow.

**Outside Diameter (OD)**

The diameters of a cylindrical feature on the outside of the cylinder. Expressed as a numerical value in units of measurement indicated on a drawing defining the size of a circular part feature.

**Outsourcing**

The offloading of specific business functions to another entity.

**Over-Design**

To meet schedule pressures, some parts must be designed to higher safety levels than normal. This ensures that parts are safe, but it introduces higher unit costs.

**Overall Cost**

A measure of customer satisfaction based on the operating costs incurred by a customer using a P&W product.

**Overall Engine Weight (OEW)**

The weight of the engine on the wing of an aircraft.

**Overall Equipment Effectiveness (OEE)**

A rating of a machine's performance as compared to its theoretical capability.  $OEE = \text{Availability} * \text{Performance Efficiency} * \text{Rate of Quality}$ .

*Refer to: TPM*

*Refer to: Standard Work*

*Refer to: Manufacturing Principles*

*Refer to: ACE Overview*

**Overall Pressure Ratio**

The pressure at the exit of the high compressor divided by the pressure at the engine inlet.

**Overdue Demand**

Parts that have been requested by customers but not yet produced and are past the delivery date requested by the customer.

*Refer to: Standard Work*

**Overdue Workstop**

Workstops are declared when P&W fails to deliver a product on-time to its customers. Overdue workstops occur when parts aren't delivered on-time due to P&W's inability to deliver it (e.g., longer than planned lead time, scrapped the part).

*Refer to: Delivery Performance*

**Overhaul and Repair Cost**

The costs associated with the disassembly, repair and reassembly of engines and engine modules.

**Overhaul and Repair Operations (ORO)**

Services that Pratt & Whitney provides to airline customers after engine delivery: engine teardown and rebuild, parts repair and inspection, fleet management, and used parts sales.

*Refer to: Product Cost Management*

**Overhaul Engine**

An engine brought in for repair. This engine generally needs to be torn down, fixed, and built again.

*Refer to: Standardization and Commonality*

**Overhaul Shop**

A place where customers send engines for repairs and preventive maintenance.

*Refer to: Delivery Performance*

**Overhead Cost**

Supporting costs of the manufacturing process that can't be classified as direct material or direct labor costs. For example, administrative supplies, maintenance and utilities are considered a part of overhead.

*Refer to: Manufacturing Principles*

*Refer to: Standardization and Commonality*

*Refer to: Product Cost Management*

**Owners Equity**

The residual interest in, or remaining claims against, an organization's assets after deducting liabilities. Owners' Equity includes the investment made in a business by its owners, called paid-in capital, plus or minus the net income or loss generated by a business' operations and dividends paid, which is recorded in retained earnings.

## - P -

### **P&L**

Acronym for Profit and Loss Statement. Another name for the Income Statement, commonly used at Pratt & Whitney.

### **P&W**

Acronym for Pratt and Whitney.

### **P&W Canada**

The P&W division in Canada.

*Refer to: Standardization and Commonality*

*Refer to: Production Scheduling*

### **P&W Funded Program**

Programs funded by Pratt & Whitney. Management can shift resources from an externally funded program to a P&W funded program.

### **P.D.C.A Cycle**

Plan, Do, Check, Act is a root cause analysis technique for process improvement and problem solving.

*Refer to: Root Cause Analysis*

### **P/E Ratio**

Acronym for Price-Earnings Ratio. A measure of the value of a common stock determined as the ratio of its market price to its earnings per share.

### **Paid-In Capital**

The total investment in a business by its owners, including the initial investment and all subsequent investments.

### **Paired Comparison**

Means of comparing measurable attributes of a product (e.g., cost, weight, or color) to each other. This type of comparison produces weighting factors for each attribute and establishes a hierarchy of importance. The weighting factors are used in the Value Management star chart process.

### **Parallelism**

A condition of lines or surfaces that are at all points the same distance apart, no matter how far extended.

### **Pareto**

A method for aligning data from the largest to smallest so that trends and problem areas may easily be observed.

*Refer to: QCPC*

### **Pareto Analysis**

Analysis of the frequency of occurrence of various possible concerns. This is a useful way to decide quality priorities when more than one concern is present. See also Pareto principle.

### **Pareto Chart**

Bar charts that graphically represent data for each process and allow for easy identification of high priority opportunities within a process. It shows the frequency of occurrence of various possible concerns, in descending order from the left to the right or top to bottom, distinguished by a cumulative percentage line. The chart, based on the Pareto principle, helps identify the vital few opportunities for improvement--those defects appearing most frequently, or those that cause the most difficulty, or cost the most money, when they do appear.

*Refer to: QCPC*

*Refer to: Process Certification*

*Refer to: Root Cause Analysis*

*Refer to: ACE Overview*

**Pareto Principle**

A term coined by J.M. Juran to describe the phenomenon whereby, in any population that contributes to a common effect, a relative few contributors account for the bulk of the effect. In quality improvement terms, this translates to: a small number of concerns is usually responsible for most quality problems. The principle is named for Vilfredo Pareto, an Italian economist who found that a large percentage of wealth was concentrated in a small proportion of the entire population.

*Refer to: Root Cause Analysis*

**Part Center**

Pratt & Whitney organization that supplies parts to P&W Module Centers.

*Refer to: Production Scheduling*

**Part Characteristic**

Any part feature such as a diameter or surface.

*Refer to: Manufacturing Principles*

*Refer to: Process Capability*

**Part Cost**

The cost to produce one specific part. Part Cost measures a part's share of the costs incurred by the operating unit such as labor, overhead, equipment, materials, and vendor assists.

*Refer to: Standardization and Commonality*

*Refer to: Inventory Management*

*Refer to: Product Cost Management*

**Part Family**

A collection of parts typically grouped together because they have similar features or require similar processes.

*Refer to: Standard Work*

**Part Flow Map**

Map that visually shows the operations a part goes through; this map forms the basis of the QCPC Summary Chart if data is being collected at the part level.

*Refer to: QCPC*

**Part Number**

A number that serves to uniquely identify an item.

*Refer to: Manufacturing Principles*

*Refer to: Standardization and Commonality*

**Part Substitution List (PSL)**

A list of preferred parts that Manufacturing uses to verify the use of preferred parts in the engine designs.

**Partnering**

Working together with suppliers and/or customers for mutual benefit.

*Refer to: Product Cost Management*

**Partnership**

A business entity co-owned by two or more individuals who usually strike an agreement with rules regarding the admission and withdrawal of partners, the division of profit and loss, liquidation of the business, and other related matters.

*Refer to: Supply Chain Principles*

**Parts Per Million (PPM)**

A measure of the quality of an operation or series of operations. Calculated by taking the total number of non-conforming part characteristics (multiplied by 1, 000, 000) and divided by the total number of parts inspected for a specific period of time.

*Refer to: TPM*

*Refer to: Process Certification*

*Refer to: Mistake Proofing*

### **Passport Checklist**

A list of criteria that must be obtained before passing to the next stage of the deployment cycle under the Passport System.

### **Passport Checkpoint**

Series of points, each requiring different criteria, through which all products must pass before being marketed.

### **Passport Review**

A review within the Integrated Program Deployment Process (IPD) designed to ensure that all program requirements are met and all problems are identified before moving on to the next stage.

*Refer to: ACE Overview*

*Refer to: Passport System*

### **Passport Review Database**

All information pertaining to and resulting from Passport is stored in an online database for access by participants and interested parties. This database is the single point of contact for communicating information and data and is accessible by all review participants. This database will be used to announce and schedule reviews, dispense information about review purpose, identify review team members, report results of risk analysis, record action items and closure, and document the approval and official completion of each review. The database is accessed through Lotus Notes.

*Refer to: Passport System*

### **Passport System**

A set of reviews integrated with the program deployment process designed to ensure all problems are identified in the deployment cycle before moving to the next stage.

*Refer to: Passport System*

### **Patent**

Grants given to an inventor by the government allowing them the exclusive right to produce and sell their invention for 17 years.

### **Payback Period**

A cost-benefit analysis method based on the number of years required to gain back the original investment that does not take into account the time value of money.

### **Payload**

The weight an aircraft can carry.

### **PCE**

Acronym for Post Certification Engineering. Engineering support of an engine which has completed all requirements for FAA (or other aviation authority) certification. Such support includes developing fixes or improvements for problems which manifest themselves during use by the airlines, all aspects of supporting the customer's technical concerns, and dealing with regulatory agencies to maintain the certification of an engine.

### **PDC**

Acronym for Product Delivery Center. A P&W organization responsible for final assembly, test, and delivery to the end customers.

*Refer to: Manufacturing Principles*

**Pedigree**

The ancestors of an engine (family tree).

**Pension Fund**

A fund set aside for employees' retirement.

**Percent**

On the P-Q Analysis Chart, the percent is the percent of the running total that part represents. If three parts are listed and the quantities for the first, second, and third parts were 30, 15, and 5 respectively, then the percentage for the third part would equal  $5/(30+15+5) = 10\%$ .

**Percent Load Chart**

A Standard Work tool that illustrates the cycle time per operator compared to Tact Time.

*Refer to: Standard Work*

**Percentage of Part Number**

On the P-Q Analysis Chart, the percentage of part number shows what percent the cumulative number of parts represents of the total number of parts. If ten parts are listed, then the percentage of part number for the first part equals  $1/10 = 10\%$ . The percentage of part number for the second part equals  $2/10 = 20\%$ , and for the third part it would equal  $3/10 = 30\%$ .

**Performance**

A measure of a product's ability to meet its customer requirements. Performance is often used synonymously with fuel burn and represents the efficiency of the product in using fuel.

*Refer to: Product Cost Management*

**Performance Efficiency (TPM)**

A ratio, usually expressed as a percentage, of the actual processing time for a part divided by its standard processing time. Setups are excluded from this calculation to prevent distortion. A traditional definition includes setup time as part of operation time, but significant distortions can occur as a result of dependent setups.

*Refer to: TPM*

**Performance Guarantee**

Contract provisions which require P&W to reimburse the customer if a delivered engine does not meet performance promises in regards to fuel consumption, part lives, and maintenance requirements.

**Performance Systems Analysis**

An Engineering group responsible for ensuring that the engine as a system is performing to requirements.

**Period Cost**

Costs that are not directly related to the production of goods that are identified as expenses during the time period they are incurred. Also called non-product costs.

*Refer to: Product Cost Management*

**Perishable Tooling**

As opposed to durable tooling, perishable tooling is a consumable resource used to produce parts that must be replaced when worn. Examples of perishable tooling include drill bits, grinding wheels, and electrodes.

**Permanent Differences**

Revenue and expense items that are recognized for tax purposes but not recognized for accounting purposes (GAAP) or vice-versa.

**Permanent Magnet Alternator**

The main power source for an engine. When this part shuts down, the engine will also shut down.

**PHT**

Acronym for Precipitation Heat Treatment. A manufacturing operation in which parts are baked in ovens at very high temperatures. This baking alters the material properties of the parts to make them stronger and more resistant to intense heat.

**Physical Inventory**

The process manually counting all of the items in inventory at a point in time.

**Planned Downtime**

Planned Downtime is time that a machine is planned to be idle, not producing a part or unavailable for production. It is time used to perform scheduled maintenance, upgrades or moves. Examples of these times include lunch, department meetings or the absence of a third shift. Tracking machine downtime is accomplished using a Computerized Maintenance Management System (CMMS) and recorded on an OEE Observation Sheet.

*Refer to: TPM*

**Plant and Equipment**

The categorization of physical assets including buildings and machinery with a value greater than \$2,500.

**Plug Weld**

An welding operation at which holes in a part that are created during the casting process or another operation are plugged.

**PMA**

Acronym for Part Manufacturer Approval. Approval granted by the FAA to a manufacturing source, which allows that source to manufacture specific replacement or modification parts which could be used instead of the equipment manufactured by or for the type certificate holder or supplier thereof.

**PMC**

Project Materials Control group. A group responsible for handling the ordering and tracking of development hardware.

**PMR**

Acronym for Program Management Review. A customer satisfaction program between the airframer, the airlines, and P&W where customers can discuss their technical support issues. Also known as Working Together Team (WTT).

**Point of Use**

Storing/keeping items close to where employees will use them to save the time of having to search for or walk to gather these items. This storage concept can be applied to tooling and inventory.

*Refer to: 6S/Visual Factory*

*Refer to: QCPC*

*Refer to: Standardization and Commonality*

*Refer to: Inventory Management*

*Refer to: Product Cost Management*

*Refer to: Production Scheduling*

**Point of Use Storage (POUS)**

Storing/keeping items close to where employees will use them to save the time of having to search for or walk to gather these items.

**Poka-Yoke**

Any mechanism that either prevents a manufacturing mistake from being made or makes the mistake obvious at a glance.

*Refer to: Mistake Proofing*

**Polish**

To make smooth and glossy usually by friction.

**Post Certification Engineering (PCE) Expenses**

Engineering expenses incurred after engine certification. Funds expended to improve engine performance, durability or other product deliverables (e.g., noise, emissions, fuel-burn, cost).

*Refer to: Product Cost Management*

**Post-Certification**

Refers to the time period after an engine has been certified to fly.

**Post-Certification Engineering**

Engineering support of an engine which has completed all requirements for FAA (or other aviation authority) certification. Such support includes developing fixes or improvements for problems which manifest themselves during use by the airlines, all aspects of supporting the customer's technical concerns, and dealing with regulatory agencies to maintain the certification of an engine.

**Post-Production Support Program**

A plan that outlines how Pratt & Whitney will support a product after it is out of production.

**POUS**

Acronym for Point of Use Storage. Storing/keeping items close to where employees will use them to save the time of having to search for or walk to gather these items.

**Power by the Hour**

An agreement in which the customer (airline) pays a fixed periodic rate incorporating capital and operating costs to a service provider, which is typically an engine manufacturer with aftermarket support that has responsibility to perform all maintenance on the engines. In its pure form, the airline does not purchase the engines, the service provider owns them, however, power-by-the-hour is often used to describe agreements in which the airline does own the engine. Rolls Royce invented power-by-the-hour in the 1970s for operators of its corporate engines and still holds a registered trademark on the phrase.

**Power Extraction**

The horsepower that is extracted from an engine, through an output shaft, to run airplane generators, hydraulic pumps, etc.

**PPM**

Acronym for Parts Per Million. (Total number of non-conforming part characteristics / Total parts inspected) times 1 million.

**PQ Chart**

Part Quantity chart that shows the parts produced in a cell.

**Pre-Certification**

The first step in the Design / Develop / Certification Phase. The goal of pre-certification is to complete a detailed engine design and ensure that the design will pass the FAA's strict requirements. Entails a detailed technical design of each individual engine part and component. The performance, weight, thrust and all other specifications of the engine are tested to verify that the hardware works.

*Refer to: Process Capability*

**Pre-Launch Phase**

Also known as the Product Definition Phase of the program life cycle. The first phase in a program's life cycle in which product requirements are established, a product conceptual design is created, and a transition strategy is formulated.

**Pre-Paid Expense**

Expenditures on goods and services for which a company has paid for but not yet received. Prepaid expenses are assets that can include such payments as insurance, taxes, and rent.

**Pre-Paid Rent**

Expenditures for the future use of property or land for which a company has paid for but not yet received.

**Precipitation Heat Treatment (PHT)**

A manufacturing operation in which parts are baked in ovens at very high temperatures. This baking alters the material properties of the parts to make them stronger and more resistant to intense heat.

**Predictive Maintenance**

A type of preventive maintenance based on nondestructive testing and statistical analysis. It is used to predict when required maintenance should be scheduled.

*Refer to: TPM*

*Refer to: Process Capability*

**Preferred Part**

A part that engineering has defined to be the replacement for numerous parts with similar functions.

*Refer to: Standardization and Commonality*

**Preferred Stock**

Ownership shares of a corporation that have priority over other shares in the distribution of dividends or payment upon company liquidation.

*Refer to: Setup Reduction*

**Prekit**

To prepare materials in a kit before performing an operation.

*Refer to: Setup Reduction*

**Prekitting**

Collecting the tools used in a setup into a kit before the machine has stopped running. This actions performed in the Foresight (F) area of FAST-TRAC.

*Refer to: Setup Reduction*

**Present Value**

The current value of cash to be received or paid at some time in the future.

**Pressure Ratio**

The absolute air pressure, prior to combustion in a gas turbine, divided by the ambient pressure.

**Preventive Action**

Action taken to eliminate the causes of a potential nonconformity, defect, or other undesirable situation to prevent occurrence.

*Refer to: Root Cause Analysis*

**Preventive Maintenance**

Activities, including adjustments, replacements, and basic cleanliness, that prevent machine breakdowns. The purpose is to ensure that production quality is maintained. In addition, a machine that is well cared for will last longer and cause fewer problems.

*Refer to: TPM*

*Refer to: Process Certification*

*Refer to: Manufacturing Principles*

*Refer to: Process Capability*

*Refer to: ACE Overview*

**Preventive Maintenance Schedule**

A maintenance schedule describing the preventive maintenance tasks, responsibilities, and dates for completion. See Preventive Maintenance.

*Refer to: 6S/Visual Factory*

*Refer to: TPM*

*Refer to: Manufacturing Principles*

### **Price-Earnings Ratio (P/E)**

A measure of the value of a common stock determined as the ratio of its market price to its earnings per share.

### **Primary P&W Sourcing**

Internal sourcing of parts and components.

### **Primary Partner & Preferred Supplier Sourcing**

External sourcing of parts and components.

### **Primary Parts Service Policy**

Basic contractual protection for all new primary parts for a failure which occurs in the period of operation.

### **Pro-forma**

The presentation of projected data. For example, a proforma balance sheet projects the anticipated assets, liabilities, and equity for a future period.

### **Probing Gage**

A gage that uses a probe to detect measurement as found in CMM's.

### **Problem Definition Tree**

A root cause analysis tool that identifies a problem and its possible solutions. These components are depicted similar to a tree with solutions branching off of the main problem. This tool allows a team to investigate multiple paths to find the root cause or solution to the problem.

*Refer to: Root Cause Analysis*

### **Process**

The combination of people, machines, tools, raw materials, methods, environment, and measurement systems that produces an intended output. Examples of a process include deburring, welding, and cleaning. The summation of activities completed to produce a product or deliver a service.

### **Process Analysis**

A unique, group problem solving tool that helps depict how a process actually works. By determining how various steps in a process relate to each other, an investigator can identify delays and waste within processes.

*Refer to: Root Cause Analysis*

### **Process and Inspect**

A process that includes inspection and recording inspection results. An example is drilling a hole and inspecting the size of the drilled hole.

### **Process at a Glance**

A Value Engineering tool. A chart used to display the sequence of manufacturing operations (as well as assembly steps) necessary to produce a production part. The completed chart acts as a visual story board which helps cross-functional teams easily understand the manufacturing process and identify which operations are the true cost drivers.

*Refer to: Product Cost Management*

### **Process Capability**

An estimate of the variability of the output of a process or an estimate of the ability of a process to produce a part characteristic. It is not the same as tolerances or specifications required of produced units.

*Refer to: Process Certification*

*Refer to: Supply Chain Principles*

*Refer to: Process Capability*

*Refer to: Standardization and Commonality*

*Refer to: Product Cost Management*

*Refer to: Production Scheduling*

### **Process Capability Chart**

A bar chart that illustrates the distribution of a set of measurements around the desired nominal.

*Refer to: Process Certification*

### **Process Capacity**

The number of units a process (operation) is capable of producing in a specified period of time.

*Refer to: Standard Work*

### **Process Capacity Analysis Sheet**

A Standard Work Tool that is used to determine the capacity of each process (operation) in a cell.

*Refer to: Standard Work*

### **Process Certification**

An ACE initiative that seeks to control the variability of process outputs by controlling the variability of process inputs.

*Refer to: TPM*

*Refer to: QCPC*

*Refer to: Process Certification*

*Refer to: Process Capability*

*Refer to: Inventory Management*

*Refer to: Product Cost Management*

*Refer to: Delivery Performance*

### **Process Certification Checklist**

A checklist used in the final step of certifying a process that ensures all of the key steps to certifying that process have been completed.

*Refer to: Process Certification*

### **Process Certification Handbook**

A manual that guides people through the entire Process Certification process.

*Refer to: Process Certification*

*Refer to: Manufacturing Principles*

*Refer to: ACE Overview*

### **Process Certification Homepage**

A site on the P&W Intranet that provides information concerning Process Certification.

*Refer to: Process Certification*

### **Process Flow**

The idea that parts continuously flow from one operation to the next without delays.

*Refer to: 6S/Visual Factory*

### **Process Flow Diagram**

A diagram depicting the steps of a process. These steps include process decisions and alternate routes to take to perform the process.

*Refer to: QCPC*

### **Process Matrix**

Identifies the types of machines and other equipment needed for processing each part number and what path these processes take. It highlights the parts that should be processed together in a cell and the parts that should be reprocessed to match the flow of other parts. A Process Matrix helps create cellular manufacturing and process flow.

*Refer to: QCPC*

*Refer to: Standard Work*

**Process Variability**

The combination of the variability in machines, materials, methods, people, gages and the environment.

*Refer to: Process Certification*

**Procurement**

A functional area of Pratt & Whitney devoted to the acquisition of raw materials, parts, and supplies needed by the company to manufacture, deliver, and support its products.

*Refer to: Standardization and Commonality*

*Refer to: Inventory Management*

*Refer to: Product Cost Management*

*Refer to: Delivery Performance*

*Refer to: Production Scheduling*

**Product Cell**

The efficient organization of equipment required to produce a part or part family.

*Refer to: Standard Work*

**Product Cost**

Costs incurred in the production of goods or the purchase of goods to be resold.

**Product Cost Management Office**

Pratt & Whitney organization responsible for assessing the true value of P&W's design decisions, products, and services that will be delivered to its customers.

*Refer to: Product Cost Management*

**Product Definition Phase**

The first phase of a program life cycle that includes the establishment of customer requirements, creation of a product conceptual design, and formulation of a plan to move from the Product Definition Stage to the Design/Develop/Certification Phase. This phase includes representatives from cross-functional areas such as engineering, manufacturing, sales & service and program managers.

**Product Delivery Center (PDC)**

Pratt & Whitney organization responsible for final assembly, test, and delivery to the end customer.

*Refer to: Manufacturing Principles*

**Product Life Cycle**

The useful life of a product in a particular market - including the stages of development, growth, maturity, and decline.

*Refer to: Root Cause Analysis*

*Refer to: Product Cost Management*

*Refer to: Delivery Performance*

*Refer to: ACE Overview*

**Product Retirement**

The final phase of a program lifecycle. When an engine becomes obsolete, it is retired and replaced with newer models.

**Product Support & Enhancement**

The fourth phase of a program lifecycle. It is the mature phase of the program. The goals of this phase are to expand the customer base, manage product extension and increase customer satisfaction. It is critical to expand spare parts sales and capture a majority share of the aftermarket during this phase.

**Production**

The third phase in the program lifecycle. This phase focuses on manufacturing engines and parts to fill customers' orders. P&W's goal is to maximize volume, minimize costs, enhance the product quality, enhance efficiency and control cost.

**Production Capacity Analysis Sheet**

A Standard Work Tool that is used to assess the capacity of individual operations within a cell and the capacity of the cell as a whole. The Production Capacity Analysis Sheet provides data for the Operations Bar Chart.

*Refer to: Standard Work*

**Production Engine**

An engine built to a customer order.

*Refer to: Standardization and Commonality*

**Production Planning**

The function of setting the overall level of manufacturing output production and other activities to best satisfy the current planned levels of sales, while meeting general business objectives of profitability, productivity, competitive customer lead times, etc.

*Refer to: Production Scheduling*

**Production Schedule**

A plan that authorizes the factory to manufacture a certain quantity of a specific item.

**Productivity**

Refers to a business' ability to generate outputs (sales, number of units produced, number of correct responses to customer inquiries, etc.) relative to its inputs (fixed and variable costs, a piece of equipment, employees, etc.).

**Profit and Loss Statement**

A report of a company's sales, associated expenses, and resulting net income for a period of time. Also referred to as an income statement, statement of operations, or statement of earnings.

*Refer to: Product Cost Management*

**Profit Plan**

A three year financial forecast that is updated on a quarterly basis.

**Profitability**

A measurement of a project's ability to earn the highest return possible on expended resources when balanced with the project's risk.

**Program Cost**

Expenses associated with a special project that are incurred for a limited period of time.

**Program Management Review (PMR)**

A customer satisfaction program between the airframer, the airlines, and P&W where customers can discuss their technical support issues. Also known as Working Together Team (WTT).

**Program Requirement**

Examples of program requirements are quality, performance, function, reliability, and manufacturability.

**Program Unit Cost**

The average recurring cost for an engine in a specific month or year.

**Progress Payment**

Payment made by the government to Pratt & Whitney based on how far the requested goods are from completion (% complete).

**Project (Action Item) List**

A list of action items a team must complete to eliminate a turnback.

*Refer to: QCPC*

**Project (Turnback) List**

A list of all of the projects to be completed that will resolve and prevent turnback issues. A running list is kept that displays the project description, who submitted the request, the project owner as well as an estimated completion date.

*Refer to: QCPC*

**Property Tax**

A tax levied on personal property (such as inventory, supplies and plant and equipment).

**Proprietorship**

A business entity owned by one individual, called a proprietor, who makes all business decisions and retains all profits or losses. Proprietorships are generally small, with only a few employees. There is no contract binding a proprietor to the business.

**PSA**

Acronym for Performance Systems Analysis. An Engineering group responsible for ensuring that the engine as a system is performing to requirements.

**Psi**

Acronym for Pounds Per Square Inch.

**Pull**

The production of items only as demanded for use or to replace those taken for use.

**Pull Scheduling**

Scheduling in which nothing is produced until there is a signal from a downstream customer.

*Refer to: Inventory Management*

*Refer to: Delivery Performance*

**Pull System**

A manufacturing strategy that relies on customer demand to pull parts through production in the amount and at the time they need them, rather than producing parts just to keep machines busy.

*Refer to: Standard Work*

*Refer to: Supply Chain Principles*

*Refer to: Inventory Management*

*Refer to: Delivery Performance*

**Purchase Order**

A document used to place an order with a vendor. It specifies the type and quantity of products ordered.

**Purchased Material**

The cost of finished parts, raw material or purchased labor on parts sourced to suppliers.

**Purchased Part**

A part that P&W purchases from a supplier.

*Refer to: Product Cost Management*

**Push System**

A manufacturing approach that does not rely on customer demand to pull a product through production (see pull systems) and in which the production of parts is not directly related to customer demand. Parts are "pushed" towards the customer rather than "pulled" by the customer's demand.

*Refer to: Standard Work*

**PW-QA6099A**

Pratt & Whitney's specification on the requirements for Process Certification.

*Refer to: Process Certification*

*Refer to: Root Cause Analysis*

**- Q -****QA Clear**

A quality assurance checkpoint at which all parts are inspected.

**QCPC**

Acronym for Quality Clinic Process Chart. Refers to a systematic method for collecting data on defects and process inefficiencies (known as turnbacks). Also refers to the graphical chart that is used to display turnback ratios.

*Refer to: QCPC*

*Refer to: Supply Chain Principles*

*Refer to: Product Cost Management*

*Refer to: Market Feedback Analysis*

**QCPC Board**

A large board located in a work area that displays the up-to-date QCPC information. The board usually displays the QCPC Chart, pareto charts, trend charts, list of team responsibilities, project (turnback) list, project (action item) list, success stories, etc.

*Refer to: QCPC*

**QCPC Champion**

A QCPC expert and coach.

*Refer to: QCPC*

**QCPC Chart**

Chart that outlines the steps in a process. It displays data on the total number of parts through each process step and how many turnbacks occurred during this step (turnback ratio). This chart is updated on a weekly basis.

*Refer to: 6S/Visual Factory*

*Refer to: QCPC*

*Refer to: Manufacturing Principles*

**QCPC Focus Event**

A team building event where a QCPC team and a QCPC coach work together to start the daily implementation of the QCPC process. During this event the team re-learns basic QCPC concepts, creates a QCPC Chart and a data collection process, and establishes QCPC responsibilities such as data collecting or updating pareto charts.

*Refer to: QCPC*

**QCPC Focus Process Matrix Meeting**

A meeting held to facilitate a team through the process of identifying their cell process flow map. The team looks for all processes their cell completes and determines how they would like to map these for QCPC data collection.

*Refer to: QCPC*

**QCPC Formula**

Refers to the numbers that appear on the QCPC Summary Chart. The turnback ratio is calculated by dividing the number of pieces that go into a process into the number of turnbacks that were submitted on a process. The turnback ratio for each process is usually calculated on a weekly basis. The sum of all turnback ratios for the week is calculated and posted in the right most column of the chart.

*Refer to: QCPC*

**QCPC Norms**

A list of meeting norms and rules that the QCPC team creates and should follow.

*Refer to: QCPC*

**QCPC Project List**

A list that identifies all the turnbacks, establishes an owner for the turnback, and provides a status on the turnback progress (solution identified, etc.).

**QCPC Summary Chart**

A template for displaying QCPC data. The QCPC Summary Chart displays a part flow map or cell flow map as its first row. Four additional blank rows, one for each week in a month, are also displayed. The QCPC turnback formulas and turnback ratios are displayed in the corresponding process/operation column on a weekly basis.

*Refer to: QCPC*

**QRIR**

Similar to Supplier's Report of Nonconformance (SRON) but comes from the P&W side.

**Quality**

Degree of excellence.

*Refer to: Process Capability*

**Quality at the Heart**

An Ito University motto describing the importance of building quality into every part of a business.

*Refer to: Delivery Performance*

**Quality Clinic Process Chart (QCPC)**

Refers to a systematic method for collecting data on defects and process inefficiencies (known as turnbacks). Also refers to the graphical chart that is used to display turnback ratios.

*Refer to: QCPC*

*Refer to: Process Certification*

*Refer to: Mistake Proofing*

*Refer to: Root Cause Analysis*

*Refer to: Inventory Management*

*Refer to: Product Cost Management*

*Refer to: Delivery Performance*

**Quality Escape**

A part not made to specifications that is installed in an engine or sold as a spare part to a customer. An engineering escape is a design error which means that the part does not fulfill its function.

**Quality of Performance**

One of the Business Success Factors for an engine program. This metric refers to the overall customer satisfaction, employee satisfaction, and financial performance of an engine program. Together, these three factors determine how balanced and successful an engine program is.

**Queue**

In manufacturing, where jobs at a given work center wait to be processed. As queue time increases, so does average queue time and work-in-process inventory.

**Queue Time**

The amount of time a job waits at a work center before work is performed on the job. Queue time is one element of total manufacturing lead time. Increases in queue time increase manufacturing lead time.

**Quick Quench**

A manufacturing process whereby metal is cooled by quenching (submerging) it. The metal can be quenched in different media - air, water, oil - and at different speeds. The media and the speed affects the properties of the material.

**- R -****R&D**

Acronym for Research and Development. Costs associated with the development of new products and certification by the Federal Aviation Association (FAA).

**Rainbow Control Chart**

A control chart on which readings are plotted horizontally on a graph, monitoring production to ensure that the outputs from a process are within acceptable limits.

*Refer to: Process Certification*

**Random Variation**

This type of variation is inherent in the process and is caused by process inputs. Individually, these inputs have relatively small importance as contributors to overall process variability. Acting in total, the variation can be substantial. Synonymous with common variation and chronic variation.

*Refer to: Process Certification*

*Refer to: Root Cause Analysis*

**Range**

Distance an aircraft can travel without refueling.

**Rank and Rate**

A decision-making technique that relates the identified solutions to the existing product/process. This is performed by comparing the impact of potential solutions to the attributes defined during the information phase. The proposal that achieves the most favorable impact to the physical attributes is ranked as the number one proposal. This technique has two variables: the importance of the requirements and the ability of the idea to satisfy them.

**Rapport**

A measure of customer satisfaction reflecting the strength of the relationship between P&W and its customers. It can be based on level of support given to industry teams, customer focus groups, and "WTTs" (Working Together Teams).

**Rate of Quality**

Used in the OEE Calculation. Equals the percentage of usable operating time that is spent producing parts that meet minimum quality requirement.

*Refer to: TPM*

**Rate of Return**

The ratio of income earned from an investment as compared to the cost of that investment.

**Raw Material**

Purchased items or extracted materials that are converted via the manufacturing process into components and products.

*Refer to: Inventory Management*

*Refer to: Product Cost Management*

*Refer to: Production Scheduling*

**Re-Engining**

Replace an older, more obsolete engine on an aircraft with a more current engine (e.g., on a Boeing 707 that doesn't have much flight time, replace the JT3Ds that are currently on the plane with JT8Ds).

**REA**

Acronym for Request for Engineering Assistance. The system used for creating and tracking engineering tasks. REA assigns a task number to each task.

**Readiness-to-Serve (RTS) Cost**

Fixed costs which are required to support ongoing operations.

**Real Discount Rate**

A rate used in Net Present Value analysis to discount cash flows that are not adjusted for inflation. Real Discount Rate = Nominal Discount Rate - Inflationary Premium.

**Real Dollars**

Cash flows over multiple years expressed in terms that factor out inflation. Sometimes referred to as "constant dollars." Real Dollars = Nominal Dollars - Inflationary Premium.

**Realization Rate**

Time required for setup, inspection and scrap.

**Recurrence**

A repeat of a nonconformance, attributable to the same cause, after the implementation of a corrective action on the first occurrence.

*Refer to: Root Cause Analysis*

**Recurrence Report**

Report used on the shop floor to monitor if problems reoccur. Proper root cause analysis should eliminate the recurrence of problems.

*Refer to: Root Cause Analysis*

**Recurring Cost**

A repeating cost such as manufacturing costs.

**Red Flag**

Indicators of potential errors. Mistake Proofing eliminates Red Flags to provide quality processes and parts, and a safe environment.

*Refer to: Mistake Proofing*

**Red Tag Strategy**

A strategy used to sort items in a workplace. A red tag is placed on unnecessary items in a workplace. This tag describes the type of item, the item name, the number of items, the reason the item is no longer necessary, the disposal method and date, and the party responsible for the item's disposal.

*Refer to: 6S/Visual Factory*

**Red X**

The one X (variable or interaction between variables), out of many known and unknown variables, that has the greatest ability to drive the Green Y from a BOB (best of the best) to a WOW (worst of the worst) level.

*Refer to: QCPC*

**Reliability**

A measure of customer satisfaction for a product that is based on fleet-wide shut down rates, delays and cancellations, unexpected engine removals and shop visit rates.

*Refer to: Root Cause Analysis*

*Refer to: Product Cost Management*

**Repair**

To fix something that is broken.

*Refer to: Product Cost Management*

**Repeatability**

For Gage R&R, the variation obtained when a single gage is used several times by one person while measuring the same feature on the same part at the same location.

*Refer to: Process Certification*

*Refer to: Supply Chain Principles*

*Refer to: Standardization and Commonality*

**Repetitive Non-Conformance Report**

Report that track the number of times a non-conformance, defect, or other undesirable situation recurs. This report does not detail recurring problems associated with particular corrective actions.

*Refer to: Root Cause Analysis*

**Replenishing Frequency**

The rate at which materials are ordered to keep production flowing. This rate can be either periodic (e.g., once every month) or based on a fixed amount (e.g., when there are only ten pieces left).

*Refer to: Setup Reduction*

**Reproducibility**

- 1) The ability of a process to reproduce consistent outputs.
- 2) For Gage R&R, the variation, expressed as differences in means or averages, when different operators measure the same feature on the same parts in the same part location.

*Refer to: Process Certification*

*Refer to: Standardization and Commonality*

**Request for Engineering Assistance (REA)**

The system used for creating and tracking engineering tasks. REA assigns a task number to each task.

**Request for Product Investment**

A standard request form for business ventures over \$250,000.

**Request for Proposals (RFP)**

An invitation put out by a company or the government to receive bids to provide a service or a product. This is also known as an Invitation for Bids (IFB).

**Required Daily Output**

The number of units that must be produced on a daily basis to meet Tact Time. A cell's Required Daily Output is stated on the Production Capacity Analysis Sheet.

*Refer to: Standard Work*

**Requirements (Design)**

Mutual agreement on what a supplier will deliver to a customer, based on a discussion of customer needs vs. supplier capabilities.

*Refer to: Product Cost Management*

**Requirements-Based Budgeting**

A method of constructing budgets that requires management to prioritize each task. Requirements-based budgets begin with the basic premise that the budget for the following year is zero. To receive funding, each task, old or new, must be justified in terms of its continued cost and benefit.

*Refer to: Production Scheduling*

**Requisition Schedule**

Spare parts master plan that feeds into Material Requirements Planning (MRP) system.  
*Refer to: Delivery Performance*

**Research and Development Costs (R&D)**

Costs associated with the development of new products and certification by the Federal Aviation Association (FAA).

**Reserve**

An account that is established to recognize a future liability that is probable and estimable. A reserve can't be deducted for tax purposes.

**Residual Value**

The amount expected to be received when plant and equipment is sold or scrapped at the end of its useful life. Also referred to as salvage value.

**Resource List**

A list usually located on the QCPC board. This list identifies places/people from which to order supplies needed within the work area. This reduces the time it takes to re-order necessary supplies.

*Refer to: QCPC*

**Responsibility Accounting**

The process of classifying costs by tracing them to the department or part center from which they originated.

**Responsiveness**

A measure of customer satisfaction based on how responsive P&W is to customer requests, including technical support and account maintenance.

**Retained Earnings**

The increase or decrease in equity that has resulted from a profit or loss associated with business operations. Retained earnings, which accumulate from year to year, are equal to net income less dividends.

**Retrofit**

To put something new on something old.

**Return on Assets (ROA)**

The ratio of net income to total assets.

**Return on Capital (ROC)**

Calculated by dividing operating profit (EBIT) by the average amount of capital a company has invested. It is a measure of a company's return on capital invested.

**Return on Equity (ROE)**

A ratio comparing net income to average equity expressed as a percentage.

**Return on Investment (ROI)**

A ratio comparing net income to average owners' equity expressed as a percentage.

**Return on Net Operating Assets (RONA)**

A measurement used by Pratt & Whitney to illustrate the efficiency of its net operating assets (NOA). NOA represent the assets and liabilities directly related to P&W's operating business (e.g., accounts receivable, inventory, accounts payable, and customer advances). Through an awareness of the actions which increase or decrease NOA, program managers enhance the profitability of a program.

**Return on Sales (ROS)**

The percentage of profit earned on sales of goods and services. Return on sales is a key income statement ratio that measures the performance of a company over a period of time. ROS is calculated by dividing Earnings Before Interest and Taxes (EBIT) by Total Sales.

*Refer to: Manufacturing Principles*

### **Revenue**

Cash inflows or other enhancements of assets which result from delivering goods or rendering services to customers. At P&W, revenues are referred to as Sales.

### **Reversal**

A reversal in a processing sequence is when a part must travel over a path it already covered to be processed. Reversals should be eliminated by creating new processes or rearranging cells.

*Refer to: Standard Work*

### **Reverse-Engineer**

To take a product that is currently in existence and recreate it using the same process as the original manufacturer.

### **Rework**

To re-process (re-machine, re-finish, etc.) a part to fix quality errors which occurred the first time it was processed.

*Refer to: TPM*

*Refer to: QCPC*

*Refer to: Process Certification*

*Refer to: Mistake Proofing*

*Refer to: Setup Reduction*

*Refer to: Manufacturing Principles*

*Refer to: Supply Chain Principles*

*Refer to: Process Capability*

*Refer to: Inventory Management*

*Refer to: Delivery Performance*

*Refer to: Production Scheduling*

### **Rework Hours**

Hours spent reprocessing or salvaging a defective item or part.

*Refer to: Product Cost Management*

### **RFP**

Acronym for Request for Proposals. An invitation put out by a company or the government to receive bids to provide a service or a product. This is also known as an Invitation for Bids (IFB).

### **Rig Testing**

The testing of an engine part or component, not the whole engine.

### **Risk Acceptance**

A conscious decision by a manager to accept a risk and the consequences that could occur.

### **Risk Monitoring**

The process of continually monitoring a project and taking the appropriate corrective action needed to maintain its health.

### **Risk Transfer**

The process of reducing risk exposure by sharing the risk that exists.

### **ROA**

Acronym for Return on Assets. The ratio of net income to total assets.

**ROI**

Acronym for Return on Investment. A ratio comparing net income to average owners' equity plus average long term liabilities expressed as a percentage.

**Rolling Year Average**

An average calculated over the twelve months previous to the current date.

**RONA**

Acronym for Return on Net Operating Assets. A measurement used by Pratt & Whitney to illustrate the efficiency of its net operating assets (NOA). NOA represent the assets and liabilities directly related to P&W's operating business (e.g., accounts receivable, inventory, accounts payable, and customer advances). Through an awareness of the actions which increase or decrease NOA, program managers enhance the profitability of a program.

**Root Cause**

The true cause of an undesired condition or a problem. In many cases, the root cause may consist of several smaller causes. Eliminating the root cause will resolve the problem and prevent the problem from recurring.

*Refer to: QCPC*

*Refer to: Process Certification*

*Refer to: Mistake Proofing*

*Refer to: Root Cause Analysis*

**Root Cause Analysis**

Rapid and persistent pursuit of the fundamental breakdown or failure of the process that, when resolved, prevents a recurrence of the problem.

*Refer to: TPM*

*Refer to: QCPC*

*Refer to: Process Certification*

*Refer to: Manufacturing Principles*

*Refer to: Root Cause Analysis*

*Refer to: Delivery Performance*

*Refer to: Market Feedback Analysis*

**Root Cause Test**

Tool used in Root Cause Analysis to verify that the root cause has been eliminated and the target problem does not recur.

*Refer to: Root Cause Analysis*

**ROS**

Acronym for Return on Sales. A measurement of percent profit used to understand a company's profitability. Return on sales is a key income statement ratio which measures the performance of a company over a period of time. ROS is calculated by dividing Earnings Before Interest and Taxes (EBIT) by Total Sales.

**Rough Stores**

The storage location for raw material that P&W owns but is not ready to use for production.

*Refer to: Inventory Management*

**Rough Turning**

A lathe metal removal process that creates a non-finished feature / dimension.

*Refer to: Process Certification*

**Royalty Expense**

The cost associated with using another company's technology or information.

**RPI**

Acronym for Request for Product Investment. A standard request form for business ventures over \$250,000.

**Rule of Ten**

A general rule explaining the importance of finding the root cause of mistakes as soon as possible. The longer it takes to eliminate the true root cause of a problem, the more expensive it is to fix the problems. Generally, the cost can increase at exponential levels.

*Refer to: Root Cause Analysis*

*Refer to: ACE Overview*

**Run Chart**

A type of trend chart used to graph observation points over time.

*Refer to: Root Cause Analysis*

**Running Total**

On the P-Q Analysis Chart, the running total is the sum of all of the part quantities up to that part. The running total for the third part listed would equal the sum of the part quantities for the first, second, and third parts.

**Russo Chart**

A tool used to focus resources by gathering and analyzing customer-based data about problems with existing products that cause customers to lose revenue or spend money unexpectedly. Russo charts display current reliability rates and targets for each component of an assembly and help to identify the most troublesome component.

*Refer to: Passport System*

*Refer to: Market Feedback Analysis*

**- S -****Safety Stock**

Additional inventory and / or capacity planned as protection against forecast errors. This inventory is found within an organization and its entire supply base. Safety stock is synonymous with buffer stock.

*Refer to: Inventory Management*

*Refer to: Delivery Performance*

**Sales**

The market value of products or services sold in a given period. Also known as revenues.

**Sales Commission**

At P&W, the amount paid to foreign sales agents as compensation for their efforts in winning a contract.

**Sales Contract**

A formal agreement between a buyer and seller regarding a sale, indicating such items as terms for payment and time of title transfer.

**Sales Planning**

Determining the overall level of sales expected to be achieved, usually stated as a monthly rate of sales for a product family. It should be determined in units identical to the production plan for planning purposes.

*Refer to: Production Scheduling*

**Sampling**

A statistical process whereby generalizations regarding an entire body of phenomena are drawn from a relatively small number of observations.

*Refer to: Process Capability*

**SC**

Acronym for Strategy Council. The Strategy Council meets to discuss different business strategies and investments that benefit both the commercial and military sides of the business. They hear presentations that outline investments which should be considered by the company.

**Scalar**

A number.

*Refer to: Process Capability*

**Scatter Diagram**

- 1) A graph of coordinate pairs (x,y) of observations; it helps determine, graphically, whether a relationship may exist between two variables. In a manufacturing event, it is a chart that uses a part diagram to illustrate where turnbacks are being discovered on the part, or what area of the part the various turnbacks affect.
- 2) A diagram of a part on which defects are marked according to a legend. A Scatter Diagram of this type illustrates where mistakes are occurring.

*Refer to: QCPC*

*Refer to: Root Cause Analysis*

*Refer to: ACE Overview*

**Schedule M**

Tax schedule used to list the temporary differences between book and tax income used in the calculation of income taxes.

**Scrap**

Consists of non-conforming, obsolete, or surplus parts. Inventory can be classified as scrap because of a quality downgrade or a defect incurred in the production process.

*Refer to: TPM*

*Refer to: QCPC*

*Refer to: Process Certification*

*Refer to: Mistake Proofing*

*Refer to: Setup Reduction*

*Refer to: Manufacturing Principles*

*Refer to: Process Capability*

*Refer to: Inventory Management*

*Refer to: Product Cost Management*

*Refer to: Delivery Performance*

*Refer to: Production Scheduling*

**Scrap Factor**

A percentage used to increase a manufacturing cell's total monthly load. Normally, a scrap factor is applied to a cell's demand plus overdue to compensate for scrapped parts. Using a scrap factor helps to ensure that customer demand can be met.

**Scrap Rate**

The rate at which parts become obsolete, non-conforming, or surplus. Can either be expressed as the cost of scrap losses as a percentage of labor cost or the cost of scrap material as a percentage of material cost.

**Sealed Bid**

A bidding process which does not disclose the price or terms of the offer to all the competing entities that place bids.

**SEC**

Acronym for Securities and Exchange Commission. The main securities regulatory authority in the United States.

**Securities and Exchange Commission (SEC)**

The main securities regulatory authority in the United States.

### **Security**

An instrument, such as a bond or stock certificate, that gives rights to the entity that owns it.

### **Sell Rate**

The amount of engines a manufacturer sells in a period of time.

### **Selling General & Administrative (SG&A) Costs**

The indirect costs of supporting a program that are not specifically identifiable with nor specifically assigned to production. SG&A includes marketing, legal, finance and executive salaries.

### **Sensitivity Analysis**

Sensitivity analysis is a method of measuring the effects of changing business case drivers on the internal rate of return (IRR) and net present value (NPV). A thorough understanding of the sensitivity of each driver is essential to help management understand which drivers have the greatest impact on the financial success of a program.

### **Sensitivity Chart**

A chart used to measure the effects of changing business case drivers on the internal rate of return (IRR) and net present value (NPV). A thorough understanding of the sensitivity of each driver is essential to help management understand which drivers have the greatest impact on the financial success of a program. Within the chart, Factor Applied to Base Inputs refers to the percentage by which the value of the business case driver is increased or decreased.

### **Service Department**

Departments which do not produce revenue-generating products or services, but exist only to support other departments or a business that sells services (i.e. maintenance contracts).

### **Service Investigation Report (SIR)**

A report issued monthly to airlines for each engine model. It contains the most recent technical information on events/problems in service, efforts of P&W to correct problems. Also contains fleet operational statistics such as In-Flight Shutdowns (IFSD's) and unplanned removals.

### **Service Policy**

Generally refers to the warranty policy for new engine/parts.

### **Service Stores**

Service stores contain commercial spares once they become finished products.

*Refer to: Inventory Management*

*Refer to: Production Scheduling*

### **Serviceable Material Management Organiz. (SMMO)**

An organization that handles the sale of spare parts.

### **Setup**

The work required to change a specific machine, resource, work center, or line from making the last good piece of unit A to the first good piece of unit B.

*Refer to: Inventory Management*

### **Setup Reduction**

Reducing the time spent changing a specific machine, resource, work center, or line from making the last good piece of unit A to the first good piece of unit B. Setup Reduction is a component of ACE.

*Refer to: QCPC*

*Refer to: Setup Reduction*

*Refer to: Inventory Management*

*Refer to: Product Cost Management*

*Refer to: Delivery Performance*

### **Setup Time**

The time it takes to set up a piece of equipment from one product run to the next. Setup time also applies to the time required for removing old tools, dies or fixtures, attaching new tools, dies or fixtures and running the machine until a new part, without defects, is produced. In Shigeo Shingo's SMED (single-minute exchange of die) system, the term applies to much more than the preparation and after-adjustment of a processing operation; it also refers to inspection, transportation, and waiting operations.

*Refer to: TPM*

*Refer to: Setup Reduction*

*Refer to: Standard Work*

*Refer to: Inventory Management*

*Refer to: Delivery Performance*

*Refer to: Production Scheduling*

*Refer to: ACE Overview*

### **SG&A**

Acronym for Selling, General and Administrative costs. The indirect costs of supporting a program that are not specifically identifiable with nor specifically assigned to production. SG&A includes marketing, legal, finance and executive salaries.

### **Shadowing**

Tracing the shadow of an item in the storage location of the item. The shadow of the item details which item is missing in the workplace and the location for storing the item. Shadowing can be on boards, trays and drawers.

*Refer to: 6S/Visual Factory*

*Refer to: Manufacturing Principles*

### **Shared Cost**

Expenditures that are incurred by two or more areas such as the joint use of equipment, supplies or services.

### **Shareholder**

Owner of a corporation who possesses a portion of the business' assets in the form of shares of stock.

### **Shop Impact**

The real or potential influence on manufacturing cost, schedule, capital, or manpower plans as a result of decisions made for business, technical or other reasons.

### **Shop Visit Rate**

The number of shop visits for an engine in terms of a base period: usually per 1000 engine flight hours.

### **Short-Term Investment**

Temporary investments that mature in less than one year and can generally be converted into cash quickly in the event that a company needs cash.

### **Should-Cost Modeling**

A process of determining what a part "should cost" based on the material, features and processing required to produce.

*Refer to: Product Cost Management*

### **SHPC**

Small Hardware Parts Center. Area that receives and warehouses small hardware.

### **Sight Glasses**

Devises or windows that make it easy to see fluid, pressure, or other levels. Sight glasses should be clearly labeled with high and low acceptable ranges of performance.

*Refer to: TPM*

**Single Minute Exchange Of Dies**

A system created by Dr. Shigeo Shingo that is used to reduce setup times to single minutes. A method for achieving just-in-time production, part of the Toyota production system. The term refers to a theory and techniques for performing set-up operations in under ten minutes. It's not always possible, but using this goal dramatically reduces set-up times.

**Single Source**

The only approved supplier of a part. Traditional manufacturers usually have at least two suppliers for each component part they purchase to ensure continuity of supply and to foster price competition. A Just-in-Time manufacturer will frequently have only one supplier for a purchased part so that close relationships can be established, fostering high quality, reliability, short lead times, and cooperative action. Although P&W only uses one supplier when single-sourcing, other suppliers exist that are certified to produce the P&W part. This prevents them from the potential risk of not receiving a part on time

*Refer to: Supply Chain Principles*

**SIPT**

Acronym for Super Integrated Product Team. This team is similar to an IPT, but has more cross-functional representation.

**SIR**

Acronym for Service Information Report. A report issued monthly to airlines for each engine model. It contains the most recent technical information on events/problems in service and efforts of P&W to correct problems. It also contains fleet operational statistics such as In-Flight Shutdowns (IFSD's) and unplanned removals.

**Six Sigma**

Represents the area under the Normal Distribution that lies between +/- 3 Standard Deviations on either side of the Process Mean. This represents approximately 99.73% of the area under the Normal Curve. We would expect roughly 99.73% of the total output for a process to lie within the 6 Sigma Spread.

*Refer to: Process Certification*

**Six Sigma Spread**

Represents the area under the Normal Distribution that lies between +/- 3 Standard Deviations on either side of the Process Mean. This represents approximately 99.73% of the area under the Normal Curve. We would expect roughly 99.73% of the total output for a process to lie within the 6 Sigma Spread.

*Refer to: Process Certification*

**Skills Matrix**

A matrix that illustrates the skill ranks of each team member for a set of given processes or operations.

*Refer to: Manufacturing Principles*

*Refer to: ACE Overview*

**Small Hardware Part**

Parts that are used to connect and lock other parts together. Examples of small hardware parts include nuts, bolts and washers.

*Refer to: Standardization and Commonality*

**Small Lot Production**

Producing products using small batches.

*Refer to: Setup Reduction*

*Refer to: Inventory Management*

*Refer to: Delivery Performance*

**Small Machine Assembly**

A combination of parts that are pieced together to form a component for a machine. Examples include tube fittings and brackets.

*Refer to: Standardization and Commonality*

**SMED**

Acronym for Single Minute Exchange of Dies.

**SMMO**

Acronym for Serviceable Material Management Organization. Organization that handles the sale of spare parts.

**SNECMA**

Acronym for Societe d'Etude et de Construction de Moteurs d'Aviation. Aircraft engine manufacturer based in France.

**Sold Overdue**

A metric that tracks the number of parts and engines that P&W did not deliver on time.

*Refer to: Production Scheduling*

**Sole Proprietorship**

A business entity owned by one individual.

**Sole Sourced Part**

Parts that have only one approved supplier / source because the specified supplier is the only supplier that has the capabilities to make a specific part.

*Refer to: Standardization and Commonality*

**Sole-Sourcing**

An agreement under which a customer agrees to purchase engines from only one manufacturer. For purchased parts, it is a situation when only one supplier has the capabilities to make a specific part.

*Refer to: Standardization and Commonality*

**Source Approved Repair**

Refers to a repair that can be completed only by certain vendors.

**Source Department**

The location, cell, business unit, or supplier that a part comes from.

*Refer to: Inventory Management*

**Source Document**

An original record of a business transaction, such as a check or vendor invoice, that provides the details of a transaction.

**Source Inspection**

Inspection at the source of supply, e.g. the supplier or the work center, as opposed to inspection following receipt or production of the items.

*Refer to: Product Cost Management*

**Source of Cash**

When a company receives cash or cash becomes available for use.

**Sourcing**

Refers the decision making process that is completed to determine if an engine part will be made in-house, by P&W, or will be out sourced and created by an external vendor.

**SOW**

Acronym for Statement of Work. A document that identifies the effort that a contractor must perform to fulfill the requirements of a contract.

**Space Propulsion Systems**

The division of P&W that produces space propulsion engines.

*Refer to: Standardization and Commonality*

*Refer to: Production Scheduling*

**Spacer**

A type of round part produced.

**Spaghetti Chart**

A chart that shows the movement of an object around a space. Spaghetti Charts are often used to show the movement of a part around a work area.

*Refer to: Setup Reduction*

**Spare Engine Requirement**

The number of spare engines needed by a customer based on discussions with Pratt & Whitney.

**Spare Part**

Those modules, components, and elements that are planned to be used without modification to replace an original part during the performance of maintenance.

**Spare Parts Fill Rate**

An indication of an operating unit's ability to satisfy customer spare parts orders each month in full (i.e., all items on an order must be shipped before the order is considered delivered).

*Refer to: Supply Chain Principles*

**Spare Parts Margin**

Amount of profit P&W makes when selling a spare part.

**Spare Parts Pricing**

Spare parts pricing is a balance between maximizing program revenue and risking reduced market share due to higher airline maintenance costs. As opposed to engine sales, spare parts margins are typically very healthy, though revenues come years after program inception.

**Spares Master Schedule**

The anticipated build schedule for spare parts based on a forecast of customer demand.

*Refer to: Production Scheduling*

**Special Support Programs**

Allowances offered to a specific operator to address a problem unique to that operator's fleet.

**Specific Fuel Consumption (SFC)**

The fuel that the engine must burn per hour to generate any one pound of thrust.

**Specification**

1. The engineering requirement for judging acceptability of a particular characteristic.
2. The document that describes the requirements with which the product or service has to conform. Critical conditions to a process or part including operating conditions such as temperature, pressure, speed, number and volume.

*Refer to: Mistake Proofing*

*Refer to: Process Capability*

*Refer to: Product Cost Management*

**Spectrographic Oil Analysis**

A method used to determine contaminants in any of the various oils used in Manufacturing. Samples are taken and sent for evaluation by responsible labs.

*Refer to: TPM*

**Speed**

A term relating to the machine movement of the part or tool.

*Refer to: Process Capability*

**Sporty**

A P&W term for competitive or aggressive. For example, prices are sporty when P&W offers their customers deals on engines.

**SR2**

Acronym for Scrap, Rework and Repair

**Stage 3 Requirement**

FAA regulation regarding maximum noise levels allowed.

**Stage-Gate Process**

A process used to monitor and modify programs from initial idea through product delivery. Stages are steps in the process. Gates are checkpoints at which the program is assessed and a go/no-go decision is made.

**Stages (Engines)**

Rotating parts of an engine such as the low and high compressor and turbine which are made up of a series of alternating rotating and stationary airfoils. The number of stages in a component is the number of sets of rotating and stationary blades.

**Standard Cost**

An average cost that is pre-determined per unit of production.

*Refer to: Inventory Management*

*Refer to: Product Cost Management*

**Standard Cost Accounting System**

Standard cost accounting establishes a cost value for each part at the beginning of the calendar year. These are used for inventory valuation, work measurement, etc. Variances between standard and actual costs are allocated to specific engine families.

**Standard Deviation**

A measure of the spread of the process output or the spread of a sampling statistic from the process. The standard deviation, or sigma, measures the dispersion of the data. The higher the standard deviation, the wider the variation is in the data.

*Refer to: Process Certification*

*Refer to: Process Capability*

**Standard Hours**

Used to measure shop volume. Calculated by multiplying the number of parts a part center needs, also known as the material requirements planning schedule (MRP schedule) by the time it takes to make those parts to arrive at the part center's labor at standard operating cost hours (LASOC hours). The LASOC hours are then multiplied by a realization rate to determine the standard hours.

**Standard Work**

- 1) For Manufacturing, an ACE initiative that defines the interaction of an operator and machine in producing a part. By standardizing processes and eliminating waste, Standard Work reduces SWIP and Lead Time and improves labor force productivity. It also provides the data required to identify constraints that prohibit a cell from meeting Tact Time.
- 2) For Engineering and Manufacturing Engineering, Standard Work refers to the standard process flows depicting specific activities that each employee should follow.

*Refer to: TPM*

*Refer to: Setup Reduction*

*Refer to: Standard Work*  
*Refer to: Supply Chain Principles*  
*Refer to: Process Capability*  
*Refer to: Standardization and Commonality*  
*Refer to: Inventory Management*  
*Refer to: Product Cost Management*  
*Refer to: Delivery Performance*  
*Refer to: Market Feedback Analysis*

#### **Standard Work Combination Sheet**

A Standard Work tool that details the tasks performed by an operator during one work sequence.

*Refer to: Setup Reduction*  
*Refer to: Standard Work*

#### **Standard Work Group**

A group of tasks that are performed by an operator during one work cycle.

*Refer to: Standard Work*

#### **Standard Work in Process (SWIP)**

The minimum amount of inventory required to sustain continuous flow at Tact Time.

*Refer to: Standard Work*  
*Refer to: Manufacturing Principles*  
*Refer to: ACE Overview*

#### **Standard Work Sheet**

A Standard Work Tool that illustrates location of equipment in a cell, the path of an operator during one work sequence, and the flow of parts through the cell. The Standard Work Sheet also shows the location of safety precautions and inspection points and the SWIP for the cell.

*Refer to: Standard Work*

#### **Standardization**

- 1) The process of designing and/or altering products, parts, processes, and procedures to establish and use standard specifications for them.
- 2) Reduction of total numbers of parts, materials, and components.

*Refer to: Supply Chain Principles*  
*Refer to: Standardization and Commonality*  
*Refer to: ACE Overview*

#### **Star Chart**

A tool used to illustrate the affect that certain attribute changes have on a product. It is used to pinpoint the attributes which are most deficient.

#### **Statement of Work (SOW)**

A document that identifies the effort that a contractor must perform to fulfill the requirements of a contract.

#### **Statistical Process Control (SPC)**

Monitoring a process by analyzing outputs using statistical techniques that provide feedback to be used in maintaining or improving process capability.

*Refer to: Process Certification*  
*Refer to: Delivery Performance*

#### **Stator**

Portion of the compressor or free turbine comprised of a non-rotating assembly of stationary vanes. As contrasted with a Rotor.

**STC**

Acronym for Supplemental Type Certificate. This certificate allows third parties to recommission a new plane to fit it with a newer engine.

**Steel Alloy**

A composite of steel and another metal.

**Stock Certificate**

A document transferring shares of ownership of a corporation. Stock certificates are issued as formal evidence of ownership shares.

**Stockout**

A lack of materials, components, or finished goods that are needed.

Refer to: Production Scheduling

**Stockout Cost**

The lost sale and/or backorder cost incurred as a result of a stockout.

Refer to: Inventory Management

**Stopper Gate**

A mistake proof device that prevents an operator from performing a task that should not be performed. This "gate" is a piece of metal/material that physically prevents an operator from placing a tool in the wrong place on a part.

Refer to: *Mistake Proofing*

**Straight-Line Depreciation**

A depreciation method that divides the depreciation expense of plant and equipment evenly throughout the useful life.

**Strategic Buffering**

The strategic placement of inventory in designated places along a production line. It is necessary because of the difference in run time between certain operations.

Refer to: *Supply Chain Principles*

Refer to: *Inventory Management*

**Strategic Business Planning**

Long range vision of market share and product development strategies.

**Strip**

Testing process to remove testing instrumentation from the engine.

**Stub-Time Engine**

An engine with hardware that is near the end of its useful life.

**Subsidiary**

A company that is wholly controlled by another company.

**Success Story**

A communication mechanism which shares the success of QCPC and any other ACE initiatives with others. To be considered a success story, a turnback project must have been closed out and mistake proofed so that the turnback will not reappear. A success story should describe the before and after situations both in words and in pictures. Refers to a QCPC turnback project that has been fixed and preventive action put in place to prevent it from happening again. Success stories are a key component of QCPC and should be shared across cells.

Refer to: *QCPC*

**Sum-of-the-Years-Digit**

An accelerated depreciation method which is calculated through the summation of the years of a plant's and equipments' useful life.

**Summary Chart**

Refers to a QCPC summary chart. The summary chart consists of either a part flow map or a cell process flow map and corresponding "shoe boxes" for each of the processes/operations listed. The "shoe boxes" collect data for each process/operation on a weekly basis.

**Supplemental Type Certificate (STC)**

This certificate allows third parties to recommission a new plane to fit it with a newer engine.

**Supplier Direct Ship (SDS)**

A web-based application used to better facilitate a more effective supply chain integration process. SDS transfers data requirements (and changes to these requirements) for production via the Internet. Suppliers are only allowed to deliver specified parts on the defined shipment date to a specified area.

*Refer to: Setup Reduction*

*Refer to: Standardization and Commonality*

*Refer to: Inventory Management*

*Refer to: Product Cost Management*

*Refer to: Delivery Performance*

*Refer to: Production Scheduling*

**Supplier Report of Nonconformance**

A document used by suppliers to report a nonconformance. Nonconformance are parts or assemblies that are acceptable for their intended performance but are not completely in conformance to specifications.

*Refer to: Process Certification*

**Supply**

Items used in production or sale such as hammers, gloves, tape, and wrenches.

*Refer to: Product Cost Management*

**Supply Chain**

All companies and processes required to manufacture raw material into a product and deliver to the end customer. All of these companies are said to be in the same supply chain.

*Refer to: Product Cost Management*

**Supportability Index**

A measure of the efficiency of direct labor by comparing how much of the paid time was spent directly on the manufacture of a product. Calculated by dividing earned hours by paid hours.

**SVR**

Acronym for Shop Visit Rate. The number of shop visits for an engine in terms of a base period: usually per 1000 engine flight hours.

**SWCS**

Acronym for Standard Work Combination Sheet. A Standard Work tool that details the tasks performed by an operator during one work sequence.

**Sweep Process**

Process that P&W uses to submit cost and pricing information data to the government; under this process P&W continues to update cost and pricing data up to the time of completed negotiation.

**SWIP**

Acronym for Standard Work-In-Process. The minimum amount of inventory required to sustain continuous flow at Tact Time.

*Refer to: Standard Work*

### **Symmetry**

Symmetry means there is a match in shape, size, and the relative position of parts on opposite sides of a dividing line or axis. Opposite sides are or seem to be identical.

*Refer to: Mistake Proofing*

### **Symptom**

A condition where evidence of a problem is manifested.

### **System Level Procedure**

An official, outlined procedure for almost every subject at Pratt & Whitney (e.g., Design Control, Contract Review, Passport Review Process, Control of Nonconforming Product, Corrective Action Requirements, etc.).

*Refer to: Root Cause Analysis*

## **- T -**

### **T/T**

Acronym for Tact Time. The rate of production required to meet customer demand over a specific period of time. Tact time is usually measured in seconds or minutes per piece, depending upon the part volume of the cell.

*Refer to: Standard Work*

### **T3**

The temperature at station 3 (high compressor exit) inside the engine.

### **T4**

The temperature at station 4 (combustor exit) inside the engine.

### **T4.5**

The temperature at station 4.5 (low turbine inlet) inside the engine.

### **Tagout**

see Safety Lockout/Tagout.

### **Taguchi's Design of Experiments**

A root cause analysis tool using statistical methods. DOE addresses three types of applications at Pratt & Whitney: problem solving, process improvements, product and process design.

*Refer to: Root Cause Analysis*

### **Tact Time**

The rate of production required to meet customer demand over a specific period of time. Tact time is usually measured in seconds or minutes per piece, depending upon the part volume of the cell.

Refer to: Mistake Proofing

Refer to: Setup Reduction

Refer to: Standard Work

Refer to: Manufacturing Principles

Refer to: Supply Chain Principles

Refer to: Delivery Performance

Refer to: Production Scheduling

Refer to: ACE Overview

**TALON**

Acronym for Technology for Affordable Low Nox. Engine combustor developed for reduced emissions of oxides of nitrogen - less polluting.

**TAM Gage**

Tooling Aerospace Manufacturing Gage. Generic tooling drawn and fabricated in-house for a specific or temporary requirement.

**Tangible Asset**

An asset that is physical in nature, and can be touched.

**Target Cost**

The development and production cost which a product cannot exceed if the customer is to be satisfied with the value of the product while the manufacturer obtains an acceptable return on its investment.

*Refer to: Product Cost Management*

**Target Price**

A price established by a business based on market demand.

**Target Volume**

A level of production established by a business, based on the amount they can produce, and market demand.

**TAROC**

Acronym for Total Airplane Related Operating Costs.

**Tax**

A required payment of a percentage of income, property value, etc. that is paid to the government by individuals and businesses.

**Tax Credit**

Direct reductions in a tax liability after the tax expense has been calculated.

**Tax Rate**

The percentage used to calculate amounts owed in taxes.

**Taxable Income**

Income before taxes that is reported to the taxing authority (e.g., the Internal Revenue Service).

**TBC**

Acronym for Thermal Barrier Coating.

**Tear Down**

The disassembly of an engine.

**Technology Readiness**

Occurs when analysis, design, development, demonstration and manufacturing process of a particular technology reaches a level ensuring a high probability of technical success.

**Template Gage**

A shape comparator resembling the part profile.

**Temporary Differences**

The difference between pre-tax book income and taxable income that results when the same revenue or expense is recorded, but is reported in one period for tax purposes and another for shareholder reporting purposes. These are also referred to as timing differences.

**Terminal Value**

The future value of cash inflows generated by a business beyond the last year of a cash flow model.

**Termination Cost**

Costs that the government must pay if it decides to terminate a program that is in progress. These costs help a company recoup the money it has expended on an abandoned program.

**Test**

The name for the manufacturing department where the product is tested.

Refer to: Delivery Performance

**Test Engine**

An engine in its development phase.

Refer to: Standardization and Commonality

**Then-Year Dollars**

Cash flows over multiple years that take inflation into account. Sometimes referred to as "nominal dollars." Then-Year Dollars = Real Dollars + Inflationary Premium.

**Then-Year Dollars**

Technique of measuring cash flow in regards to how much money it is worth in present day terms.

**Theoretical Manpower**

See Ideal Manpower

Refer to: *Standard Work*

**Theoretical WIP**

The minimum amount of inventory required to sustain continuous flow.

Refer to: *Inventory Management*

**Theory of Constraints**

A production planning theory that accepts the existence of unbalanced production. Some resources have lower capabilities to produce outputs than others. This theory utilizes minimal buffer stock to smooth production.

Refer to: *Inventory Management*

**Throttle-Push**

To increase the power level (thrust output) of the engine by pushing the throttle.

**Throughput**

The actual amount of product that is completed in a given timeframe. The total volume of production through a facility.

Refer to: *TPM*

Refer to: *QCPC*

Refer to: *Process Certification*

Refer to: *Setup Reduction*

Refer to: *Root Cause Analysis*

Refer to: *Inventory Management*

Refer to: *Production Scheduling*

**Thrust**

A measurement of the outward force exerted by a jet engine, which provides the energy for forward motion and lift.

**Thrust Specific Fuel Consumption (TSFC)**

A measurement of fuel consumed over a fixed amount of time running a jet engine operating at a particular thrust level. This term is commonly used in warranty for aircraft performance guarantees. These guarantees usually state that

an aircraft equipped with Pratt & Whitney engines will have a competitive TSFC level to similar aircraft powered by GE or Rolls Royce engines.

#### **Time Observation Sheet**

A Standard Work tool used to record the amount of time it takes an experienced operator to complete assigned element tasks. The Time Observation Sheet provides information used in the Percent Load Chart and Standard Work Combination Sheet.

*Refer to: Standard Work*

#### **Time-Value of Money**

The fact that a dollar today is worth more than a dollar tomorrow.

#### **Timing Differences**

The difference between pre-tax book income and taxable income that results when the same revenue or expense is recorded, but is reported in one period for tax purposes and another for shareholder reporting purposes. (Also referred to as temporary differences).

#### **TINA**

Acronym for Truth in Negotiations Act. Act passed by congress in 1962 to require the standard disclosure of costs by all contractors submitting cost or price data to the government. P&W must adhere to this legislation.

#### **TMC**

Acronym for total maintenance cost.

#### **TOC**

Acronym for Top of Climb. The portion of the flight where the aircraft stops climbing and begins to cruise at constant altitude. This is an important condition that is used to determine engine thrust requirements.

#### **TOGW**

Acronym for Take-Off Gross Weight. The total weight of an airplane at take-off.

#### **Tolerance**

The amount of variation allowed from standard.

*Refer to: Process Certification*

*Refer to: Supply Chain Principles*

*Refer to: Process Capability*

#### **Tooling**

The process of providing a factory with machinery and fixtures in preparation for production. It also refers to any working part of a power-driven machine.

*Refer to: Mistake Proofing*

*Refer to: Supply Chain Principles*

#### **Tooling Aerospace Manufacturing Gage**

Generic tooling drawn and fabricated in-house for a specific or temporary requirement. Also known as a TAM gage.

#### **Tooling Credit**

The type of credit offered to a customer to reduce the cost of an initial tooling or spare parts purchase.

#### **Top of Climb (TOC)**

The portion of the flight where the aircraft stops climbing and begins to cruise at constant altitude. This is an important condition that is used to determine engine thrust requirements.

#### **Top Ten Failures**

A document that lists the ten most common failures associated with a piece of equipment. This document summarizes the failure and the solution to the failure, and indicates the frequency of each failure relative to all failures.

*Refer to: TPM*

## **TOS**

Acronym for Turbine Overhaul Services. A division of P&W responsible for the servicing of turbines.

## **Total Percent**

On the P-Q Analysis Chart, the total percent is the percent that the quantity of that part represents of all of the parts listed. If three parts were listed and the quantities for the first, second, and third parts were 25, 20, and 5 respectively, then the total percent for the first part would equal  $25/(25+20+5) = 50\%$ . The total percent for the second part would equal  $20/(25+20+5) = 40\%$ .

## **Total Column**

The sum of turnback ratios that were observed for a week. For example, if the turnback ratio for WELD was 10%, for TURN was 10% and MILL was 10%, the TOTAL COLUMN would say 30%.

## **Total Cost Input**

The total accumulation of labor, material, and operating expenses assigned to programs.

## **Total Cost of Ownership**

The sum of the costs a customer incurs to own and operate an engine. These include the costs of overhaul and repair, spare parts, and fuel.

*Refer to: Supply Chain Principles*

## **Total Cost of Poor Quality**

Poor quality causes defects, scrap, rework, late deliveries, scheduling replacements, expediting orders, lower demand, customers wanting to pay less, warranty costs of returned products, and product liability costs.

*Refer to: Manufacturing Principles*

*Refer to: Root Cause Analysis*

## **Total Cost Per Standard Hour**

The sum of fixed and variable costs measured against standard hours.

## **Total Process Variability**

In Process Certification, Total Process Variability is the sum total of the contributions of all Process Inputs transmitted to a Key Process Output (KPO). The Total Variability of the KPO expressed as six times the standard deviation of the KPO data is used to characterize the sum total of these process inputs as Total Process Variability.

*Refer to: Process Certification*

## **Total Productive Maintenance**

A series of methods to ensure that every machine in a production process is always able to perform its required tasks so that production is never interrupted.

*Refer to: TPM*

*Refer to: QCPC*

*Refer to: Process Certification*

*Refer to: Setup Reduction*

*Refer to: Manufacturing Principles*

*Refer to: Inventory Management*

*Refer to: Product Cost Management*

*Refer to: Delivery Performance*

## **Total Recordable Incidents**

The total number of injuries and other environment, health, and safety related problems that have occurred in a manufacturing unit over the course of a month.

## **Touch Labor**

Direct labor. The labor that actually "touches" or adds value to the product.

**TPM**

Acronym for Total Productive Maintenance. A series of methods to ensure that every machine in a production process is always able to perform its required tasks so that production is never interrupted.

*Refer to: TPM*

**TPM Event**

An intensive workshop during which a team of employees works together to gather data, clean, inspect, and repair a piece of equipment. TPM events are often used to train employees in TPM concepts and procedures.

*Refer to: TPM*

*Refer to: Process Certification*

*Refer to: Production Scheduling*

**Trade Payable**

The amount due to a supplier for goods and services. Generally, trade payables at Pratt & Whitney are obligations that are due to suppliers within 30 days. Also referred to as accounts payable.

**Trademark**

Identification, such as a name, sign, logo, or an emblem, of a product or service.

**Training Credit**

A type of credit offered to a customer to assist in the cost of training airline employees in the operation/maintenance of Pratt & Whitney products.

**Transaction**

Any event that affects a business' financial position and is reflected in the business' financial statements.

**Transition Strategy**

A plan to move from the Product Definition Phase to the Design/Develop/Certification phase in the program lifecycle. This plan addresses two key issues: timing and technological considerations.

**Tree Diagram**

One of the seven new tools for management, it continually identifies ideas in greater and greater detail. At first the question is "What is the major component of this idea"? Then it usually shifts to "How will this idea be accomplished"? The tree diagram goes beyond the first two charts by assisting the thought process in identifying items, which were missed in the brainstorming process for the affinity chart and the interrelationship diagram.

**Trend**

A gradual change in a process or output that varies from a relatively constant average.

**Trend Analysis**

The process of comparing variances from one time period to another to identify trends that are either negatively or positively affecting the business.

**Trend Chart**

Used to graphically display the total number of turnbacks area experiences within a week.

*Refer to: QCPC*

**Truth In Negotiations Act (TINA)**

Act passed by congress in 1962 to require the standard disclosure of costs by all contractors submitting cost or price data to the government. P&W must adhere to this legislation.

**Trystorm**

Process within mistake proofing where a team tests the effectiveness of their mistake proof device / process ideas.

*Refer to: Mistake Proofing*

**TSFC**

Acronym for Thrust Specific Fuel Consumption. A measurement of fuel consumed over a fixed amount of time running a jet engine operating at a particular thrust level. This term is commonly used in warranty for aircraft performance guarantees. These guarantees usually state that an aircraft equipped with Pratt & Whitney engines will have a competitive TSFC level to similar aircraft powered by GE or Rolls Royce engines.

**Turbine Exhaust Case**

The exhaust case at the rear of the engine.

**Turnaround Time**

The measured period between receipt of material from customer and shipment back to customer. It represents the time it takes to repair a part or overhaul an engine.

*Refer to: Production Scheduling*

**Turnback**

Any delay or defect in a process, which provides an opportunity for improvement. Examples are quality problems, dull or uncalibrated tools, missing details, or incorrect instructions.

*Refer to: 6S/Visual Factory*

*Refer to: TPM*

*Refer to: QCPC*

*Refer to: Process Certification*

*Refer to: Manufacturing Principles*

*Refer to: Inventory Management*

*Refer to: Delivery Performance*

*Refer to: ACE Overview*

**Turnback (Project) List**

Refers to a turnback project list that is generated from QCPC tickets. Team members review the projects at a QCPC weekly meeting and determine what actions they will take to address the issues.

**Turnback Baseline**

Initial turnback ratio for a team based on 2 to 4 weeks worth of data; this is the value the team uses as a benchmark when aiming to decrease turnback numbers by 50%, 100%, etc.

*Refer to: QCPC*

**Turnback Ratio**

Ratio of number of turnbacks per process step to the number of parts that passed through the process (including scrap). In mathematical terms:  $\text{turnbacks at process} / \text{pieces into process (including scrap)}$ .

*Refer to: QCPC*

*Refer to: Process Certification*

**Turnback Ticket**

Physical piece of paper used to collect turnback information.

*Refer to: QCPC*

**Turnback Trend Chart**

A chart that displays the turnback ratio over time so that trends may be observed.

*Refer to: QCPC*

**Turning**

A lathe material removal process.

**TY\$M**

Acronym for Total Year's Dollars in Millions. It's an abbreviation for the total amount spent for a task in a year.

## - U -

### **U.S. Federal Income Tax**

A national tax levied on U.S. businesses' taxable income.

### **UER**

Acronym for Unscheduled Engine Removal. The unscheduled, unanticipated removal of an engine that is considered incapable of continued operation before its next scheduled overhaul. Typical engine removals are planned.

### **Ultrasonic Analysis**

A technique used to identify equipment problems by measuring the sound waves emitted from a piece of equipment. Irregular readings indicate the lack of proper function.

Refer to: TPM

### **UM**

Acronym for User's Manual.

### **Unfavorable Variance**

The difference between actual business results and past or expected business results that indicates performance lower than expected.

### **Unit Cost**

Also referred to as Engine Unit Cost. The cost to produce one engine.

### **United Technologies Corporation (UTC)**

The parent company of Pratt & Whitney, Carrier, Hamilton Standard, Otis, Sikorsky, and the United Technologies Research Center.

*Refer to: Manufacturing Principles*

*Refer to: Standardization and Commonality*

*Refer to: Root Cause Analysis*

### **Universal Fixture**

A fixture that can be used on all machines. This allows for only detailed changes to be made to the fixture during a setup.

### **Unk-Unk**

Acronym for **Unknown-unknowns**. Uncertainties which cannot be predicted to happen but may occur.

### **Unplanned Downtime**

Occurs when a machine is unavailable to run parts for an unforeseen reason. Breakdowns of all sorts and emergency stops result in unplanned downtime.

*Refer to: TPM*

### **Unscheduled Engine Removal (UER)**

The unscheduled, unanticipated removal of an engine that is considered incapable of continued operation before its next scheduled overhaul. Typical engine removals are planned.

*Refer to: Market Feedback Analysis*

### **Upgrade**

Certain products created to improve fuel efficiency, reliability, noise reduction and other related issues. Examples include: JT8D Hush Kits, PW4000 Phase III Kits, and PW 2000 Combustion Exit Temperature Kits (CET).

**Upper Control Limit (UCL)**

The Upper Control Limit is the upper statistical limit above which.

*Refer to: Process Certification*

**Upper Specification Limit**

The Upper Specification Limit is typically equal to nominal + tolerance. It can be found in the technical requirements.

*Refer to: Process Certification*

**Upstream Characteristic**

A part characteristic that is cut in a process prior to the one in question.

*Refer to: Process Certification*

**Upstream Process**

A process that occurs before the current operation.

*Refer to: Process Certification*

*Refer to: Delivery Performance*

**Use of Cash**

When cash is paid out of a business or becomes unavailable for other business activities.

**Useful Life**

The estimated time period, over which plant and equipment will be used, starting with when it is placed in service.

**Utility Person**

Also known as a water spider. A person that helps keep the cell running continually by stepping in for operators when they need a break and by keeping the cell organized. This person will also fill in for absentees.

*Refer to: Standard Work*

**Utilization**

Equals the amount of time a machine is scheduled to run (Available Time - Planned Downtime) divided by the amount of time a piece of equipment is Available to run.

*Refer to: TPM*

**Utilization Requirement**

Utilization refers to the frequency with which a customer uses an engine. Therefore, utilization requirements are the customer's demands for the use of an engine.

**- V -****Value Analysis**

Application of value management focused on understanding the functional requirements of any new or existing process prior to designing a solution. Value analysis is a non-product oriented methodology which is concerned with procedural and process-type work.

**Value Chain**

All of the organizations involved in the specific activities required to design, order, and provide a specific product, from concept to launch, order to delivery, and raw materials into the hands of the customer.

*Refer to: Supply Chain Principles*

**Value Engineering**

Application of value management focused on understanding the function requirements of a new or existing product prior to designing a solution. This takes functions, systems, parts, processes, etc. apart to understand the function better and begin to explore where costs can be cut out. A product oriented method.

*Refer to: Product Cost Management*

### **Value Management**

Methodology used by Pratt & Whitney to analyze the functionality of new and existing products and processes. This analysis ensures the parts/processes can achieve the necessary functions and essential characteristics, as defined by the customer, in the most profitable manner. The methodology consists of two components: Value Engineering and Value Analysis. See Value Engineering and Value Analysis.

### **Value Methodology**

Methodology used by Pratt & Whitney to analyze the functionality of new and existing products and processes. This analysis ensures the parts/processes can achieve the necessary functions and essential characteristics, as defined by the customer, in the most profitable manner. The methodology consists of two components: Value Engineering and Value Analysis. See Value Engineering and Value Analysis.

*Refer to: Product Cost Management*

### **Value Stream**

The specific activities required to design, order, and provide a product, from concept to launch, order to delivery, and raw materials into the hands of the customer.

*Refer to: Supply Chain Principles*

### **Value-Added**

The actual increase in utility from the eyes of the customer as a part is transformed from raw material to finished inventory. It is the contribution made by an operation or plant to the final usefulness and value of a product as seen by the customer. The objective is to eliminate all non-value-added activities in producing a good or service.

*Refer to: Standard Work*

*Refer to: Product Cost Management*

### **Value-Added Cost**

A cost that cannot be eliminated from operations without affecting the value of the product or service.

### **Value-Added Work**

Some kind of processing; changing the shape or character of a product or assembly; add value to the final product.  
2. Work that really counts, productive work, work that directly contributed to the purpose and improvement of the organization.

*Refer to: Product Cost Management*

### **Variable Cost**

A cost that changes in direct proportion to a change in production volume.

*Refer to: Product Cost Management*

### **Variable Costs Per Unit**

Operating costs that vary directly with a change of one unit in the production volume, e.g., direct materials consumed.

*Refer to: Product Cost Management*

### **Variable Data**

Data that is readily quantifiable, such as dimensions or other measurements.

*Refer to: Process Certification*

*Refer to: Process Capability*

### **Variable Gaging**

Unlike attribute gaging, variable gaging devices produce a measurement such as a dimension or temperature using a scale such as inches, pounds, or degrees that characterize a part.

*Refer to: Process Certification*

**Variable Measured Characteristic**

Characteristics that are variable in nature, such as diameters or other dimensional data.  
*Refer to: Process Certification*

**Variable Part Characteristic**

A part characteristic that lends itself to being quantified, such as a diameter or thickness.  
*Refer to: Process Certification*

**Variance Analysis**

The process of comparing financial results against previous period results, expected results, and the market environment (or competitors' results).

**Variance from Plan Dollars (VPL\$)**

The dollars difference between actual sales revenue and planned sales revenue.

**Variance from Plan Percentage (VPL%)**

The percent difference between actual sales and planned sales. This is calculated by dividing planned sales by the variance from plan dollars.

**Velocity**

Synonymous with speed. The velocity of a part is the speed at which it moves through a cell.

**Vendor Assist**

Temporarily or permanently off-loading a production operation either internally or to a supplier.  
*Refer to: Product Cost Management*

**Venture**

A potential new business (e.g., new engine family, an acquisition of an overhaul and repair facility).

**Venture Analysis**

An economic analysis, which summarizes the financial cost and benefits of new business proposals, e.g., new engine models, joint ventures, etc.  
*Refer to: Passport System*

**Vertical Market**

Pratt & Whitney's customers, both the airliner and airframer.

**Vertical Turret Lathe**

A machine in which work is rotated about a horizontal axis and shaped by a fixed tool.

**Vibro Bowl (V-Bowl)**

A smoothing/deburring operation that removes minute surface irregularities. Parts are placed in a large, vibrating bowl containing tumbling media. The contact between the parts and tumbling media removes the irregularities.

**Village-Processing Factory**

A factory setup in which the processing is organized in villages performing similar operations, rather than cells in which a variety of operations are performed on the same part.  
*Refer to: Standard Work*

**Visual Control**

A control that visually signals a process to begin, end or change because a problem has occurred. It is a Japanese production method in which work is managed by data display and visible indicators of procedures, processes, and results. See Kanban.  
*Refer to: 6S/Visual Factory*

**Visual Factory**

A state when anyone can walk into a workplace and visually understand its current situation. One should immediately be able to understand the workplace organization, the schedule condition, the work process, how environment, health, and safety practices are upheld and any abnormalities. Also known as a Visual Workplace.

*Refer to: 6S/Visual Factory*

*Refer to: QCPC*

**Visual Workplace**

A state when anyone can walk into a workplace and visually understand its current situation. One should immediately be able to understand the workplace organization, the schedule condition, the work process, how environment, health, and safety practices are upheld and any abnormalities. Also known as a Visual Factory.

*Refer to: 6S/Visual Factory*

**VMC**

Acronym for Vertical Milling Center.

**Volume**

Number of items.

**Volume Discount**

A discount used to encourage customers to buy more products, through which the selling price is reduced, or a percentage of sales are awarded once a customer orders above a specific level of volume.

*Refer to: Manufacturing Principles*

*Refer to: Supply Chain Principles*

**VPL\$**

Acronym for Variance from Plan Dollars. The dollars difference between actual sales revenue and planned sales revenue.

**VPL%**

Acronym for Variance from Plan Percentage. The percent difference between actual sales and planned sales. This is calculated by dividing planned sales by the variance from plan dollars.

**VTL**

Vertical Turret Lathe. A machine in which work is rotated about a horizontal axis and shaped by a fixed tool.

**- W -****WACC**

Acronym for Weighted Average Cost of Capital. A weighted average of the rate at which a company can borrow money and the rate of return required by the company's shareholders.

**Wait**

Time when operators or resources are not producing product because of setup, maintenance, lack of material, lack of tooling, or not being scheduled.

**Walk Time**

Time spent walking from one operation to another.

*Refer to: Standard Work*

**Warranty**

An assurance that a product will perform its intended function for a stated period of time or be repaired or replaced by P&W or other selling company. At P&W, the terms of the warranty are part of the negotiation process, and in the case of military engines and spare parts, a separate purchased warranty is available.

*Refer to: Production Scheduling*

**Warranty Cost**

Charges to the profit and loss statement for all warranty related costs. Warranty cost has two components: an accrual based on a percentage of sales and warranty spending expensed as cash paid out.

*Refer to: Process Certification*

*Refer to: Root Cause Analysis*

**Warranty Reserve**

A reserve which is established to recognize the probable future return, repair, or replacement of products, which fail to operate properly, during the warranty period.

**Waste**

Any human activity which absorbs resources but creates no value. Examples are mistakes, which require rectification, production of unwanted items, or the transport of goods from one place to another without any purpose. Also known as **muda** in Japanese.

*Refer to: Standard Work*

*Refer to: Manufacturing Principles*

*Refer to: Supply Chain Principles*

*Refer to: ACE Overview*

**Watchlist**

A worksheet used to track and document activities and actions resulting from the risk analysis process.

**Water Spider**

An operator that is free to help other operators that need temporary assistance. Water Spiders are not assigned to specific machines or Standard Work Groups and are cross-trained to perform many operations. Water Spiders help maintain continuous flow.

**Waterfall Chart**

Also known as a Waterline Chart. A chart which establishes the tasks to be performed at any given level of spending. The chart displays the category of effort, the tasks within each category, and the funds allocated to each task.

**Waterline Chart**

Also known as a Waterfall Chart. A chart which establishes the tasks to be performed at any given level of spending. The chart displays the category of effort, the tasks within each category, and the funds allocated to each task.

**Weigh / Count**

A process usually performed by a Packaging department to count and weigh the parts and packages for delivery purposes.

**Weighted Average Cost Of Capital (WACC)**

A weighted average of the rate at which a company can borrow money and the rate of return required by the company's shareholders.

**What-If Analysis**

A risk-free model that is used to test different assumptions of a business case.

**WIP**

Acronym for Work In Process. Product in various stages of completion. It includes raw material that has been released for initial processing, and completely processed material awaiting final inspection and acceptance as finished product.

Refer to: Inventory Management

**Work Flows and Employees**

Roots representing flows of work necessary to satisfy global aerospace needs. Having employees properly aligned to support the work flows creates a strong network, which will support business growth and development.

**Work in Process (WIP)**

Product in various stages of completion. It includes raw material that has been released for initial processing, and completely processed material awaiting final inspection and acceptance as finished product.

*Refer to: Setup Reduction*

*Refer to: Standard Work*

*Refer to: Inventory Management*

*Refer to: Product Cost Management*

*Refer to: Delivery Performance*

*Refer to: Production Scheduling*

**Work Instructions**

Operator instructions detailing a manufacturing process.

*Refer to: 6S/Visual Factory*

*Refer to: QCPC*

*Refer to: Process Certification*

*Refer to: Mistake Proofing*

*Refer to: Standardization and Commonality*

*Refer to: Root Cause Analysis*

**Work Sequence**

The tasks an operator performs in one work cycle.

*Refer to: Standard Work*

*Refer to: ACE Overview*

**Working Capital**

Only those assets and liabilities that are directly required to generate a sale (such as inventory and accounts payable) or result from a sale (such as accounts receivable and advances).

**Working Capital**

Only those assets and liabilities that are directly required to generate a sale (such as inventory and accounts payable) or result from a sale (such as accounts receivable and advances).

**Working Capital Turnover**

A ratio that indicates the number of times a business' average working capital can be divided into its net sales for one year. This statistic is used to evaluate the management of working capital. It is calculated as: Annual (ized) Sales / Average Working Capital. A higher turnover indicates efficient management of working capital.

**Working Together Team (WTT)**

A customer satisfaction program between the airframer, the airlines, and P&W where customers can discuss their technical support issues. Also known as Program Management Review (PMR).

**Workstop**

For engines, a metric tracking when the assembly floor is shut down due to missing parts. For spares, a customer-driven metric that determines when a customer cannot use an engine due to a missing spare part. Two types of workstops exist: overdue workstops that are caused by P&W and non-overdue workstops that occur when customers mis-communicate or mis-calculate their requirements.

*Refer to: 6S/Visual Factory*  
*Refer to: Standardization and Commonality*  
*Refer to: Delivery Performance*  
*Refer to: Production Scheduling*

### **Workyear**

One resource working full time for one year.

### **World Class**

Standards set in the manufacturing industry. Considered the ultimate or best possible level of performance.

*Refer to: TPM*  
*Refer to: Setup Reduction*  
*Refer to: Standard Work*  
*Refer to: Process Capability*  
*Refer to: Standardization and Commonality*  
*Refer to: Inventory Management*  
*Refer to: Product Cost Management*  
*Refer to: Delivery Performance*  
*Refer to: Production Scheduling*  
*Refer to: ACE Overview*  
*Refer to: Passport System*  
*Refer to: Market Feedback Analysis*

### **Worst of the Worst (WOWs)**

Outputs of a process that are consistently poor, have high variation, and have been historically difficult to control.

*Refer to: Process Certification*

### **WTT**

Acronym for Working Together Team. A customer satisfaction program between the airframer, the airlines, and P&W where customers can discuss their technical support issues. Also known as Program Management Review (PMR).

## **- Y -**

### **Yield**

The output of a process.

*Refer to: Process Certification*

## **- Z -**

### **Zero-based Budgeting**

Same as Requirements Based Budgeting. A method of constructing budgets that requires management to prioritize each task. Requirements-based budgets begin with the basic premise that the budget for the following year is zero. To receive funding, each task, old or new, must be justified in terms of its continued cost and benefit.

### **Zero-out**

A term expressing the adjustment towards zero for a gage.

