

Plattco Corp. CDSC Articles: Glossary of Terms

| <u>Term</u> | <u>Definition</u> |
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| Accountable | Responsible for executing an expected Process ; an explanation of reported variances and some given authority to reduce variances through corrective action. |
| ADCR (Average Days to Customer Receipt) | The time period between an order leaving Fluidmaster's shipping dock and physical receipt at the customer. |
| ADSC (Average Days to Ship Complete) | Average Days to Ship Complete; the time between order entry at Fluidmaster and shipment to the customer. ADSC does not include ADCR. Future dated orders use an artificial entry date that is a number of days prior to the requested ship date equal to the number of expected days in the ADSC process to avoid contaminating the end of the month ADSC calculation. |
| Assemble to Order (ATO) | A final assembly strategy that creates finished goods in response to customer orders from available, previously produced / purchased parts and subassemblies |
| ATO System | Automated Final Assembly Scheduling System. Creates Daily Final Assembly Schedule, |
| Assembly Lot Sizing | The mathematical calculation of feasible assembly lot sizes of each SKU. Feasibility includes the available capacity of the assembly line and the throughput/flexibility of the line. Estimated Line throughput time is used to assure that calculated lot sizes are greater than calculated reorders points. |
| ATO Build | A daily final assembly performance measure; percent of the Final Assemble Schedule reported as produced; less than 100% build indicates assembly problems or material handling errors. ATO Build multiplied by Percent of Schedule Not Impacted by Part Shortages (from the Capacity Management Report) equals Effective Build . |

| Term | Definition |
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| ATO Line Inventory | Purchased or manufactured parts stored around individual assembly lines and replenished nightly to support daily final assembly activities. These parts are stored in quantities initially determined by the monthly Master Production Schedule (Planned Quantities), may be Autoadjusted by the ATO System to Maximum Quantities or manually adjusted with material handler inputs (Stated Quantity) to reflect part shortages. These various quantities are used by the ATO System during the nightly scheduling process to assure that the resultant ATO Assembly Schedule is feasible with respect to component part availability. These quantities are not perpetual inventory balances but are included in the Prime Inventory balance. |
| Available Backlog | Customer orders that are available for final assembly scheduling; includes all past due and Current Demand orders |
| Available Capacity | The sum total of run, setup, or maintenance and downtime at a work center. |
| Backlog | Customer orders that have not been allocated to finished goods and are in the Order Entry system |
| Bottleneck Lot Sizing | A mathematical calculation of assembly / workcenter lot sizes based upon demonstrated run and setup times, planned capacity and chosen minimum / maximum lot size rules that ensure feasible lot sizes within calculated throughput times |
| Bottleneck States | The possible operational conditions of a bottleneck workcenter; run parts/product, being setup, receiving maintenance or idle. Bottleneck workcenters should seldom be idle. |
| Bottleneck Workcenter | An assembly station or manufacturing workcenter that dictates assembly / manufacturing lot sizes due to its relatively inflexible response to product / part changeover; a throughput constraint |

| Term | Definition |
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| Build Ahead Inventory | Finished Good inventory built prior to the receipt of customer orders for the purpose of stabilizing manufacturing capacity requirements and staffing levels; generally used to offset extreme demand seasonality or large, known future customer orders that require greater than the available capacity in the factory in the month they are received. |
| Capacity requirements planning (CRP) | A mathematical feasibility check during the Master Scheduling process of a selected department or group of departments' ability to produce a specific Master Production Schedule. A comparison of the capacity required by the MPS to the availability of capacity in the department, usually calculated in hours. |
| Confidence Interval | A statistical method for estimating the observed value of a selected variable at any point in time with a chosen level of accuracy or probability. A range of numbers expressed as an upper and lower limits that have a given probability of containing the observed value of the variable. The estimated Replenishment Lead Time if each ATO assembly line uses the calculated upper limit of the Queue Time . The probability of the actual queue of work at each assembly time is a function of the confidence interval chosen during assembly lot sizing. Observed queues above the upper limit signal the need for additional assembly time to reduce the queue below the upper limit to avoid product shortages. |
| Continuous Improvement Process | A management process that uses historic variance information to initiate structured analysis and corrective action. As variances are eliminated planning and system parameters are adjusted to reflect new process capabilities. Variances from new capabilities are continuously captured and used to fuel ongoing improvements. |
| Current Demand | The youngest customer order group in Available Backlog; includes orders due today and some number of selected number of days into the future; used by the ATO Scheduling system along with Past Due Orders to create Available Backlog. |

| Term | Definition |
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| Customer | Person, company, workcenter or department for which a product, output or service is produced or performed. Customers may be internal or external to Fluidmaster. |
| Deliverables | Physical items or events produced in response to project Work Plan Activities that are reviewable by project management and when finished officially complete the Activity |
| Delivery Process | The last subprocess in the Order-to-Delivery Process. |
| Demand | Customer order with specific SKU(s) and specific time request |
| Dependent Variable | A variable whose value is a function of other variables and mathematical relationships. Something that can not be directly managed or affected. Example: Assuming your weight is only dependent on the amount of food you eat and the amount of exercise or calories burned. Your weight can only be indirectly controlled. You can only directly control independent variables: food intake and caloric output. |
| Effective Build | Daily assembly line customer service measure. Product of % of the Available Backlog up to the daily capacity of the line that appeared on the Final Assembly Schedule and % of Final Assembly Schedule completed. |
| Feasibility | The characteristic of a plan, schedule or activity that assures the capability of the person or process to achieve the expected outcome based on demonstrated, historical performance, of formal checking of available capacity or inventory. e.g. the Final Assembly Schedule is feasible with respect to available assembly capacity and Prime Parts. |
| Final Assembly | The last value added step in the manufacturing process. The process of creating a shippable item from previously manufacturer purchased components or subassemblies. |
| Final Assembly Schedule (FAS) | The daily report of planned final assembly activity produced by the ATO System. |
| Flexible Manufacturing and Scheduling | |

| Term | Definition |
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| Forecast | A formal, stated prediction of future, external customer demand; used to prepare a Master Production Schedule . |
| Forecast Error | The difference between demand and forecast for a given period |
| Forecast Bias | Average forecast error. Sum of period error divided by number of forecasted periods. |
| Forecastability Factor | std. deviation forecast error + Avg. forecast error/avg. period demand- gives relative degree forecast confidence level. High forecastability factor indicates SKU candidate for build off season build. Example: SKU 1 SD =100 avg. error=25 avg. period dem=12, FF=10x25/12 = 21, SKU 2 SD = 150 avg. error = 0 avg. period = 12, FF=150x0/12 = 0. Therefore SKU 1 lower confidence of forecastability over a 12 month period. |
| Future Order | The portion of backlog that is not available for Final Assembly Scheduling |
| Generous Listening | A communication skill that involves combining a person's spoken and nonverbally communicated questions or statements within the context of a conversation and the speaker's mindset / background to more fully understand what is being communicated. This skill also involves recognizing and communicating your understanding of the speaker's emotion. |
| Independent Variable | A variable whose value is independent of the value of any other variable. |
| Issue | In Project Management, a problem or obstacle you can't solve on your own. Issues and suggested solutions should be communicated to Steering Committee members for resolution. |
| Kanban | Literally translated as "signal"; a Kanban system is an inventory ordering and management approach that signals replenishment ordering/manufacturing based on established reorder points; syn. Pull System |

| Term | Definition |
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| Kanban Board | A manual scheduling display and mechanism at each Work Center that holds and displays Kanban Cards in a fixed sequence for the purpose of controlling production and identifying LATE Cards. |
| Kanban Card | A card that signals and approve the production of a single part; hung on a Kanban Board in response to ROP triggers reported on the Kanban Driver Report. |
| Kanban Driver Report | A daily report that lists the Prime Inventory items that have hit their Reorder Points and need to be replenished; this report casues Kanban Cards to be hung on their respective Kanban Board. |
| Lot Size | The quantity that a manufactured part is produced in. Lot sizes are calculated during the production planning and Master Scheduling process where they are checked for economic viability and manufacturing feasibility at Bottleneck workcenters. May be called reorder quantity when referring to purchased parts. |
| Master Production Planning | Monthly planning process that creates and maintains an 12-18 month planned production horizon detailing the quantity of each SKU needed to meet customer demand and maintain desired inventory levels while staying within stated capacity limits. |
| Master Scheduling | Monthly planning process that creates and maintains an 12-18 month planned production horizon detailing the quantity of each SKU needed to meet customer demand and maintain desired inventory levels while staying within stated capacity limits. |
| Maximum ATO Component Quantity | The maximum quantity of an ATO line component that can be available each day to meet expected customer demand without adding or changing the established container; this quantity is a function of the MPS and the Planned Queue size. |
| Operational Flexibility | The time needed to replace a consumed part or fill a customer order. Measured by throughput time . |

| Term | Definition |
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| Order | An official transaction in a production planning and control system; may refer to an external or internal customer request for parts or product. |
| Order Entry Process | A series of activities that process external customer orders and makes them available to the Shipping Process: Entry and Credit |
| Order to Delivery (O-T-D) Process | A series of subprocesses and activities that handle the physical and logic movement of customer orders from order entry through physical shipment;3 subprocesses make up the O-T-D Process: Order Entry, Shipping, and Delivery |
| Order to Shipment Process | The activities and events that receive and move external customer orders from order entry to physical shipment of product from a Fluidmaster warehouse |
| Outlier | In sales forecasting, an unusual historical event that is not useful for predicting the future and is removed or adjusted in order history to reduce the standard deviation of forecast error and lower calculated safety stock (e.g. promotions). In sales forecasting, significant future events that have a high probability of occurring that are added to demand forecasts to reduced the standard deviation of forecast error and avoid additional safety stock. Potential outliers are periodically identified in the sales forecasting process and reviewed by Sales/Marketing to determine if demand history should be adjusted or future forecasts should receive added forecasted demand. |
| Outlier Management | One step in the monthly Demand Forecasting Process. It involves the identification of past historical and high probability future demand events for the purpose of lowering the standard deviation of forecast error, monthly forecast variability. Historical outliers, (e.g. new customer initial stocking orders, promotions) are adjusted. Future outliers are added to the statistical forecast. All outlier management activity is presented and reviewed in the monthly Forecasting Meeting as part of the S &OP Process. |

| Term | Definition |
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| Pareto's Law (80/20 Rule) | A observed phenomenon that 80% of the result from a group of observations is created by 20% of the occurrences. |
| Past Due Order | Customer orders in Backlog that are older than the Order-to-Shipment process standard |
| Performance Measures | Mathematical indicators of the status or results of a specific machine or business process. (e.g. Average forecast error, scrap rate) |
| Perpetual Inventory | Inventory that has a running on hand balance in a computer account or logical location. The on hand inventory balance is maintained by inventory transactions that put quantities in and take quantities out of the account/location. Perpetual inventory balances are also used to report balance sheet inventory levels and are included in a formal cycle counting program. |
| Planned Quantity | The quantity of an ATO line component that should be available each day to meet expected customer demand; this quantity is a function of the MPS and the Planned Queue size; this quantity is supplied to the ATO System monthly via the Master Production Scheduling System and is used nightly by the ATO System to create the daily Final Assembly Schedule unless a Stated Quantity is created or input to the system. |
| Planned Queue | A quantity of component parts, expressed in days of average demand, that should be available at each ATO Line to meet expected daily demand; equals Planned Quantity divided by average daily demand. |

| Term | Definition |
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| Prime Inventory | Component inventory, either purchased or manufactured, at a stage of completion just prior to final assembly. These parts are used to restock ATO Line Inventory each night. Replenishment of manufactured Prime Inventory is initiated by the Kanban/Purchased Part Driver Report. Prime inventory locations are physical locations that hold parts in manufactured/purchased lot sizes. These locations are also perpetual inventory locations that require inventory transactions. Part usage is backflushed from these locations as part of nightly ATO processing. Parts are transacted into these locations daily. |
| Process | A group of logical or physical activities that produce a desired result. |
| Process Step Chart | A graphic display of linked processes or subprocesses that demonstrates the flow of product or information. |
| Processing Time | The amount of time needed to make a part or product; physical time on the machine or assembly line, including set up time. |
| Pull Manufacturing | Manufacturing approach that use customer demand and the consumption of parts or the shipment of product to initiate replenishment manufacturing or purchasing activity. |
| Push Manufacturing | Manufacturing approach that uses a Master Production Schedule or fixed Production Plan to initiate manufacturing or purchasing activity. |
| Queue | A group of customer orders, work orders or Kanban Cards in a chosen sequence that denotes their priority in processing. The queue of work for an assembly line expressed in days of work is used to gauge the amount of capacity (hours) needed to finish the jobs in the queue within their calculated Replenishment Lead Time. Increasing queues signal orders are coming in faster than the assembly line can keep up and unless additional time is spent running the line to reduce the queue time below the Queue Upper Limit product shortages will occur. |

| Term | Definition |
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| Queue Time | The amount of time a work order or manufacturing order waits in line behind other orders before it is begun. Workcenter and assembly line queues are estimated during the lot sizing calculation. Queue time is the upper limit of a queue probability distribution created from a simulation of customer demand. Queue Time is expressed in hours or days and represent a worst case time it will take for the workcenter/assembly line to start any order. Upper and lower limits for the simulated queue are calculated using statistical process control techniques applied to the simulated queue distribution. These limits vary depending on the chosen probability, or confidence interval, selected during the simulation. Queue Time plus the Processing Time of each job is the Replenishment Lead Time used to calculate the part or product's Reorder Point . |
| Re-Order Point (ROP) | The quantity of parts or product on hand that signals the need for a replenishment order in a Reorder Point/Pull system; equals expected demand during replenishment lead-time plus safety stock; ROP |
| Re-Order Quantity (ROQ) | The quantity of parts or product ordered to replenish consumed parts/product in response to a ROP trigger in a Reorder Point/Pull system; equals the calculated Lot Size . |
| Replenishment Lead Time | The amount of time needed to replace parts or product used or shipped by/to a customer; equals queue time plus processing time. Critical component of the calculation of Reorder Point. |
| Root Cause | Explanation of a Variance that suggests corrective action. |
| Root Cause Analysis | The process of using Root Causes to identify areas of high improvement opportunity for further investigation and focused project improvement projects. This process is the engine of continuous improvement. |

| Term | Definition |
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| Rough Cut Capacity Planning (RCCP) | A feasibility testing techniques used in Master Production Scheduling and Production Planning to assure that potential Plans do not exceed the capacity of specific manufacturing departments. The capacity units usually are hours. |
| Rule #1 | If it feels good, don't say it. |
| Safety Stock | Inventory carried to buffer against part/ SKU shortages due to forecast error or historical demand variability. Inventory levels are a mathematical function of average and standard deviation of historical forecast error, chosen level of customer service and replenishment lead time. |
| Sales & Operations Planning | A monthly senior management process for reviewing previous month results approving future production plans, resolving issues and generally running the Fluidmaster Co. Involves the combination of demand forecasts, manufacturing capacity and investment necessary to meet customer delivery expectations, minimize operational costs and inventory investment. |
| Saw Tooth Diagram | A graphic presentation of the mathematical logic and timing associated with ordering material using Reorder Points(ROP), Reorder Quantities(ROQ, Safety Stock(SS) and Replenishment Lead-time(RLT). Named from the general shape of the diagram. |
| Shipping Process | A series of linked steps and activities that move physical product from the Fluidmaster warehouse to the delivery truck; this process is linked to the Delivery Process which physically moves product to the end customer. |
| SKU | Abbreviation for Stock Keeping Unit. |
| Sourcing / Purchasing | The activities or department that locate, order and manage outside vendors and their products or services to support Fluidmaster's business. |
| Standard Deviation | A statistical measure of variability or dispersion of observed points in a distribution. Used in the calculation of safety stock, lead time variability and identification of potential demand outliers. |

| Term | Definition |
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| Stated Quantity | A quantity of ATO line component parts that supercedes the Planned Quantity during nightly ATO processing. Stated Quantities are created as the result of manual inputs to the ATO System from production control, material handlers, and/or automated adjustments from the Autoadjustment function in the ATO System up to the Maximum Stated Quantity (MSQ) . |
| Statistical Forecasting | The combination of mathematical algorithms and demand history to create demand forecasts. Best done by commercial statistical forecasting packages. Dozens of algorithms are tested each month for each forecasted item to determine the best algorithm often based on a least squared error analysis. This assures the most accurate forecast based solely on historical sales data. |
| Straight Talk | A communication skill that involves speaking openly and honestly with the intent to fully inform without willfully causing unnecessary pain. |
| Supply Chain | A series of linked companies, processes and systems that move raw materials, intermediate products and the information that controls their movement through the various manufacturing and distribution processes ultimately deliver finished product to the end customer. |
| Throughput Time | Total time a chosen work order takes to pass through a work center; equal queue time plus processing time . Total factory throughput time equals the summ of individual work center throughput times plus internal order processing time. |

| Term | Definition |
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| Time Fence | A policy or computer mechanism that prevent automatic changes to the Master Schedule arising from new Demand Forecasts or other sources for a chosen period of time into the future. Time fences formally recognize the Company's ability to implement changes to production plans and inventory level. They prevent changes to Plans inside time frames that are infeasible or excessively costly. Fences may be firm or soft, denoting the degree to which they prevent changes and what time period they protect. Generally the closer the time fence the more firm it is. Time fence policy is set and managed in S & OP Meetings and may be overridden in unusual situations by senior management direction, usually as the result of extraordinary events or opportunities. |
| Unbiased Sales Forecast | A characteristic of a forecast that is, on average, neither high or low; unbiased forecasts have an average forecast error over a significant time period (e.g.12 months) equal to zero. |
| Variance | The difference between expected and actual results; signals the need for a Root Cause explanation and possible corrective action. |
| Workcenter | A machine or group of machines that have the following operating characteristics, and are controlled by a single Workcenter Kanban Board: 1. functionally equivalent capable of making the same parts. 2. Always operate concurrently, supplying parts to each other in a fixed sequence. 3. A single "pivot" machine that processes all parts and is supplied by one or more feeder machines depending on the part being produced and operate in the manner described in condition 2. 4. A group of machines and a controlling machine that operate together in a consistent, concerted manner producing one or more parts in response to the requirements of the controlling machine that is scheduled by a single Kanban Board. 5. A group of machine with little or no common operating characteristics, part relationships or routings that are run by one or more operators who are the throughput constraint. |

| Term | Definition |
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| Work Center queue variance | An actual work center queue that is greater or smaller than the upper and lower limits of the Queue Distribution created during Master Scheduling Lot Sizing. |
| Workplan | A written series of actions that represented a plan to accomplish a stated Objective or achieve a desired result. |