



Calculating Safety Stock

by Jim Cantrell, jim@amosoft.com

There is a cost associated with having a situation where the material is not in stock. Stock-outs can cause non-monetary results such as loss of customer satisfaction when items cannot be shipped on time. Whereas the cost of a production stoppage can be calculated when a production line stops and has to be retooled for a new order when the stock-out of a component occurs.

There are three techniques that are used to calculate safety stocks; statistical based, fixed quantity and time period based.

Statistical Based Safety Stock

The statistical method to calculate safety stock is based on the premise that is possible to mathematically calculate the level of safety stock to prevent a stock-out situation. The traditional method used to statistically calculate safety stock is the used of the normal distribution or bell-shaped curve. In a normal distribution curve, the mid-point of the curve is the forecast, which represents the average value. As the curve moves away from the center there is a deviation from the average and the probability of a high deviation from the forecast is represented by a smaller and smaller percentage. For example a 48% deviation from the forecast may represent a 2% possibility.

There are pros and cons of selecting a statistical based safety stock. Although the statistical method is based in accurate mathematics, predicting business is not always as accurate. There are always situations that occur that cannot be forecasted. For example, a statistical method may calculate an item to have a safety stock even when the item is no longer required in manufacturing. In addition some business methods employed by companies to improve efficiencies in the supply chain may work against the mathematical equations used in calculating safety stock. Just-In-Time techniques can adversely affect the requirements of safety stock and render the calculation inaccurate.

Fixed Safety Stock

Companies can decide to have a fixed value for the level of safety stock for some materials. This will require a production planner to determine a value for the safety stock rather than rely on a quantity determined by a statistical calculation. The value that is determined by planner will remain the same until manually changed. When the actual inventory level reaches or falls below the safety stock level, this will trigger a replenishment order for a quantity of material. The quantity of material on the replenishment order is determined by demand. The fixed safety stock level can also be set to zero when a company wants to phase out an item, if it is being superseded or the finished good is no longer being manufactured.

Address: 12445 Pacific Ave 5, Los Angeles, CA 90066

Phone: 310-862-4259

Web: www.amosoft.com



Time Period Based Safety Stock

The time period based safety stock level is used to calculate the stock required over a fixed period. For example, if manufacturing demand requires 100 cases of part A to be consumed each day, the safety stock for a week would be 700 cases. The time period based safety stock is therefore determined by the forecast for the material in future periods. The forecast will usually include a combination of actual demand from sales orders placed by customers and a forecast based on a statistical calculation.

Whatever method is used to calculate safety stock, it should be monitored periodically to ensure that it is accurate and satisfies the need it is intended for. Having safety stock in a warehouse has a cost associated with it and unnecessary safety stock is a scenario that should be avoided.

Address: 12445 Pacific Ave 5, Los Angeles, CA 90066

Phone: 310-862-4259

Web: www.amosoft.com