



## **Clevor Schedule Optimizer for Manufacturers**

### **Manufacturers who can benefit from Clevor**

Manufacturers include both discrete and batch process manufacturers both those who are make to order manufacturers as well as make to forecast manufacturers. They include both the companies that use and ERP system and those who do not. Finally, they include both the companies that have an assembly line and those that do not have an assembly line.

### **The scheduling needs of manufacturers**

All manufacturers develop a master production schedule (MPS) to meet the demand placed on them by their customers. In case of the make to order companies, the master production schedule is a collection of such orders and in case of make to forecast companies, they develop a master production schedule which balances the lot sizes (manufacturing productivity) with the inventory costs, given a forecast of sales. This MPS determines the start date and the gross completion date of each of the lots. It also determines the inventory levels and the work load on the shop.

After the MPS has been developed, it is possible to calculate the materials requirements, knowing the inventory levels, the lead times and the bill of manufacturing, using one of the many software packages available for this purpose. However, scheduling of the manufacturing plant is still a major problem.

What is needed is a scheduler that not only observes all the constraints such as the bill of manufacturing, start dates and finish dates for each lot, alternate resources that could be used, calendars for each of the resources but also to achieve a given business objective such as, minimize the total cost or maximize the total profit.

### **Clevor Schedule Optimizer for Manufacturers**

The Clevor Schedule Optimizer for Manufacturers designed to fulfill the above needs. Some of the highlights of our solution are:

## **Objective of the schedule**

Clevor Schedule Optimizer can handle most business objectives. However, the most common business objective in scheduling of manufacturers to come up with a schedule that will “minimize the total cost of the schedule” or “maximize the profits from the MPS being scheduled” while meeting all constraints, including the required completion dates of the lots and the resources that may be available.

## **The schedules are feasible**

The schedules built by Clevor are “feasible”. This means that they can be implemented successfully because they observe all the specified constraints. These constraints include the bill of manufacturing of each of the lots being scheduled, the specific or alternative resources that are assigned to each of the operations each of the products, start and needed completion dates for each lot, the calendar for each resource, the availability of additional resources that could be considered etc.

## **Cost elements included in the total cost objective**

The following cost elements are included in the total cost objective or total profit objective at this time:

1. Cost of undertaking each of the operations using the right resource in the right quantity. It also takes into account the hiring cost, cost during the time for which the resources is hired.
2. Any fixed costs related to the various operations or production lot including the material cost.
3. Moving cost. This is the cost (and time) involved in moving staff.
4. Overhead cost for each lot or the whole MPS
5. Interest cost
6. Lateness cost and opportunity cost for each of the lots being scheduled

## **Benefits of Clevor Schedule Optimizer for manufacturers**

### **Cost savings**

Clevor schedule optimizer helps our customers improve the utilization of their resources. Based on the tests carried out by Clevor and the experience of Clevor’s customers, we estimate that our customers can obtain 10% to 20% savings in their variable costs over time. These savings come from better utilization of the resources.

### **Improved customer service**

Our customers find that they can provide a much better service to their clients by providing better due date performance and many times much earlier due dates.

## **Risk management**

Our customers track the progress of their production regularly. This gives them a much better control over the progress of their production schedule and the cost incurred. This allows them to take corrective actions when necessary. This is how they control their risk of cost overruns.

## **Focus on best practices and methods**

Once the schedules are being managed better, our customers focus on identifying best practices and methods. These efforts yield still more cost savings.

## **Updates and re-scheduling**

In spite of all the best planning and scheduling, things will change. When they do, reschedule. Clevor's high speed and automatic schedule optimization engine makes it much easier to re-schedule.

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