Challenges

Typical challenges related to the amount of inventory in the extended supply chain include:

**Rising inventory carrying costs:** a variety of issues can cause increases in the costs of carrying inventory in the supply chain, such as the changing demand patterns that require the use of safety stock to maintain service level agreements.

**The need to support surge or sag supply chain demand scenario:** fluctuations in supply chain demand requires the use of safety stock. How does the customer determine what is needed and where to maintain the required inventory to achieve the needed service level agreements?

The Solution

This solution provides a comprehensive analysis of the inventory, including raw materials, work in progress (WIP) and finished goods in the network, and optimizes the placement of that inventory to minimize total cost.

This includes an analysis of strategic inventory levels at various tiers in the supply chain to define optimum levels and locations, reduce WIP and improve overall supply chain performance.

Solution Benefits

There are significant business benefits to optimizing the network including:

**Improvements in Product Lead Time**

Optimizing the network can result in up to a 75% improvement in production lead times.

**Improvements in Working Capital**

Optimizing the network can reduce working capital as much as 65%.

**Improvements in Inventory Turns**

Optimizing the network can result in improved inventory turns as high as 190%.

The table below reflects the results from an actual project:

<table>
<thead>
<tr>
<th></th>
<th>% Improvement</th>
<th>Potential Savings due to Optimization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production Lead Time</td>
<td>76%</td>
<td>Reduce by over 300 Days</td>
</tr>
<tr>
<td>Working Capital</td>
<td>65%</td>
<td>Over $3M in savings</td>
</tr>
<tr>
<td>Inventory Turns</td>
<td>190%</td>
<td>No increase in Cost of Goods Sold</td>
</tr>
</tbody>
</table>

Projected Supply Chain Performance with Optimized Inventory
Implementation

The professional services required to implement this solution are as follows:

• **Phase 1 – Discovery**
  Determine the “as-is” state of the inventory in the extended supply chain, including a review of the contract requirements for performance and a better understanding of the known problems to be investigated.

• **Phase 2 – Information Gathering**
  Based on the scope of the discovery phase, further information is gathered from suppliers to use as a basis for the analysis.

• **Phase 3 – Analysis and Recommendations**
  A variety of tools are used to capture the information for analysis. Once analyzed, a findings report is prepared that is presented to management including recommendations for improvements.

• **Phase 4 – Implementation**
  Professional services can be provided to support and implement the recommended changes.

About the Electro-Optics Center

The Electro-Optics Center (EOC), a proud part of The Pennsylvania State University, is a hybrid between the best components of a university and those of private industry. This relationship allows us access to the university’s researchers and scientists, its state-of-the-art facilities and leading edge research.

Our staff, comprised primarily of former industry and DoD personnel, brings experience in exceeding sponsor and corporate expectations. Through the application of this hybrid model, the EOC is able to provide its sponsors with solutions that combine leading edge research with on-time and on-budget deliveries. Learn more at www.eoc.psu.edu.