Total Cost of Ownership

Uncovering the hidden costs: product price is only the tip of the iceberg

The Total Cost of Ownership (TCO) of production chemicals and direct materials used in bioproduction can vary depending on your business model. While the product price is an important element, analysis of the ancillary or hidden costs can have a significant impact on the overall cost of your production chemical supply. These hidden costs impact your ability to mitigate risk and optimize operational efficiencies within your supply chain journey.

- Product price
- Visible costs
  - Inventory carrying costs
  - Warehouse space requirements
  - Cost of poor quality
  - Unpredictable lead-times
  - Payment terms
- Hidden costs
  - Poor OTIF
  - Supplier management
  - Quality management
  - Order & logistics management
  - Freight expense
TCO Considerations Within the Customer Supply Chain Journey

TCO has implications across the entire Supply Chain journey from supplier management to QA released material for production and beyond. Hidden costs add up over time, and can drive inefficiencies across the supply chain and bioproduction workflow processes.

**Jobs to be Done:**

**Hidden Costs**

**Problem**

**Situation**
- Production volume requires a large number of FTE resources (people, time) to manage direct material supplier(s) and supply chain activities

**Problem**
- Time and resources associated with:
  - Vendor and supplier engagements
  - Purchasing activities
  - Inbound logistics activities
  - Warehouse activities at time of receipt
  - Resolution of quality issues, CAPAs, MOC, CN, etc.
  - Inability to move ship-dates to address warehouse capacity and flexibility constraints

**Hidden Costs**
- Cost pressure impacting ability to hire required staff
- Cost in overtime expenses
- Working capital tied up in inventory
- CapEX to meet warehouse capacity requirements

**Situation**
- Risk of production delays can be caused by a variety of problems

**Problem**
- Risk associated with:
  - Receiving non-compliant material
  - Supplier cGMP non-compliance
  - Low OTIF
  - Planning error

**Hidden Costs**
- Production delay resulting in loss of revenue ranging from $150K to $530K per day
- Storage and quarantine of non-compliant product
- Time and cost to replace non-compliant product
- Inventory costs associated with expedite fees
- CapEX for warehouse capacity to store safety stock to mitigate risk

**Situation**
- Excessive number of individual supplier shipments

**Problem**
- Inability to consolidate shipments from multiple suppliers

**Hidden Costs**
- High level of freight expenses
- Inefficient material receiving and high OpEX due to the number of individual shipments

**Customer Warehouse**

**Dock to Stock Jobs**

**Jobs to be Done:**

**Hidden Costs**

**Problem**

**Situation**
- Complexity and diversity of direct materials requires significant FTE resources (people, time) to perform receiving and stocking activities for direct materials

**Problem**
- Time and resources associated with:
  - Poly pallet transfer
  - Receipt labeling
  - Returnable/recyclable container management

**Hidden Costs**
- Cost pressure impacting ability to hire non-production staff
- Cost of overtime during peak activities
- Contamination risk due to fiber from wood pallets
- EH&S risk associated with chemical handling
- CapEx for warehouse capacity to transfer and store both wood and poly pallets

**Situation**
- Criticality of maintaining production schedule drives significant investment in safety stock inventory and cGMP warehousing capacity

**Problem**
- High levels of working capital tied up in safety stock and pre-released inventory
- High levels of warehouse OpEX to manage volume of direct material safety stock and pre-released inventory
- Warehouse space requirements for holding safety stock inventory and pre-released inventory

**Hidden Costs**
- High cost of capital
- Negative impact on corporate working capital
- Negative Impact on company’s stock valuation and reduced profitability
- Reduced ability to meet corporate initiatives to drive productivity improvements to mitigate cost increases
- Overhead costs to manage cGMP warehouse infrastructure
- Potential for significant CapEx for warehouse capacity expansion(s)
- Inability to secure capital funding for projects not directly related to manufacturing or drug development
- Operational cost(s) and risk(s) due to capital project and facility expansion management oversight
### Jobs to be Done:
- Raw material Sampling
- QC Inspections
- Quarantine Labeling
- QA release Labeling

### Hidden Costs
- Cost for multi-lot testing in absence of large lot positions
- Costs associated with QC testing (internal and/or external)
- Cost and time for QC labeling and documentation in absence of large lot positions

### Situation
Complexity and diversity of direct materials and cGMP manufacturing release process requirements mandates significant FTE resources (people, time) to manage pre-production activities.

### Problem
Time and resources associated with:
- Raw material sampling
- Production material (consumables) QC inspection
- Production material QA release labeling and documentation

### Hidden Costs
- Cost of working capital
- Negative impact on corporate working capital
- Inability to meet corporate initiatives to reduce working capital usage
- Negative impact on company’s stock valuation and reduced profitability
- Reduced ability to meet corporate initiatives to drive productivity improvements to mitigate cost increase
- Overhead costs to manage cGMP warehouse infrastructure
- CapEx for warehouse capacity expansion(s)
- Inability to secure capital funding for projects not directly related to manufacturing or drug development
- Operational cost(s) and risk(s) due to capital project and facility expansion management oversight

### Situation
Inefficient and/or lengthy cycle times from direct material product receipt to QA release.

### Problem
Extended inventory holding of pre-released safety stock
- cGMP space requirements to hold pre-released safety stock
- Inefficient OpEX use due to poor workflow processes

### Hidden Costs
- Cost of working capital
- Negative impact on corporate working capital
- Inability to meet corporate initiatives to reduce working capital usage
- Negative impact on company’s stock valuation and reduced profitability
- Reduced ability to meet corporate initiatives to drive productivity improvements to mitigate cost increase
- Overhead costs to manage cGMP warehouse infrastructure
- CapEx for warehouse capacity expansion(s)
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### Situation
Requirement for risk mitigation specific to direct material QA release process.

### Problem
Current cleanroom capacity is constrained to handle forecasted demand
- Lack of redundancy for raw material sampling

### Hidden Costs
- CapEx investment to build additional sampling suites
- OpEx costs associated with cleanroom staffing to handle raw material sampling for QC testing
- Risk of Production delay resulting in loss of revenue ranging from $150K to $530K per day*  

### Situation
Requirement for high levels of QA released safety stock to mitigate risk of production delay.

### Problem
High levels of working capital tied up in safety stock and QA released inventory
- High levels of warehouse OpEx to manage volume of direct material safety stock and QA released inventory
- Limited warehouse space capacity to hold safety stock and QA released inventory

### Hidden Costs
- Cost of working capital
- Negative impact on corporate working capital
- Inability to meet corporate initiatives to reduce working capital usage
- Negative impact on company’s stock valuation and reduced profitability
- Reduced ability to meet corporate initiatives to drive productivity improvements to mitigate cost increases
- Overhead costs to manage cGMP warehouse infrastructure
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* Estimated cost of production delay can vary based on manufacturer type (e.g., CDMO vs. innovator), and includes consideration for idle manufacturing assets, depressed supply of finished goods, potential penalties for missed supply deadline, and potential revenue loss of finished product sales. Actual cost of production delay is customer/site specific.
Are you effectively managing the hidden costs driving your Total Cost of Ownership?

TCO = Visible Costs + Hidden Costs

- Are you measured on TCO or simply cost of product?
- How does your company measure TCO for your production chemicals?
- What are the biggest TCO drivers for your company?
- Does the company have effective strategies in place to address these TCO drivers?
- Are these strategies proving to be cost effective in addressing the TCO drivers?
- How has managing the production chemicals supply chain – and the TCO drivers – impacted core manufacturing?
- Is senior management looking for improved operational and manufacturing productivity?

Partner with Thermo Scientific Production Chemicals and Services for a production chemicals supply chain assessment to identify opportunities to mitigate risk, improve productivity, and reduce total cost of ownership.

Thermo Scientific Production Chemicals and Services works with biologic developers and manufacturers who want to do what matters most, innovate and produce life-changing therapeutics. With over 30 years of experience delivering production chemicals and direct material supply chain solutions, we deliver risk mitigation, improved operational efficiencies, and reduced total cost of ownership so our customers can accelerate their speed to market, speed to clinic, and improve productivity.

Find out more at: thermofisher.com/tco