

Operations Improvements At International Custom Machine Tools Designer And Manufacturer: Quick-win Engineering And Material Cost Savings

The Challenge: MachineCo, a PE-owned designer and manufacturer of custom machine tools for industrial manufacturers, including Automotive and White Goods, was transitioning to a predominantly international customer mix with most of its new orders coming from India, Russia, China, and Latin America. To better service its international customers and take advantage of lower costs, MachineCo had recently set up a small assembly and service operation in India. As MachineCo was suffering from ongoing margin deterioration (~10%), with a persistent gap in quoted margin vs. actually-realized margin, MachineCo's CEO engaged Gotham to pin down the underlying reasons for margin deterioration, as well as opportunities to better leverage India operations.

The Partnership:

Analysis: Gotham launched a 4-week to understand the drivers of MachineCo's ongoing margin erosion, determine quick-win and longer-term opportunities and develop capture plan.

Quoting and Engineering Process

To develop a detailed fact base, Gotham interviewed Quoting and Engineering staff; mapped the process front-to-back; and performed detailed machine margin analysis by scrutinizing labor hours spent by mechanical, electrical, and hydraulic engineering functions at each project stage (concept, detailed engineering, debugging, etc.) vs. quoted hours. From our robust understanding of current process and labor hours, Gotham established that the root cause of margin deterioration was a huge disconnect between quoting and engineering, e.g.:

- Inconsistent, undisciplined quoting process and over-reliance on historical data with limited engineering involvement
- Limited cross-functional communication precluding full and robust up-front understanding of customer requirements, leading to over-engineering
- Inadequate/missing engineering processes and reviews/controls creating excess and rework engineering time.

Material Spend

Simultaneously, the Gotham team analyzed 3 years of PO and A/P data and conducted interviews with the purchasing and finance departments to understand material spend. To determine the purchasing facts, Gotham performed bottom-up analysis to compensate for the company's limited purchasing perspective – existing purchasing and finance systems had been set up to purchase by project, with no readily available views of spend by vendor or by commodity. As part of our analysis, Gotham cleaned up classification of over 10,000 SKUs purchased over the previous 3 years, reconciled discrepancies between and synthesized different data sources, and created profiles of material spend that included: pricing trends from PO to PO; spend by vendor and vendor fragmentation level; and material prices vs. relevant commodity indices. Our analysis uncovered significant opportunities from enhanced purchasing organization and controls, given that:

- Although almost 2/3rd of overall material spend was on repeat parts from the prior year, MachineCo's per-project buying approach could not leverage this commonality in quotation process (11% price increase for these repeat parts despite decline in underlying commodity prices)
- Purchasing leverage was being diffused by high level of vendor fragmentation driven by lack of component standardization
- Purchasing organization was acting as "clerks" who were placing orders as directed by engineering and primarily focused on getting the parts in vs. the cost. Purchasing gaps included no preferred vendor program, limited pricing negotiations/volume discounts, poor reconciliation of POs to invoices leading to avoidable price creeps, and limited visibility/understanding of purchasing patterns.

Role Of India Operations

Building on detailed analysis of labor tickets, Gotham identified engineering and field service activities for a possible near-term transition to India. We also identified several machining and assembly opportunities for transfer based on freight tradeoffs and customer location.

Strategy: Based on Gotham's detailed diagnostics and discussions with the management team, we proposed a targeted savings capture plan in each key focus areas:

- **Quoting and Engineering Processes:** Design and implement robust inquiry vetting and quoting stage-gate processes with explicit points for engineering input to improve quoting accuracy. Simultaneously, enhance the engineering processes, e.g., introduce regular review points to ensure design to quoted specifications, create formal post-mortem process to learn from past experiences, proactively manage engineering hours against a disciplined budgeted hours
- **Material Spend:** Pursue immediate cost savings by: implementing a cost-focused purchasing process and reporting/tools; proactively seeking price adjustments as commodity prices retreat; negotiating contracts that provide price protection/volume rebates; and consolidating the vendor base. Longer-term, work with engineering to standardize parts, creating purchasing scale with vendors
- **Role of India operations:** Start by immediately migrating engineering functions with low skill requirements (accounting for 35% of total engineering hours) to India; and overtime, as the skills are developed in India, phase in additional activities.

Execution: Gotham launched the quick-win capture effort: To this end, we crafted a quoting and engineering process end-vision; developed a vendor negotiation strategy; and created vendor packages for top vendors with a detailed dashboard on historical purchases identifying issues with pricing (e.g., huge fluctuations in price from one PO to the next) and future predicted volume with the vendor. Gotham also crafted a detailed capture plan and timeline for all targeted savings.

The Outcome: Quick-win cost savings ranged from \$1.7-2.7MM. Initial vendor negotiations delivered 6-20% in savings.

