COVID Supply Chain Constraints & Mitigation August 2021



Executive Summary

- Management Commentary
 There is a cross-industry consensus that strong demand and constrained supply is driving inflation throughout the value chain.
- Evolving Situation
 – 2020 earnings calls focused on cash preservation, market concerns, and COVID-19 shutdowns; while Q2 2021 calls generally had a strong focus on increased demand, limited supply, and growth.
- Commodity Developments

 Most commodities have increased significantly since their lockdown-induced dips.
- Transport
 Driven by increased demand and a severe container imbalance, the Shanghai Containerized Freight Index has increased 4x since the pandemic began, while Air Freight has also experienced dramatic increases, especially between Asia and North America.
- Labor
 – After an unprecedented number of firings in early 2020, layoffs and quits have returned to
 relatively normal levels while the number of job openings, especially in Manufacturing, have greatly
 increased.
- Negotiations & Mitigation— A systematic approach will ensure cost increases are mitigated and savings opportunities are identified, tracked and achieved in a timely manner. A detailed follow-up process will be needed to ensure any price increases are modified as market conditions improve.



Recent Q2 Earnings Call Statements

There is a cross-industry consensus that strong demand, constrained supply, and low inventory is driving inflation throughout the value chain.

The fact is that there's just **unprecedented demand** and so there's just not enough metal inside of North America, which is really what is the very basic structural change that is driving those premiums up.

- William Oplinger, Alcoa CFO

As a result of strong end market demand trends, the lessons of the pandemic and ongoing geopolitical uncertainty, some customers will change their inventory management strategy from just-in-time to just-in-case and increase the target level of what they consider normal inventory levels.

- Sanjay Mehrotra, Micron CEO

We're dealing with historical high levels of raw material inflation in the current period. We achieved higher sales levels despite significant supply and component disruptions, including ones that reduce the overall manufacturing capability of our customers.

- Michael McGarry, PPG CEO

Due to supply disruptions, we experienced unprecedented levels of raw material and transportation costs that continually elevated as the quarter progressed. This drove raw material inflation to be up a mid to high teenpercentage on a year-over-year basis versus our original estimate of a high single-digit percentage increase.

- Michael McGarry, PPG CEO

Volumes declined year-over-year and sequentially due to the lower polyethylene supply from the lingering effects of Winter Storm Uri and our own planned maintenance turnarounds. Compared to the prior quarter, the business delivered local price gains in all regions. - Jim Fitterling, Dow CEO

While the drought in Taiwan is behind us, the rise in **COVID-19 cases in Malaysia**, **India, and Taiwan are a risk** to our manufacturing operations and R&D activities in these regions.

- Sanjay Mehrotra, Micron CEO

Drilling down specifically on our adjusted EBITDA, the \$1.4 billion performance represented a 165% increase over the past quarter, primarily due to increased steel pricing, fixed-price contract improvements, favorable product mix and higher volumes. Unlike most of the American steel industry, we have been relatively well shielded from inflationary forces thus far, due to our self-sufficiency in raw materials, namely pellets and HBI. More specifically, our overall cost per ton barely moved compared to the first quarter.

- Keith Koci, Cleveland-Cliffs CFO

Demand for steel is very strong across all sectors, and **strong demand supports strong prices**. Q4 2020 was supposed to be the peak for steel prices, then Q1 2021, and then again in Q2. Well, we are in Q3 and the reality is **demand is relentless**.

- Lourenco Goncalves, Cleveland-Cliffs CEO While industrial production is up nearly 20% over the year-ago low, it still has not reached pre-pandemic levels. **Retail inventory to sales is at its lowest levels in more than three decades** and strong demand continues to counter near-term potential restocking efforts.

- Howard Ungerleider, Dow CFO

All of our businesses are securing additional selling price increases. Due to significant increases we experienced in the second quarter and anticipate in the third quarter, we now fully expect to offset raw material cost inflation in the fourth quarter on 2021 on a run rate basis. As I've said previously, these current disruptions are temporary and we strongly believe there is sufficient capacity available in our supply chain once operating conditions normalize.

- Michael McGarry, PPG CEO



Q1 2020 vs Q2 2021 Earnings Call Mentions

2020 earnings calls focused on cash preservation, market concerns, and COVID-19 shutdowns; while Q2 2021 calls generally had a strong focus on increased demand, limited supply, and price increases.







Source: Q1 2020 & Q2 2021 Earnings call transcripts (Alcoa, Amphenol, Cleveland-Cliffs, Dow, Fastenal, Micron, Nucor, NVIDIA, PPG, TE Connectivity, US Steel)

Recent Developments

Commodities experienced significant supply and demand shocks since COVID began.

Item	Index Change since Jan 2019	Primary Causes	Outlook
Oil (WTI)	+ 40%	Increased demand, production cuts	Level then decline in Q1 2022
Natural Gas (HH)	+ 30% (+65% max)	Supply shock (TX winter), increased demand	Level then decline in Q1 2022
Lumber	+ 47% (+400% max)	Demand shock, limited additional production capacity	Retreated from record highs, leveling off through 2021
Iron Ore	+ 181%	Increased demand, constrained supply	Expected to decline in H2 2021
Aluminum	+ 38%	Demand shock (cans), rapid return of demand (autos) constrained supply	Leveling off and declining in H2 2022
Steel	+ 140%	Rapid return of demand (autos), constrained supply, increased raw material pricing	Elevated pricing through 2021
Resin	+ 5-40%	Supply shock (TX winter), increased raw material pricing, increased demand	Elevated pricing through 2021
Semiconductors	+ 10%	Demand shock and constrained supply	Constrained supply through Q1 2022
Container Shipping	+ 300%	Container imbalance (US-Asia)	Elevated pricing through Q1 2022
Air Freight	+ 125-420%	Increased demand and constrained supply	Elevated pricing until PX flights recover
Trucking (Contract)	+ 10%	Driver shortage, increased e-commerce deliveries	Elevated pricing through 2021



Commodity Trends (Jan 2019 = 100)

Most commodities have increased significantly since their lockdown-induced dips, with lumber rising the most before being the first commodity to experience a significant drop.

- Iron Ore has increased the most since 2019, never falling below 2019 levels even during initial lockdowns
- WTI had the steepest lockdowninduced fall, but is now nearly 50% above 2019 levels
- Natural Gas declined throughout 2019 and 2020 before experiencing a shock due to the winter storms in Texas
- Aluminum, Tin, and Zinc all experienced lockdown dips but are now 20-60% higher than 2019 levels
- Lumber pricing experienced explosive increases from rapid demand expansion driven by increased construction and renovations and constrained manufacturing capacity





Increased Demand & Raw Material Cost

Steel prices remained elevated after demand rapidly returned.

- Steel prices have yet to decrease after increasing rapidly in late 2020 and hitting record levels in 2021
- The extreme price rise was due to demand coming back faster than expected as well as low service center inventories, constrained raw materials, and infrastructure spending
- Iron Ore supply was hit by lockdowns and may continue to be impacted if conditions continue to deteriorate in Australia and Mongolia
- Steel futures are indicating that prices will begin to decline in late Q3 2021



Actually, some of the **customers** who were complaining earlier this year about rising steel prices then turned around and **decided to accept the reality**. They cut deals with Cleveland-Cliffs at that time and are now just plain happy. Others probably will be unhappy for a long time.

- Lourenco Goncalves, Cleveland-Cliffs CEO



Raw Material Constraint Recovery

Months later, the resin market is still working through the backlog caused by the historic winter storms in Texas.

- The Texas storms forced at least 50 major outages and closures, including most Gulf refineries, petrochemical plants, and steam crackers
- Resin reactors accounting for an estimated 80-85% of all US PE and PP production were shut down, which caused the large Thermoplastic PPI spike in the chart to the right
- Capacity utilization saw its steepest decline since the 2008 financial crisis
- Logistics were disrupted by the complete shutdown of the Port Of Houston, rail services, resin warehouses, and highways
- Months after the storm, supply has not yet caught up to demand, causing record pricing



We anticipate the **strong demand** we experienced in the second quarter across our polyethylene, polyurethane, acrylic and silicone chains to extend **through the second half of 2021**. Polyethylene demand growth, for example, is projected to outpace supply additions in the near-term **with pricing strength and resilient margins** on a sustained and favorable oil to gas ratio with the majority of industry capacity adds coming in the higher end of the cost curve.

- Howard Ungerleider, Dow CFO



Increased Demand & Production Constraints

Semiconductors' continued supply and demand imbalance is expected to continue through 2022.

- Supply constraints that existed prior to the pandemic worsened as demand increased, pushing capacity utilization to historic highs
- Transportation constraints remain due to limited commercial flights between Asia & North America
- Facility fires and shutdowns in Japan, winter in Texas, and drought in Taiwan has worsened conditions
- Production was allocated to the electronics industry, leaving others such as automotive facing shortages and shutdowns as their demand recovered faster than expected
- New facilities have a 5-year lead time which implies relief is far off if demand continues





International Freight (Air/ Ocean)

The Shanghai Containerized Freight Index has increased 4x since the pandemic began, while Air Freight has also experienced dramatic increases, especially between Asia and North America.



Cost <mark>&</mark> <u>Capital</u>

Domestic Freight (Barge/ Truck/ Rail Freight)

Inland transportation options remain constrained.

- Truck rates fell ~20% during the lockdown, but have since recovered, and are now 10% higher than January 2019 levels due to higher demand and a continued shortage of drivers
- Rail peaked during 2020 fall harvest and have since returned to 2019 levels
- Barge had a higher than average surge in prices during the 2020 harvest and has now returned to levels seen last summer
- Several macroeconomic indicators (Consumption, Industrial Production, Inventory-to-Sales) are pointing towards continued strong freight demand





Labor Trends

After an unprecedented number of firings in early 2020, layoffs and quits have returned to relatively normal levels while the number of job openings, especially in Manufacturing, have greatly increased.

- At the start of the pandemic, layoffs totaled 13M and 9.3M in March and April respectively
- The total number of job openings briefly declined, but returned to pre-pandemic levels by Q3 2020 before accelerating in Q1 2021
- Manufacturing job openings are now double what they were before the pandemic, while total nonfarm openings are up ~25%

A big chunk of **our recruiting base has vaporized** from the areas that we traditionally approach. That has created challenges for us. I'm pleased to say those challenges have lessened over time, but they're still pretty acute.

- Dan Florness, Fastenal CEO





Approach

A systematic approach will ensure cost increases are mitigated and savings opportunities are identified, tracked and achieved in a timely manner

Opportunity Screening	Opportunity Quantification	Opportunity Prioritization	Opportunity Execution	Follow-up
 Identify savings/ mitigation gap by category and supplier Conduct spend analysis Develop cost breakdown estimates for key categories Define key cost drivers by category and supplier Identify which tools to use by category and supplier 	Identify stakeholders (internal and external) Identify barriers Estimate savings/ mitigation opportunity Estimate time and resources required to complete	 Review savings/ mitigation opportunities across organization Choose initiatives to execute based on estimated opportunity, resources and time needed to implement Develop next steps and action plan Assign owners Assign deadlines Communicate follow-up dates 	 Verify cost breakdowns Review contracts Confirm cost drivers Develop negotiation agendas Conduct negotiations and communicate "should cost" levels to suppliers 	 Set daily and weekly report-out process Assign executive support to overcome identified roadblocks Verify savings/ mitigations are realized via PO/ Invoice audits



Execution – Structured Negotiations

Four principles of effective supplier engagement

Maximizing supplier contracts requires detailed spend analysis and situational awareness to motivate the supply base and identify the best value.

Supplier Engagement Four-Principles



Supplier Engagement Key Points

Maximizing contract value requires detailed understanding of the four engagement principles:

- Leverage Understanding market dynamics and the state of competition can drive the tone and approach of the negotiations
- Costs Assessing the supplier's marginal and total cost to deliver sets target pricing and identifies productivity targets
- Usage Quantified usage data provides insight into volume incentives, features and offerings actually consumed
- History Supplier contracts are often predicated on achieving quality, service and volume incentives and should be audited



Savings Initiatives

Several initiatives can rapidly uncover savings and cost mitigation opportunities.

#	Initiative	Description
1	Input Review / Spend Analysis	Evaluate market landscape for target costing
2	Competitive Benchmarking	Compare unit rates to internal and market benchmarks
3	Contract Audit	Validate that POs match terms and discounts are applied
4	Energy Pricing	Identify savings generated from shifts in the energy market
5	Commodity Price Review	Ensure evolving market prices are properly reflected in contract price
6	Index Audit	Find overcharges and inaccurate index correlations
7	Pricing Formula Review	Update price formulas to align with current market conditions
8	Material & Labor Markup Audit	Eliminate excessive supplier markups on materials and labor
9	Overtime Markup Review	Ensure overtime multipliers are below 1.5x for loaded labor
10	Payment Term Discounts	Leverage early payment discounts offered by suppliers
11	Burden Review/ Cost Model	Calculate supplier costs using activity based costing methods
12	RFP Development	Create RFP template to support bid analysis and targets
13	Supplier Bid Analysis	Evaluate supplier responses and key negotiation topics
14	Supplier Negotiations	Present analysis using a fact-based negotiation template



Input Review / Spend Analysis

Ensure declining market prices are reflected in contract price

Approach

- Data specific to a supplier is most accurate, but macro level data can be useful as a starting point
- A cost breakdown must be developed to determine each raw material's respective portion of a component's total cost
- Volatile commodities should be prioritized
- Identify recent price relief provided to suppliers and if this relief is still valid
- Review changes in volume that have increased a supplier's buying power
- Identify savings supplier receives from scrap resale
- Use available data to set target prices and calculate the opportunity for improvement over time
- Common sources for commodity data include LME, CRU, AMM and EIA

What to Expect

- Ideal Situation: Components with a high percentage of material cost. Contracts that have not been reviewed in the past year.
- Time to Conduct Study: 2-3 days
- Time to Negotiate: 2-5 weeks
- Potential Savings: 3%-15%

Steel	Steel market study and negotiations resulting in 5% savings in 6 weeks.
Aluminum	Assessed proposed pricing increase compared to external market data and efficiency rebates resulting in 6% savings in 1 week.
Diesel	Created a process and value chain to arbitrage regional diesel price variance resulting in 2% savings



Competitive Benchmarking

Internal and market data is effective for prioritization and supplier negotiations

Approach

- Identify sourcing of data both internal and external
- Summarize data and map to supplier pricing and costs
- Create side by side comparisons to highlight the gaps from benchmarking
- Normalize data to ensure a true "apples to apples" comparison across the supply base

What to Expect

- **Ideal Situation:** Multiple supplier for similar components. Contracts that have not been reviewed in the past year.
- Time to Conduct Study: 1 Week
- Time to Negotiate: 1-5 weeks
- Potential Savings: 2-20%

MRO	Benchmarked mechanical spare part costs to external public and semi-public market rates
Resin	Benchmarked price, terms and adders for commodity and engineering resin families
Travel	Benchmarked hotel rates and managed travel



Contract Audit

Validate that POs match terms and discounts are applied

Approach

- Several areas should be reviewed for savings opportunities when conducting a contract audit
 - Expiration date
 - Volume commitments/ savings
 - · Escalators and de-escalators
 - Annual savings targets
 - Savings sharing clauses
 - Commercial KPIs
- Contracts with volume commitments and pricing escalators should be prioritized
- POs should be compared to contracts to ensure pricing is consistent with agreed upon terms
- Penalties for quality and lead time should be enforced

What to Expect

- Ideal Situation: Suppliers with detailed pricing conditions in their contracts that may not have been followed. Contracts that have not been reviewed in the past year.
- Time to Conduct Study: 2 hours per contract
- Time to Negotiate: 1-5 weeks
- **Potential Savings:** 2-20%

Diesel Fuel	Contract audit to identify alternate suppliers and verify volume commitments resulting in 2% savings in 7 weeks.
Maintenance	Audit of contract rates vs. invoices resulting in 10% savings in 7 weeks.
Engineering Services	Reviewed billing history for service provider travel and materials to deliver 45% savings on assessed travel costs.



Energy Pricing

Identify savings generated from shifts in the energy market

Approach

- Determine energy's percentage of key categories' respective cost
- Identify suppliers' energy sources by location (i.e. power plant energy source)

Natural gas

Coal

Petroleum

Renewable

- Review if energy sources have changed over the past year (e.g. coal to natural gas)
- Engage suppliers to recover energy savings that have not been shared

What to Expect

- Ideal Situation: Components that require high amounts of energy to produce. Components produced in plants that my be powered by natural gas.
- Time to Conduct Study: 3 days
- Time to Negotiate: 2 weeks
- **Potential Savings:** 1-5%

Die Casting	Audited Chinese die casting supplier's 10% price increase request due to higher utility and energy costs – audited the energy costs and established lower should cost resulting in a 6% price reduction.
Chemicals	Audited energy and input commodity costs for a chemicals supplier to generate over \$1 million (5% annual savings).



Commodity Price Review

Ensure evolving market prices are properly reflected in contract price

Approach

- Data specific to a supplier is most accurate, but macro level data can be useful as a starting point
- A cost breakdown must be developed to determine each raw material's respective portion of a component's total cost
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Index Audit

Find overcharges and inaccurate index correlations

Approach

- Identify components that are tied to an index
- Compare the index's definition to best practice (i.e. indices should represent cost elements for providing a particular product or service, rather than for the product itself)
- Indexing should be used in cases where suppliers are exposed to dramatic and unpredictable changes in cost
- In cases where indexing is warranted, only the costs should be indexed, not the selling price
- Changes in price must work both ways—if the price can go up due to an index it must also go down if the index declines
- General CPI should be avoided

What to Expect

- Ideal Situation: Contracts tied to any general price index.
- **Time to Conduct Study:** 4 hours per contract
- Time to Negotiate: 1 week
- Potential Savings: 2-10%

Recent project work

Construction	Contractual index review for crushed stones
Matariala	identified the incorrect index was being
Materials	tracked resulting in 3% savings in 1 week.

Manual Labor

Realignment of index to match BLS standards resulted in 4% savings in 7 weeks.



Pricing Formula Review

Update price formulas to align with current market conditions

Approach

- Identify contracts tied to pricing formulas
- Verify via an invoice audit that pricing formulas are being followed
- Ensure that inputs to pricing formula are still accurate (e.g. energy or labor indices)
- Verify that pricing formula allows for reduction in pricing (i.e. one way escalation formulas must be eliminated)
- Identify if supplier has changed sub-suppliers and potential impact on pricing formulas

What to Expect

- Ideal Situation: Contracts with specific formulas for pricing that have not been reviewed in the past two quarters.
- Time to Conduct Study: 1 week
- Time to Negotiate: 2-3 weeks
- Potential Savings: 3-15%

Aluminum Extrusions	Audited pricing formulas for aluminum formed products and recycling costs.
Steel	Audited steel pricing formulas based on iron ore and coking coal to negotiate on cost drivers.



Material and Labor Markup Audit

Eliminate excessive supplier markups on materials and labor

Approach

 Perform cost breakdown for markup portion of component or service's cost (if no cost breakdown exists, develop "should cost" models internally)

•SUTA/ FUTA

Benefits

Employee screening

Transportation

•SG&A

Profit

- Benchmark cost components across suppliers within similar regions to identify outliers
- Identify inconsistencies in requirements across departments (e.g. drug screening, background checks)
- Fact based negotiation templates should be developed to address any gaps

What to Expect

- Ideal Situation: Labor and materials whose markups are not justified with detailed cost breakdowns. Contracts that were originally negotiated by outside groups (e.g. HR for temp labor)
- Time to Conduct Study: 2 weeks
- Time to Negotiate: 2-3 weeks
- Potential Savings: 2-30%

Contingent Labor	Contingent Labor markup review leveraging detailed cost models and supplier consolidation resulting in 8% savings in 4 weeks.
Engineering Services	Contracted Services RFQ and negotiations resulting in 28% savings in 10 weeks.
Technical Labor	Contingent Labor markup benchmark, RFQ and negotiations resulting in 11% savings in 8 weeks.



Overtime Markup Review

Ensure overtime multipliers are below 1.5x for loaded labor

Approach

- Review contracts and invoices that include overtime rates
- Identify if overtime multiplier is applied to fully loaded labor costs (i.e. labor rates that include social costs, SG&A and Profit)
- In the US, overtime multipliers applied to fully loaded labor should be 1.38-1.43
- Review suppliers' recent charges and identify overcharges that my be reimbursed

What to Expect

- Ideal Situation: Any overtime rate of 1.5 times loaded regular time or more. Components produced on lines with more than 10% overtime.
- Time to Conduct Study: 1 week
- Time to Negotiate: 1-2 weeks
- **Potential Savings:** 3-12%

Engineering Services	Benchmark and markup review of contracted services resulting in 4% savings in 6 weeks.
Contingent Labor	Cost modeling for contingent labor resulting in 8% savings in 4 weeks.
Engine Component	Plant visit and labor study resulting in 6% savings in 7 weeks.



Payment Term Discounts

Leverage early payment discounts offered by suppliers

Approach

- Early payment discounts challenge sourcing and accounts payable to determine when a discount is in the best interest of the company
- The business case depends on the size of the discount, the number of days the payment is accelerated and the organization's cost of capital
- The treasury department should be engaged to determine the organization's cost of capital
- Supplier surveys can be distributed to determine how many suppliers are willing to offer discounts in exchange for faster payment

What to Expect

- Ideal Situation: Contracts that already have payment term discounts in place. Suppliers that are willing to provide discounts for early payment.
- **Time to Conduct Study:** 2 weeks (if survey is conducted)
- Time to Negotiate: 1 week
- **Potential Savings:** 1-3%

Recent project work

Mechanical
ComponentsSupplier survey and payment term analysis
resulting in 2% savings in 3 weeks.



Burden Review/ Plant Visit

Eliminate supplier overcharges on depreciated assets and ensure proper labor charges by conducting a plant audit

Approach

- Visits should be coordinated with the supplier's engineering department as they will be most knowledgeable and open about operations
- Suppliers typically post key production metrics in their facility (e.g. equipment uptime, scrap cost, overtime hours, run rate, equipment utilization) which should be noted to challenge current pricing
- Allocating direct cost is a simple matter of counting and asking the right questions during the plant tour
- Allocating indirect costs is more difficult, but several key rules can help build a fair cost model (e.g. identify your company's share of the supplier's revenue and square footage to ensure fair allocation)

What to Expect

- Ideal Situation: Manufactured components of which fixed assets account for a significant portion of total cost. Also appropriate for situations where parts cannot be rapidly moved from one supplier to another.
- Time to Conduct Study: 3-4 Days
- Time to Negotiate: 3-4 Weeks
- Potential Savings: 5-20%

Automotive Components	Review of engine component supplier resulting in 20% savings achieved within 8 weeks.
Formed Metal	Review of roll-form operation resulted in 10% savings within 5 weeks.
Construction Materials	Review of concrete tie supplier resulting in 3% savings within 2 weeks.



Cost Reduction / Raw Material Mitigation

Steel Sourcing – Appliance Manufacturer





- Facing 40% increases in steel costs, the team was selected to lead a strategy workshop to increase leverage with steel suppliers
- Using both internal and market data, the supply base was segmented to identify previously unseen supplier vulnerabilities
- The team was provided with negotiation agendas and leverage to address the negotiations resulting in savings of over 35%



Cost Reduction / Raw Material Mitigation / Supplier Consolidation

Steel Stamping Supplier Consolidation – Automotive OEM

2008

2009



2007

Engagement Overview

- A major consumer of steel enclosures needed to reduce internal as well as supplier costs
- The team executed a supply base rationalization effort to consolidate volumes and reduce the supply base
- Suppliers were presented with scorecards and 2 scenarios – increased volume for pricing concessions or elimination as a supplier
- The number of suppliers was reduced 64% with a net savings of 3% during a time of escalating steel prices



\$0

2006

Cost Reduction / Lead Time Reduction

Component Sourcing – Automotive OEM





- With a component spend of over \$800 million the team was asked to identify savings through complexity management
- After identifying seat fabric as the longest lead time item, the team worked to standardize requirements resulting in a lead time reduction of over 8 weeks
- Increased volumes for key components led to targeted negotiations and a resulting savings on the components of 34%



Cost Reduction / Complexity Reduction

Complexity Reduction – Electronic Components





- During sourcing for electronic components the client ran into sourcing roadblocks when trying to move components with proprietary connectors
- After reviewing key customer requirements, the team identified that standard components, if specified by the client, could be used
- The resulting standard connector strategy opened up competition and reduced next generation sourcing spend by 17%



Global Resin Cost Model

Cost Reduction / Value Chain Analysis

Natural Gas edstock Percent 0 to 0 02 0.10 to 0.15 0.15 to 0.2 0.20 to 0.25 0.25 to 0.3 0.30 to 0.3 0.35 to 0.4 0.40 to 0.4 0.45 to 0.5 0.60 to 0.6 0.65 to 0.3 0.70 to 0.75 \$1.20 \$1.00



- A major resin consumer wanted insight into competitor sourcing practices for resin
- A detailed cost model was developed to compare naphtha and natural gas as feedstock to develop the resin categories
- New supplier opportunities were identified as well as specific market intelligence regarding where competitors were sourcing material from.



Cost Reduction / Leverage Review

Steel Processor Negotiation Support – Automotive OEM



Coil Storage 190,000 ft ²	Flow Through 95,000 ft ²
<u></u>	
	190,000 ft ²

- A major consumer of steel needed to assess current toll processing costs
- The team assessed the true cost to process the coils by auditing the processor's facility and applying activity based costing to create a target price
- Total costs were assessed from mill to processor to stamping facility to determine the best components to source based on achieving the target price
- Scenarios were developed to create alternatives to the processor



Cost Reduction

PCB Teardown – Telecom OEM



Bill of materials				
Description	unit	qty	cost per unit	total cost
80 cm^2 PCB	cm2	80	\$0.012	\$0.962
AMI ROM chip 901227	unit	1	\$3.750	\$3.750
64 pin connector, black, F	unit	1	\$1.287	\$1.287
Flat resistor, MP820, 50.0, 1%	unit	3	\$0.032	\$0.096
4 pin, L connector M, 4mm, white	unit	2	\$0.630	\$1.260
2 pin, L connector M, 2mm, brown	unit	1	\$0.165	\$0.165
2 pin, L connector F, 2mm, brown	unit	1	\$0.165	\$0.165
2 pin, L connector F, 2mm, white	unit	2	\$0.165	\$0.330
1.7V 4mm high intensity red LED	unit	2	\$0.019	\$0.038
10 pin connector, white, M	unit	1	\$0.940	\$0.940

- A global telecom OEM needed to audit electrical components for the PCB assemblies in control modules
- The team used supplier price breakdowns combined with market tests and supplier audits to develop best-in-class component prices
- The pricing data book allowed the team to renegotiate contracts and set productivity targets based on the specific mix of components per module
- Saving resulting in 8% in the first year and 2% for the following years after



Cost Reduction / Supplier Consolidation

Contingent Labor – Light Industrial



	Weighting	Score	1	2	5	4	5
Cost	40%						
Mark-up Percentage	70%		Bottom 30%	Middle 40%	Top 20%	Top 10%	Best for locations
Overtime	10%		Multiplier > 1.4	Multiplier < 1.4	Multiplier < 1.35	Multiplier < 1.32	Multiplier <1.3
Payment Terms	10%		As Invoiced		Net 30		Net 60
Screening Costs	5%		Passed Through		Minor Charges		No charge for pentair
Additional incentives	5%		No incentives				High value incentives
Geography	10%						
%of Pentair locations that can be serviced (i.e. within 30 miles)	30%		< 10%	>10%	>40%	>60%	>90%
%of Pentair spend that can be serviced (i.e. within 30 miles)	30%		<10%	>10%	>40%	>60%	>90%
Willingness/Ability to Open an Onsite	30%		Not willing		Willing		Existing/References confirm capability
Local Account Representative	10%		Not willing		Willing		Existing/References confirm capability
Current Quality	40%						
Is currently preferred supplier?	40%		Avoid	Neutral		Preferred, Willing to Consider Others	Preferred
Internal Scoring (interviews)	25%						
Lead Time	15%		>4 days	>72 hours	<48 hours	<24 hours	Normal request within 24 hours, rush within 5 hours
Turnover Rate	10%		>30%	<25%	<15%	<10%	<5%
Quality Assurance	10%		Assurance program lacking major details	Average quality assurance program		Quality assurance program lacking minor details	Detailed quality assurance program
Customer Service and Transition	10%						
Reference Ranking	40%		Negative	Neutral	Positive	Enthusiastic reference, company not a parallel to Pentair	Enthusiastic reference, situation similar to Pentair's

- Multiple business units in a \$3 billion global conglomerate sources their customer service contingent labor individually
- Multiple contracts existed, and terms, rates and services levels were audited
- Multi-round Ariba auction rounds were conducted with supplier feedback and targets delivered at each stage
- Results savings were achieved through quantifying the service level value and markup prices



Cost Reduction / Contract Audit

Contingent Labor – MSP Benchmarking & Contract Audit



- Cost & Capital was asked to review and benchmark the current use, rates and how savings are measured with the existing MSP whose compensation was partly based on achieved savings
- The team benchmarked the rates for the job categories, then compared that to the charged rate
- Cost & Capital revealed where the client was paying above market rate and what categories required additional layers of audit to ensure performance from the MSP
- The team developed a standard MSP RFP template to ensure compliance





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