Three Steps for Sustainable Cost Reduction

Steel companies set their sights on high performance
Steelmakers are under intense pressure to improve profitability. Market growth has slowed, raw material prices remain elevated and steelmakers have less market power to increase prices.

Steelmakers traditionally have responded by launching cost-reduction projects. In the past, these efforts have tended to produce short-term improvements, but experience suggests effectiveness wanes as management attention is diverted to other priorities. The key challenge is how to sustain cost reduction.

By consistently adhering to a three-stage framework, not only in the cost-take-out phase but also in ongoing operations, steel leaders can achieve dramatic, sustainable improvements and position their companies for high performance.
Shrinking margins pressure steelmakers

Squeezed on the demand and supply sides, steelmakers face intense pressure to maintain profitability. On the demand side, financial crises and market uncertainty have slowed steel consumption with unfavorable consequences on pricing. On the supply slide, industry concentration in the mining sector and Chinese demand has boosted prices for raw materials. As a result, the spread between input costs and steel product prices has declined in absolute and relative measures, in spite of the Hot Rolled Coil (HRC) price going from just over $200/ton in 2001 to over $700 today, as seen in Figure 1, which also shows the decline in average steel company EBITDA margins since 2004.

Adding to these market-based pressures, steelmakers, particularly in North America and the European Union, are saddled with aging equipment and hindered by workforce gaps in skills. These factors present formidable barriers to sustaining cost reductions.

Steelmakers have faced margin pressures before and typically have responded with a multitude of initiatives. While many companies have succeeded in reducing costs, too often the efforts have failed to generate systemic improvements. The lack of genuinely improved processes and practices has failed to shift the cost structure. The gains frequently have eroded as “bad practices” re-emerged and underlying problems migrated to new areas.

Several drivers—speed, simplicity, focus and discipline—are needed for sustainable cost reduction. Speed reduces the time to convert improvement ideas into tangible results. Simplicity eliminates rework and non-value-added activities while standardizing processes to optimize productivity. Focus prioritizes strategic issues to achieve the greatest impact on mill operations without spreading good people too thin, and also to reduce fatigue associated with improvement initiatives. Discipline enables gains to be achieved and creates an environment needed to pursue high performance.

Figure 1. The spread between steel prices and raw material costs declined sharply over the past decade.

![Graph showing the spread between steel prices and raw material costs from 2000 to 2011.](source)

Source: Steel Business Briefing, World Steel Dynamics, Accenture Research
A framework for sustainable cost reduction

Experience demonstrates that a three-stage approach (see Figure 2) enables steel companies to build from short-term cost savings to achievement of sustainable benefits.

Figure 2. Three-stage framework for sustainable cost reduction.

1. **Quick wins**: Identify opportunities for immediate cost reduction. Achieve quick wins to self-fund the program and build confidence among stakeholders in cost relief.

2. **Optimize**: Run current operations more efficiently. Improve business processes, reduce non-value-added tasks and accelerate effective decision making to decrease average unit costs.

3. **Sustain**: Achieve operational and cultural changes by shifting the focus to an efficient and effective operating model. Drive improvements in labor costs through automation and efficiencies. Reduce operating costs per ton through more streamlined processes. Implement innovative sourcing strategies. Reinforce sustainable cost reduction through capability building and training.

Quick wins

Rapidly turn ideas into measurable gains

Usually, there is no shortage of ideas for cost improvements, from shop-floor workers to engineering contractors to plant managers. However, too often a structure is lacking for communicating, reviewing and approving suggestions. As a result, there is excessive time between idea generation and implementation—or, worse yet—a failure to implement.

To address this problem, cost-reduction programs should have a well-defined first phase with an objective to rapidly turn actionable ideas into results, focusing on quick wins that can generate benefits within a few months. Speed can be achieved by using a streamlined screening and approval process and by instilling a sense of urgency throughout the workforce with a comprehensive communications program. Focusing on quick wins can lead to additional programmatic benefits:

- Momentum and energy as the workforce sees tangible results and becomes motivated to share more ideas with management.
- A self-funding mechanism that supports subsequent phases of a transformational program.

Quick wins typically are generated when key stakeholders—such as operators, coordinators and managers—gather to scrutinize current practices. At one steel mill, for example, furnace operators typically walked for 40 seconds to reach the main switch and close the furnace door before processing the heat. During a brainstorming session, an operator questioned why the main door switch was located so far from the furnace.

In a few hours the door switch was moved closer to the door, thereby saving approximately 30 seconds, leading to shorter tap-to-tap time and additional throughput. This example demonstrates the characteristics of a quick win: brief implementation, minimal cost and immediate benefits.

Ideally, brainstorming and evaluating improvement ideas become part of weekly routine in a systemic approach as a more cost-aware culture is developed. Accenture typically sees a 1 percent to 2 percent improvement from tactical improvements that are mostly quick wins. These gains free up capital to tackle structural initiatives with longer paybacks and higher total value.

While speed is of the essence in initial efforts, it is important that company leaders be wary of quick fixes such as headcount or percentage-based budget reductions. Near-term targets might be achieved, but there is the risk of hindering longer-term, structural transformation. Hasty reductions can divert attention from the need to optimize processes and build a culture of operational excellence.
Optimize

Turn the spotlight to improved business processes

Many companies have firmly entrenched business processes, incurring higher costs due to redundant people working on non-value-adding tasks. Complexity builds up over time and undermines efficiency and also slows down decision making. The result: siloed, bureaucratic and slow-moving organizations.

For companies seeking to achieve sustainable cost reduction, optimization of key processes is essential. Accenture has deployed a number of approaches and tools to help accomplish this objective. Approaches such as Lean Six Sigma or continuous improvement can generate savings by focusing on ways to reduce costs without compromising safety, environmental sustainability or capital budgets.

Pursuing process excellence through the use of field-tested methodology helps steel companies make progress quickly toward measurable improvements. Kaizens, a lean management technique, helps to resolve problems quickly, usually within a week or two, and at low cost. Shop-floor and area managers meet to identify key bottlenecks in the process, identify root causes and challenge the norms of why a process works the way it does. The results are typically sustained based on the deep engagement of the stakeholders.

Kaizens are effective for core operations as well as back-office processes. In the operations area, one steel mill conducted a kaizen to reduce reline time. The reline was reduced from 14 days to 12 days through the implementation of multiple time-saving ideas across the process. For a back-office example, an integrated steel mill was able to reduce premiums on a contractor’s rates prior to outages. It was determined that, due to extensive security processing, each contractor worker spent the day prior to the outage at pass control completing a series of tasks required by security to allow access to the mill the next day. These non-productive hours were billed to the plant. The kaizen team redesigned the process and identified future-state processes that reduced contract spend on the day prior to the outage by approximately 80 percent. The plant moved from a first-come, first-served approach to a schedule-based approach. Forms were archived from the previous outage and revised on an exception basis.

Combining results from tactical and optimization phases, Accenture believes steel companies can achieve sustainable bottom-line savings ranging from 3 percent to 5 percent within eight months. Subsequently, the program gains further momentum and executives are in a better position to create the strategic redesign.

1 Japanese term meaning “change for the better.”
Prime areas of opportunity

In collaborative projects conducted in the past two decades, Accenture has helped steel mills throughout the world use key value levers to reduce operating costs and sustain major gains. Some of these are shown in Figure 3, together with the potential improvement opportunity range.

Figure 3. A partial list of opportunity levers to drive down costs.

<table>
<thead>
<tr>
<th>Opportunity Levers</th>
<th>Total Cost (%)</th>
<th>Opportunity Range (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Raw Materials</strong></td>
<td>80–90</td>
<td>3–5</td>
</tr>
<tr>
<td>• Evaluate cost per unit of raw materials based on actual value in use</td>
<td></td>
<td></td>
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<tr>
<td>• Improve process for handling scrap</td>
<td></td>
<td></td>
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<tr>
<td>• Increase reutilization of slag and sludge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Manage yield losses through the production flow</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Improve accuracy of alloy additions</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Operations</strong></td>
<td>2–3</td>
<td>5–10</td>
</tr>
<tr>
<td>• Evaluate cost vs. life of refractory</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Decrease variability of activities through:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- automation</td>
<td></td>
<td></td>
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<tr>
<td>- Improved process control (loop tuning)</td>
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<td></td>
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<tr>
<td>- Decreased operator variability through standard procedures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Resolve trade-offs between manufacturing efficiency (length of runs) and customer service (on-time delivery)</td>
<td></td>
<td></td>
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<tr>
<td>• Define roadmap to implement new technologies</td>
<td></td>
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<tr>
<td><strong>Maintenance</strong></td>
<td>4–5</td>
<td>5–10</td>
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<tr>
<td>• Define and execute standard maintenance procedures such as preventative or predictive maintenance practices</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Improve ability to track, investigate and address root causes for unplanned outages</td>
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<td></td>
</tr>
<tr>
<td>• Optimize inventory of spare parts to balance between cost and response time to equipment failures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Resolve trade-offs between equipment replacement vs. rebuild</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Energy</strong></td>
<td>1–2</td>
<td>5–10</td>
</tr>
<tr>
<td>• Enhance use of recovery gases in coke ovens and blast furnaces</td>
<td></td>
<td></td>
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<tr>
<td>• Improve heat containment through the process</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Optimize energy consumption through advance process control looping</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Labor</strong></td>
<td>2–3</td>
<td>0.5–1</td>
</tr>
<tr>
<td>• Implement a system for performance-based incentives</td>
<td></td>
<td></td>
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<tr>
<td>• Evaluate use of contracted services based on total cost</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Balance size and number of crews against cost of overtime</td>
<td></td>
<td></td>
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<tr>
<td><strong>Intra-plant logistics</strong></td>
<td>3–5</td>
<td>5–10</td>
</tr>
<tr>
<td>• Reduce or eliminate double-handling of material</td>
<td></td>
<td></td>
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<tr>
<td>• Eliminate demurrage fees by optimizing capacity for loading and unloading</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Optimize intra-plant storage layout and routes to reduce fleet</td>
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</tbody>
</table>

Source: Accenture
Sustain

Promote a culture of continuous improvement

Companies may have the preferred processes in their mills and also have established performance management yet lack a continuous improvement culture. Cultural deficiencies are typically not due to a lack of improvement opportunities but rather from a lack of structural support.

Companies need to incorporate tactical areas and optimization with core assets to drive improvement for the long term. Core assets include strong governance, defined processes and supporting technologies. The assets can combine to sustain a continuous improvement culture (see Figure 4).

Governance defines the decision-making process and decision rights. The organization is designed to support the decision-making model. Considerations include geography, assets, customer segments and the supply chain network. The key organizational design principle is to align the organization structure with the decision-making process and decision rights. When this is well defined, many day-to-day decisions can be made closer to the front line, thereby reducing bureaucracy and speeding decision making. Well-designed metrics and feedback mechanisms guide the process and identify potential improvements and leading practices.

As processes are standardized, technology plays a much greater role in sustaining continuous improvement. Repetitive tasks can be automated and better-quality data inspires further improvements.

Technology can also support moving to a shared service model for non-core support functions. Shared services provide cost-effective support to the business, assuming attentive client service and cost management. For example, standard mill operating metrics and financial statements provide management and the workforce with a shared “single version of the truth.” These metrics can move day-to-day decision making lower in the organization, and lead to sharing of internal best practices across operating units and mill sites.

Sustaining cost reduction requires a cultural change in many organizations. Each employee needs to know the direction the organization is headed and feel empowered to share ideas. In addition, leadership needs to lead by example. The organization will read the words, but the credibility of those words comes from the actions of genuine leadership.

Cultural change that enables continuous improvement typically requires training, performance management, and incentives and recognition:

• **Training.** Providing a large base of employees with effective continuous improvement tools can create huge benefits for the organization. Helping employees understand the benefits of the “plan–do–check–act cycle” encourages continuous improvement.

• **Performance management.** Many organizations still lack clarity in this area. Reports are not trusted and effectively used to identify priorities and launch initiatives. An effective system provides reliable, easy-to-understand and focused reports on operational and financial key performance indications.

• **Incentives and recognition.** Leadership needs to identify the best way to reward people for investigating, suggesting and implementing ideas. Ideas range from public recognition to a program of incentives and benefit sharing.

When incorporating all three of these approaches, Accenture has seen improvements ranging from 5 percent to 8 percent in 12 to 18 months.

Figure 4. Key assets needed to build a continuous improvement culture.

Well-defined processes also contribute to continuous improvement. Standard tasks, roles and procedures efficiently convert valuable knowledge into cost reduction for the mill. Brainstorming and evaluating improvement ideas should become part of the weekly routine. A central repository can capture ideas that can be selected and approved for implementation. Selected ideas are given to a well-structured implementation process, with the result being that people throughout the organization have confidence in how improvements are selected and implemented.
At an unprofitable mill, a steel manufacturer was losing millions of dollars due to poor reliability, low throughput and underutilized capacity. To assist in the mill turnaround, company leaders selected Accenture, which, for 20 years, has helped companies implement sustainable cost-reduction programs.

A year-long program was outlined, gaining full support from the president, mill manager and controller. Each of 10 teams was supported by Accenture consultants and a program management office run by the client program manager and Accenture. The program, involving about 50 people, was a comprehensive cost-takeout that addressed most operating areas.

A four-week diagnostic assessment identified opportunities. Baseline costs were defined and pricing effects were normalized, so only operational improvements would count and changes to the cost of raw materials were excluded from performance measurements. The steelmaker followed the three-stage framework.

Quick wins: This process took three months and included weekly meetings that included brainstorming and idea generation. The meetings identified wasteful activities in multiple areas: sourcing, coke oven, blast furnace and steel shop. Quick wins reduced non-value-added processes, contractors and operational changes. These gains made the program cost neutral, thereby allowing the company to focus on larger projects promising greater return on investment.

Optimize: This stage lasted six months and encompassed several areas: operations and maintenance, procurement, sales, general and administrative, and logistics. Project leaders facilitated kaizens, or rapid-change projects, to motivate people and generate savings to finance more ambitious projects. The project team identified more than 500 ideas from the workforce and helped change the culture to a more cost-aware organization. A strategic sourcing exercise yielded improvements ranging from 6 percent to 14 percent across 16 categories. Eliminating redundant tasks and standardizing processes reduced tap-to-tap time. In addition, visibility of finished products and work-in-process locations were improved with barcodes and radio frequency identification, leading to a streamlined re-selling process for byproducts. Cost-benefit analyses of proposed improvement projects gave a quick look into return on investment. Through focus and project prioritization, the team identified a significant potential in annual (recurring) savings while not overloading the organization with excessive lower-value initiatives.

Sustain: This stage overlapped with the optimize stage, and results were seen shortly after it was introduced. To sustain governance, focus and process discipline, the project team created the role of continuous improvement program manager. This decision allowed a single point of contact to enable the organization to execute the process of identifying waste and inefficiency, determine root causes and developing step-change improvements. This move also allowed other areas of improvement to be found in maintenance and reliability, where improvement required attention in planning and execution, performance management and maintenance analytics.

Delivering quantitative results: Some specific benefits of the program include:

- Coke-oven throughput rose 3 percent, with improved stability and reduced coke moisture.
- Blast furnace fuel rate declined by 3 percent through advanced analytics.
- Steel-shop throughput rose 12 percent due to improved yield, greater reliability and vessel availability, along with improved process control.
- Process was sustained by training a dedicated resource from Operations as the continuous improvement manager.
- Training modules were developed for key stakeholders.
- A cost-conscious culture was developed.

Project reviews were incorporated into existing monthly meetings to review costs. Redesigning reports and improving benefits tracking enabled processes for performance management and greater accountability on a daily basis. These changes had a positive effect on company culture within six months after this stage began. Leadership supported individual risk taking and testing of new concepts. Failed initiatives were stopped and used for learning and improving future actions as opposed to a search for whom to punish. Implementing recommendations of an effective process for daily management enabled better decision making and generation of innovative ideas.
Improve margins through sustainable cost reduction

While the steel industry will always face external challenges from volatile demand, pricing and raw material costs, business leaders can mitigate those effects. Cost-improvement strategies that drive shareholder value should be a priority.

The approaches presented provide a framework to realize rapid benefits while reducing costs and maintaining service levels. As the case study illustrates, leaders of steel companies can achieve recurring savings in the millions by successfully implementing these ideas.

Consistent support and widespread participation, however, are needed to deliver sustainable reductions. Employees need support from above to make tough calls. Genuine cultural change is essential to sustain the benefits and promote a lasting focus on high performance.
About Accenture

Accenture is a global management consulting, technology services and outsourcing company, with 257,000 people serving clients in more than 120 countries. Combining unparalleled experience, comprehensive capabilities across all industries and business functions, and extensive research on the world’s most successful companies, Accenture collaborates with clients to help them become high-performance businesses and governments. The company generated net revenues of US$27.9 billion for the fiscal year ended Aug. 31, 2012. Its home page is www.accenture.com.

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