Milliken Performance System
Zero Based Thinking
Illuminating Opportunities,
Guiding Improvements

Performance Solutions™ by Milliken
Leading to Operational Excellence

Zero-Based Thinking-
Illuminating Opportunities, Guiding Improvements

Across industries, many companies are “hitting their numbers”. Corporate leaders set budgets and establish performance targets based on their current standards or what they believe to be stretch goals. Executives diligently guide their organizations to achieve these goals, most not realizing they are championing and monitoring deficient performances and allowing substantial costs to drain from their organizations.

Milliken & Company, a multinational group of textile and chemical companies, has guided its operations improvements in a different way, with zero-based thinking. The concept is based on a simple question: if you could remove all wastes of time, money, and resources from an activity — making it zero-based — what cost savings would that return to the organization? The immediate reaction is that it’s an impossible objective. But like any target, a goal of zero certainly provides direction. And there truly are some zero-based targets that should always be sought, such as workforce safety.

Often inadequate goal setting creates an expectation that if budgets are met, it’s considered acceptable, it’s considered good,” says Phil McIntyre, director of business development for Performance Solutions by Milliken®, the performance-consulting division of Milliken & Company. “A budgetary mindset doesn’t really highlight the opportunity for improvement that’s possible. Many times there is not a metric in place that shows what was really possible as much as there was a mechanism in place of meeting expectations.”

McIntyre describes how most companies approach the manufacturing of a product with an expectation of the cost to produce it. Within that expectation are allowances for machine stoppages, allowances for waste, allowances for changeovers, allowances for style changes, allowances for machine failures, allowances for returns, and so on. “These allowances are baked in early as to what the cost of the product should be, and, typically, if that cost is met during manufacture, it’s considered acceptable. A zero-loss mindset highlights the total of those losses within the expectations, within the budget, and challenges what’s possible.”

The concept of zero-based thinking isn’t new. Quality consultant Philip Crosby promoted much in the 1980s with his mantra of zero defects, arguing that the resources needed to get to zero defects would more than offset the costs of poor quality, illustrating his “quality is free” thinking. Milliken & Company was motivated by the concept, says Craig Long, executive director of Performance Solutions, but looked to Japanese manufacturers for a prescriptive way to apply it. “It was the Japanese who really educated us on the concept of zero thinking, that perfection is possible if you don’t try to take on the whole thing at one time but instead attack it incrementally,” says Long. “It was through these processes that we really began to eliminate some defects that had plagued our industry for years and years, and we totally eradicated them.”

It’s common for manufacturers to initially struggle with zero-based thinking. Even at Milliken there were “huge internal fights” among executives when they were first held accountable to zero-based targets, recalls Long. He and his colleagues argued that some allowances are simply unavoidable and others are necessary. Long says that ultimately there may not be a way to get to zero, but by identifying targets of zero, it directionally sets the organization to work on the biggest improvement opportunities (i.e., those furthest from zero and with the most to be gained). “That’s really the big light bulb. We tell people, ‘You’re going to go after a big number, and you’re never really going to
get there.” A leading Performance Solutions’ client described how his company used to set goals prior to its current practice of utilizing Milliken’s zero-based thinking. Back then, the manufacturer would look at current performance measures then estimate a potential percentage of improvement which then indicated the resources and investments applied to the area. Zero loss thinking takes practice, but Performance Solutions’ clients find the practice very revealing. It provides leaders greater clarity than trying to move from current state to 5 percent better. It also establishes a confident way forward for leaders who know they have prioritized projects in a meaningful, more enlightened way.

“Early on, when a company adopts a zero-loss mindset, the purpose should not be to assign a dollar sign to it,” says McIntyre. “The purpose of a zero-loss mindset is to understand where the cash flows are going to directionally point you and help you establish improvement projects. Early on, you need a certain level of directionally accurate instead of accurate to the fifth decimal point. The losses direct you where to assign projects and assign your resources. Over time — with that time frame being different for different organizations — you need to go back and define the level of accuracy required to validate improvements.” For example, pursuit of zero downtime for a machine would be supported by target metrics (e.g., unplanned stops per week) that progressively get closer to zero in order to drive continuous progress toward zero.

Since Milliken & Company began zero-based thinking, Long says the company has eliminated half of its cumulative target. Surprisingly, he sees that as the bad news. “The good news is there’s still another 50 percent that we can refocus on and go after.”

Building the Case for Zero-Based Thinking

Common manufacturing variable conversion costs are labor, energy/utilities, and materials/supplies. Each of these cost “buckets” is further tracked by stratifications. For example, labor rates vary by tenure, pay grade, position, etc. Material and component costs vary by the life associated with the material and its usage (general vs. product-specific). Utility costs vary for water, power, steam, and gas. With a zero-loss approach, anything that prevents an organization from making a perfect product with a perfect process (i.e., no wastes, de-
lays, injuries, etc.) contributes to a loss of cash flow specific to one of those cost buckets.

For example, consider the losses associated with a machine breakdown:

- **Labor**: When the machine stops, someone in the organization assigns labor to get the machine up and running or it’s ingrained in the organization that maintenance will respond. There is a cash flow associated with maintenance labor going to repair the machine, as well as cash flow for the idle production labor waiting for the machine to return to service.

- **Supplies**: There usually are supplies associated with a breakdown, both to repair the machine and those materials or parts that have been damaged by the unexpected stoppage while in the middle of production.

- **Utilities**: Despite no production from the machine and no products coming from the process, the utility meter continues to spin for that area of the plant (i.e., air conditioning, lighting, electrical power).

“We encourage an organization to challenge their current mindset that these are expected, budgeted costs,” says McIntyre. “If you can start capturing that portion of cash flow associated with a breakdown, and then add up all of the breakdowns and therefore all the cash flows within a period, it highlights significant cost-reduction opportunities as opposed to a historical budget mindset. We’ve seen many organizations that show between 50 percent and 60 percent of their cash flow associated with losses, but they’ve got a very small portion of their budgeted spend dedicated to attacking those losses. When an organization really begins to see and understand that loss number, they can start dedicating between 50 and 60 percent of those resources to attacking the 50 to 60 percent of their cash flow losses.”

McIntyre says that most executives picture manufacturing wastes as tangible categories, such as poor quality products or excessive inventory, but they rarely consider budgeted areas of production spend. He argues “that 100 percent of the cash flow in an organization not associated with machine run time is a waste. When you start looking at it that way, it significantly opens up the possibility of where we should be working. Do we have the right projects established around this? It starts getting you out of the firefighting mode and into the sustainability, continuous-improvement mode.”

Zero-based thinking also challenges the ineffective and all-too-common practice for seeking cost reductions: Many organizations with recessionary cost pressures subsequently threw down mandates to reduce costs, especially labor. Often that meant “across the board” labor cuts from locations, departments, production lines, etc. For example, a mandate for a 10 percent labor reduction meant that every manager cut his or her staff by 10 percent. That’s not only bad for morale for the remaining 90 percent of employees, it’s done little to improve the nature of work and probably made the job more difficult and less cost-effective, says Long.

When a company starts identifying activities that contribute to losses, potential labor-cost reductions materialize in a more meaningful way. If a company is attacking its losses, it identifies the labor component associated with each loss, allowing the company to redeploy labor once improvements are made or strategically consider plans to align labor with changing market demands (new products and new manufacturing lines and equipment). For Milliken & Company, an unintended consequence of attacking losses was improvement in the nature of the work. Instead of fixing and firefighting, labor is applied more efficiently and the workforce mindset improves along with it. “There is a certain calmness that starts to occur in plants,” says Long. “You can walk into an operation and feel it. There is discipline and control rather than people fighting machines every single day.”

Many executives are skeptical of the zero-based approach until they witness it for themselves. “We show them what Milliken did, and we say, ‘Yes, it’s possible because we’ve done it for 16 years.’ We don’t give any impression at all that
we’ve taken 100 percent of the loss out. We even communicate that we’ve still got losses in there.” With that said, McIntyre also notes that one Milliken facility has not had a machine breakdown in eight years.

“We can show organizations how to get to that point, but you need to communicate to the workforce that no one is going to directly lose their job as a result of those improvements,” says McIntyre. “Obviously, 15 years ago that Milliken site had different layers of labor to correct the breakdowns. And now, through attrition, through retirement, and through other things, they’ve been able to show significant cost reductions over time — it wasn’t a purge of people as they got much improved and reduced machine breakdowns.”

**Getting To Zero**

Zero-based thinking helps an organization apply the Milliken Performance System (see sidebar) to its unique environment. It has a critical role throughout the six-step method used by Performance Solutions to improve client companies:

1. Accommodate, educate, and demonstrate: Executives are invited to begin their companies’ transformations by observing the Milliken Performance System (MPS) in action at Milliken facilities. At this stage, executives learn about zero-based thinking and see how Milliken has computed its own losses and uses those loss figures to guide improvement at Milliken facilities.

2. Assessment: Once a manufacturer commits to an engagement, Performance Solutions practitioners review their operations, evaluating one or many sites. Practitioners have typically spent an average of 20 years working within multiple Milliken facilities. They examine operations, identify weaknesses, and quantify losses of current processes by linking the losses they observe to the manufacturer’s financial statements. At this stage, a company begins to understand how much cash flow it’s losing.

3. Master plan: During the assessment, practitioners will continue to educate the client around loss development and loss stratification specific to their operations. This helps the executives identify their most impactful loss targets (apply the 80/20 rule) and establish a plan to systematically address weaknesses within the company that contribute to those losses. In coordination with practitioners, executives will select the site(s) where improvement work begins.

4. Plant implementation plan: Improvement work moves from strategic to tactical, and a plan is worked out that identifies the first project for improvement within a single facility, the employees that will be directly involved in improvement, and how MPS should be applied. Zero-loss thinking is instrumental in plant planning.

5. Model within a plant: The first improvement project addresses a specific area, line, or piece of equipment for complete transformation — that is, the objective is to get the model to as close to zero losses as possible within a 90-day period. The model is selected not only based on the size of the loss opportunity and urgency, but also on how it will perform as a model to help other areas replicate improvements.

6. Replication: Once the model area is completely transformed to zero losses (or as close as possible within 90 days), zero-loss analysis and MPS concepts and standards are deployed to other areas within the plant and other plants. Since personnel have learned how to transform an area and believe in zero-based thinking, the pace of improvements rapidly accelerates and disseminates throughout the plant and company.

The Performance Solutions improvement approach differentiates itself from other initiatives in that experienced practitioners help companies customize MPS to their unique operations — it’s not one size fits all — and it’s an incremental process. Long says it does not start off with a big hope or promise, causing people to think, “Here we go again. This too will pass.” Instead, practitioners identify a zero-loss target and address improvement on just one particular line or machine. “The concept is if we can do it on one — addressing losses on the one piece of equipment, putting in the countermeasure for improvement,
Managing the Model

A key step in implementing the Milliken Performance System is to identify a specific area, department, line, or critical piece of equipment within a plant or plants to begin the lean transformation. Leadership’s role in this stage is to guide the selection of the model, sorting through criteria, such as urgency for improvement, replicability to other areas, and capacity for complete improvement.

That guiding role is critical to overall transformation, says McIntyre. For example, if a model area is already performing well, then it might be perceived as just a continuation of good performance. Or if an area is dealing with a new machinery installation or ERP implementation, availability of resources for a performance system is likely to take a back seat. Leadership must identify poorly performing units with stable management and a desire to improve that, once improved, the rest of the organization will rally around. And in large organizations, only leadership can make the difficult decision of identifying the breadth of model replication — identifying areas and locations that are strategic and transformative for the organization, and those that are not.

Alan Hoover, general manager, Jane’s Dough Foods, says his company “will start small and develop a model room that is laid out properly, where things are labeled properly and put into their proper position, and where you can see the abnormality and normality within one second. And we’re going to get that right, and then move it out to the other parts of our facility. Although it may take a little bit longer on the front end, once you get [the model] right and everybody sees it and gets it, then you’re going to be able to move very quickly to implement it systemwide.”

Leaders should be patient upfront with selection and transformation of the model, Hoover advises. “You can play a key role with that smaller group, that smaller area, and make sure it’s really done right so that it gets replicated much faster. I think patience on the starting end is a key... We’re going to move slowly at first, but then we’re going to move very fast.”
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fying losses as much as 25 percent to 50 percent of their costs of goods sold.

While excited by the loss numbers and potential savings, which will vary by company and the nature of the industry, Glover says that executives still will argue that it’s not all obtainable. They insist that it’s necessary to back out activities from the computation, such as preventive maintenance required to keep equipment running or changeovers to accommodate varied product mixes. This is where zero-based thinking slashes through traditional corporate expectations and truly challenges executives: For example, preventive maintenance (PM) at many companies is typically allocated in increments of eight hours (one shift), regardless of how much work really occurred. Performance Solution argues that it should only be allotted the true amount of work time, or, in some cases, none at all as PM can be done while equipment is running and by operators at the machine. Similarly, the expectation is that in order to change over equipment to run a different product and optimize the company’s capital equipment, the equipment must stop for the changeover to take place. Some Milliken facilities have developed safe ways to keep equipment running while incorporating all or parts of the necessary changeover.

“Treat everything as if it should be perfect, and your equipment should never stop making the product,” instructs Glover. “Everybody that works on the product should do it the most efficient way. Everybody should have 100 percent attendance. All these types of things come into play. Start thinking about it from that standpoint, and you can start seeing just how much money is really on the table.”

Glover says that with an 80/20 focus on losses, it becomes possible to remove 90 percent of losses from a singular machine or activity within 90 days. “For example, so many people try to fix all their breakdowns, and they just get overwhelmed. You can’t. It doesn’t work as well that way. That’s why I think the ‘focus’ word in focus improvement is so critical in our approach.” That can be as straightforward as trying to eliminate nine out of 10 breakdowns on a machine. “One of the things we ask is, ‘Can you get it down to where you can count it on your hand?’ So if we’re averaging 10 breakdowns or 10 minor stops a day, then we have the operators tracking how many occurred. If they can count them on their hands, it’s a lot easier than calculating 0.076 percent of throughput. It gets them focused in the right way.”

McIntyre says the loss landscape also helps Glover and the practitioners give priority to MPS pillars — e.g., daily team maintenance, 5S, process control, etc. — that will be the most effective to address losses initially but also support long-term improvement. “Part of master planning is to design the implementation to score some quick wins, but, at the same time, build a system that is sustainable so that you’re not fighting these same problems a year from now. Let’s attack the losses, but let’s also establish the infrastructure so that you can continually build on it after we’re gone.”

Zero-Based Thinking and Manufacturing Strategy

The Milliken Performance System has many of the same principles and tools of lean manufacturing and well-known Japanese improvement methodologies, such as the Toyota Production System. That’s not surprising, since many of the MPS characteristics were learned through dozens of trips to Japanese benchmark companies over the decades. But one distinction between lean and the Milliken Performance System is the method to identify and guide improvement efforts. With lean systems, wastes are identified with value-stream mapping that principally relate to time (lead time waste and delays vs. value-add processing time); there is an assumption there is an assumption that minimizing lead-time wastes increases cost savings. Zero-based thinking starts at the bottom line --costs --and gives improvement direction based on where the most costs can be saved.

In addition to identifying plant- and line-level losses, zero-based thinking helps senior leadership more accurately assess the production capacities that exist in their plant networks. “You will uncover so much ability to improve that you start having the manufacturing-footprint rationalization discussion, which then takes significant money out of the supply chain,” says McIntyre.

“A footprint rationalization may be in consola-
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Leading to Operational Excellence, adds McIntyre. “It may even be shift-schedule changes. Many plants have found the power to take a shift out, still keep their workforce employed, and take advantage of these gains along the way. There’s a lot of creative ways that people can take advantage of these improvements.”

With a better understanding of real capacity (absent wastes and budgeted losses), executives can make better decisions about where to make product and what products and what volume of products can really be made without capital investments. Long says that many CEOs report back to him that they’re making more product in less time and with fewer resources, and they then begin to explore ways to fill that capacity. “Now new product development, commercialization, sales force effectiveness, and all these things really start coming into play. This is where the real advantage is.” Zero-based thinking provides leadership with more data and more reliable data to make those decisions.

“Once your eyes start to open and the vision starts to develop of what waste looks like, then it opens up a whole other possibility of costs within the supply chain, such as inventory line items, working capital, rental, usage cash, etc.,” adds McIntyre. “Once you see it, you can’t walk by it without seeing it again.”

For multi-site organizations, zero-based thinking fosters positive dialogue between plants and their managements, common approaches to analyzing losses given the nature of their operations, and standards for communicating losses and the buckets of spend they affect. Zero-based thinking is a tool that leads to a new way of thinking. “You’ll eventually get to the ability to share projects, share successes, and have a commonality of thought,” says McIntyre. “But there are a lot of positive arguments that lead up to that point in the development of a loss mindset.”

MPS and the Milliken approach is “about the culture. It’s about the people. At the end of the day, there are thousands of books written on lean, six sigma, and TPS. If the leadership isn’t capable or willing to go through what it takes to build a high-performing team, it doesn’t matter how many tools and how many super-duper black belts you hire, you’ll never get there. And the Milliken system, in my opinion, focuses directly on the culture. And that’s what enables them to reach the performance levels that they have,” says McIntyre.

“Organizations that do the best job of taking losses out of supply chain are those in which leadership has embraced it, leadership has established the right metrics, leadership has established the right review processes,” says McIntyre. “They might not necessarily understand it to the nth degree, but they understand the size of the prize and they want to establish metrics around achieving that.”
Put Performance Solutions to Work For You

Each experienced practitioner uses Milliken's world-class and award-winning approach that has been developed through two decades of benchmarking best practices around the world. Milliken's approach is grounded within an organic, associate-based culture. Discover how Milliken's practitioners work alongside leadership, management and associates from all manufacturing disciplines to create higher performing and safer organizations.

Visit www.performancesolutionsbymilliken.com to learn more about Milliken's consulting and education services.

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