The future of operational excellence – beyond lean

How Run-to-Target manufacturing transforms culture, capability and cost
Introduction

Today's companies are struggling to make a breakthrough in manufacturing performance. For all the investment in lean manufacturing, Six Sigma and total productive maintenance (TPM), companies still find their manufacturing results lacking. Average factories operate at 55%-65% overall equipment effectiveness (OEE) with mean time between failures (MTBF) on the line of 4-10 minutes. But not every attempt at improvement has to end in disappointment. A fundamentally different approach to manufacturing excellence has emerged, one that integrates lean and TPM with reliability engineering, equipment ownership and daily management systems. Run-to-Target (RTT) manufacturing, pioneered by P&G, is not another quick fix or program of the month. It is a top-to-bottom transformation with proven results, built as part of a larger Integrated Work System (IWS). RTT focuses on three key aspects:

1. Well-structured daily execution based upon core processes
2. A zero-loss focus through easy-to-use statistical tools
3. Leaders empowering the workforce so that technicians lead the transformation

Through wholesale adoption of this approach, P&G has continued to move its factories to 85%-94% OEE and MTBF of more than 240 minutes, with lines achieving only one to two unplanned stops per day. This has enabled “lights-out lines,” “cash positive factories” and the ability to change over so frequently that they can produce the top SKUs totaling 60%-70% of the factory volume every day. This reliability and flexibility have led to installing Amazon directly at the end of the lines in a number of factories. P&G continues to apply this approach to reduce costs by 3%-5% year over year.

Having pioneered this fundamentally new approach to manufacturing excellence over decades of trial and testing, P&G and EY have now aligned to offer this solution to other companies. Over the last three years, increasing numbers of businesses have adopted the RTT approach and the results have been amazing. RTT has been successfully implemented across industries, manufacturing technologies and geographies with widely differing operator capabilities.

IWS delivers more than 2,500 highly codified manufacturing capabilities combining reliability engineering with lean, TPM, equipment ownership and daily management systems. It contains wide-ranging analytics, work processes, tools, techniques and training, and is structured across phases of maturity. All capabilities are clinically linked to progression, with a comprehensive set of phase exit criteria and assessments. Its highly structured, integrated approach enables fast and sustainable advances through the phases. The IWS journey begins with RTT.

While RTT and IWS may at first sound similar to other operational excellence programs, this combination of systemic transformations is differentiated in numerous areas by its broad scope and unique methods. For example, increasing the core technical and problem-solving skills of the teams, including maintenance, differentiates IWS from traditional approaches. IWS also enables a transformation from a traditional and horizontal shift-based organization structure to a vertical line-centric model that establishes clear ownership, accountability and results by line. This paper focuses on eight key differentiators of RTT that collectively can help companies make a sustainable breakthrough in manufacturing performance.

We’ve already helped some of the leading consumer products companies deliver breakthrough results.

Case study example: US$16 billion packaged foods company

“ Able to reduce from 7 day operation to 5”

“10% increase in capacity”

“Eliminated 6 million production stops”

“Increased OEE by 18% generating US$120m in savings and reduced CapEX by 13%-15%”
Focus on the business objectives and results, predicated on a zero-loss mentality and 100% employee ownership

Two principles drive IWS: the quest for zero loss and the development of 100% employee ownership.

Achieving a sustainable zero-loss value stream from raw materials to a consumer preferred product will provide a breakthrough. Waste or loss is often invisible to those surrounded by it. Getting people to see it requires a mental shift triggered by defining and envisioning the ideal — zero loss for every element in the supply chain. The goal is to understand that ideal, determine the current recoverable opportunity and relentlessly set the organization on the path to its future state.

Individuals develop work plans that deliver their part of the organization’s strategic loss reduction. Those on the floor develop understanding of how their continuous loss elimination specifically contributes to the company’s success. Playing a role in the improvements also makes their workdays more enjoyable as their uptime improves and the stability of the operation grows.
Leadership is a critical driver of the journey; leaders actively develop their people and drive culture every day

Choosing to envision, engage, empower and develop every employee in the creation of a waste-free material-to-product transformation system is the meaning of IWS. Leaders must demonstrate the value of this change by being the first to implement it (learn and do) and then the leaders must teach those they lead.

This learn-do-teach approach must begin at the very top of the organization and extend to the people doing the material-to-product work.

Through RTT, managers become servant leaders who remove barriers to operator success, realizing that the operator is the only part of the workforce that actually transforms raw materials into finished products. All managers spend dedicated time each day on the production floor, assisting their teams in their equipment interactions, where they can see firsthand the difficulties that hinder improvement.

All people want to do good work, to contribute and to develop. Sharpening loss elimination skills provides the medium for the zero-loss culture to come to life. Leaders doing hands-on work demonstrate and then teach these skills to their partner workers. The culture of supportive and servant leadership and continuous improvement is the foundation of understanding and mutual respect.

The only way a leader "adds value" is by developing and evaluating the people they support.
Total employee ownership leverages the full capability of the organization

While other approaches often rely on a small group of experts to swoop in and temporarily save the day, IWS builds skills throughout the entire organization, turning every member into a problem solver. In essence, IWS is an operator-led transformation. Operators are coached to transform into equipment owners who take on increasing levels of ownership for maintenance and improvement through growing technical expertise and standard work processes.

Typical improvement focus (Top loss only) vs. All employees are engaged to identify and eliminate all losses

“100% of the brains are thinking versus 20%.”
4 Fundamental shift to operator technical mastery and equipment ownership

In a traditional factory, operators start and stop equipment, clear simple jams and keep their work areas clean. When a problem occurs, they call maintenance to fix it. Maintenance personnel spend most of their time dealing with unplanned equipment failures and try to find time to complete planned maintenance activities.

The work and tasks done by operators are significantly different from typical models, and they evolve during a plant’s journey

Through autonomous maintenance processes, operators gain technical mastery first through cleaning and inspection capabilities and later through in-depth machine component training. Operators learn the requirements of every component and take ownership to keep the equipment in the best possible condition to reliably make quality products.

Through progressive maintenance, personnel transition to time-based and condition-based work. They use their technical expertise to help develop operators, and they turn over inspections and most daily maintenance to the operators.

As a result, the role of the operator is less about pushing buttons or reacting to problems and more about maintaining standards by monitoring conditions and taking actions before a problem occurs. Maintenance personnel stop running to the hottest fire and spend most of their time planning and coordinating interventions. In general, the atmosphere transforms from chaos to calm.

Work and tasks done by operators are significantly different from typical models, and evolve during a plant’s journey.
In many non-IWS factories, management focuses on downtime. When results are reviewed for an area, the metric everyone looks at is total downtime. Mechanics are urged to get equipment running as soon as possible. If the line is down, get it back up! Maybe there will be time later to fix it right. Orders have to go out!

Many sites ignore minor stops, in which equipment can be restarted in a short time, and some automated systems will not even count them as downtime. But these repetitive quick stops add up, and they tie operators to the equipment. Every stop creates a variety of potential issues. Quality suffers. Injuries are more likely when a person is rushing to get a stopped machine running. And stops breed more stops: machines are most likely to stop right after they are started, because of poor preparation or instability in ramping up to speed.

By contrast, IWS focuses on lengthening uptime, the amount of time between stops. Every stop counts, no matter how long. Stops are traced to root causes, and equipment standards are established to prevent a recurrence. The most frequent stops are the most aggressively attacked. Operators take pride in prolonging the time between stops and keeping total stops to a minimum. The ultimate measure of success is a machine that stops only when it is planned to stop.

IWS utilizes analytical tools developed through reliability engineering. There are tools that analyze and predict the interaction of various types of stops, tools that optimize rate and line balancing, and tools that measure statistical improvement that a process has made. Each tool has training materials and easy-to-use templates based in Excel.

A good example of this is the rate optimizer tool used to determine the best speed at which equipment should run.

Factories often run equipment at a faster rate than what will produce the most throughput. For most observers, this is counterintuitive. How can you slow down and make more? The short answer is that the faster you run, the more often you stop. At some point, the accumulation of stops exceeds the increased production. The rate optimizer takes several pieces of data on rate, stops, planned downtime and line complexity, and it develops a performance curve that shows the rate to run for optimum cost, as well as optimum throughput. Optimum rates are not static, and the rate optimizer can help determine the improvements needed to “earn the right” to speed up successfully.

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Even though throughput is the same, no. of stops, scrap, quality and productivity is better in B.
Standards are uniquely embedded in daily management systems, which means they are never static

Daily management systems (DMS) are step-by-step processes practiced daily to maintain or incrementally improve results. The best-known standard processes are applied in a systematic approach with clear responsibility and ownership. On-the-floor activities are focused on standard processes that deliver and sustain results, and completion is rigorously monitored for effectiveness.

Examples include centerline management, where operators manage settings based on standards established through understanding the needs of the equipment transformations. Clean, inspect, lubricate (CIL) standards keep equipment in optimal condition to efficiently make quality product.

When results do not measure up, the first question asked is whether the DMS that controls the result was executed according to standards. Events that prevent full adherence to DMS standards are addressed daily to bring performance back to expectations. Uncertainty and variation between operators and shifts are eliminated. Using DMS provides a common foundation for the entire organization to build on. Because of the rigor of the process, changes can be easily evaluated for effectiveness.

Typical daily management systems

- Centerline management (CL)
- Defect handling
- Clean, inspect, lubricate (CIL)
- Breakdown elimination
- Maintenance planning and scheduling
- Change management
- Rapid change over
- Incident elimination system

- Capabilities from TPM, lean, reliability engineering and other systems are embedded within the DMS.
- Making it part of the daily activity significantly increases understanding and adoption.
- Rigorous execution is vital: any fix to a line stop must find its way back into a DMS so that it will not recur.
Daily direction setting is key to the transition from “reactive” to “predictable,” setting the plan for the day

Complementing the daily management systems and analytics is daily direction setting, which plans the work for the 24-hour day and includes the line structure team, team supervisors and selected operators. Work is prioritized based on both leading indicators and past data. The key is to focus on input measures (e.g., eliminating equipment defects or maintaining center lines) that lead to desired output measures (e.g., staying on schedule). Daily direction setting helps to solve problems and to return equipment, methods and processes to base condition. It encourages the resolution of problems at the lowest level where and when they occur by giving timely and correct support at that level.
The RTT accelerator approach achieves quick results

RTT consists of three elements that set it apart: accelerate the deployment approach, drive tangible results and build capabilities. Many operational excellence programs take a long time to show results. But RTT can produce tangible improvement in as little as 16 weeks. IWS at a site typically begins with the implementation of the RTT accelerator, the foundational daily leadership cadence that drives the organization. The accelerator incorporates RTT capabilities and rolls them out in a fast-paced program, starting small and quickly gaining steam.

Day by day, new components are added, and performance is sharpened through practice and coaching. Collaborative line structure teams – with leaders from operations, maintenance and process control – are taught how to guide each production area’s proactive daily work. Standardized metrics and advanced analytics are used to identify hidden opportunities and develop action plans. What emerges is a solid base of predictable results and behaviors that prepare a site for continually improving performance.

The system develops a momentum all its own, running toward full rollout. On the shop floor, you might hear “We are getting it before it bites us” and “When will we do this on my line?”. Once the groundwork is laid and the culture shift starts, the results often pour in. By the end of 16 weeks, clients typically see these benefits: throughput goes up. Stops are decreased. Scrap is reduced. Engagement soars. Life in the factory becomes more predictable. Just as importantly, results are sustainable because the organization has learned a new approach to its work – one that can build a better future and working world.

Average client results during RTT implementation

| MTBF: 37% | Throughput: 32% | OEE: 12 pts |

Why EY?

At EY we work hard to understand our clients’ issues and are driven to ask better questions in the pursuit of making their businesses work better. Our deep industry-specific operational leading practices and unique ongoing collaboration with industry leader P&G mean that you can benefit from our insight and deliver a better working world for your people.

Many companies attempt to implement operational excellence programs such as Lean, Six Sigma or TPM. They pick and choose tools, try them out and often find that any improvements are unsustainable. Other times they hire people who have been part of a program elsewhere and expect them to duplicate it. Building a program that can be applied uniformly across the enterprise takes tremendous organization, planning and resources.

By using EY, clients can quickly begin transforming to a proven, integrated system. From corporate headquarters to the shop floor, EY coaches the manufacturing organization in accelerated transformations that build lasting capability. The goal is for the organization to replicate early success throughout the enterprise, increasingly using only internal resources. EY advisors help begin each stage of the journey, but as the culture builds, clients find less need for help.

In the end, IWS is a people system. People accomplish more. The organization has more flexibility, tackling challenges from suppliers, customers and consumers with the same passion that it applies to internal issues. New products and equipment come in running as well as or better than the ones before them as the organization analyzes and plans for every detail of every initiative.

IWS focuses on delivering superior business results and positive culture change at every stage of its deployment and long-term implementation. It helps build total employee ownership and harnesses the power of your people to make a difference every day. By committing to an enterprise transformation, you can deliver productivity, cost, cash, service, quality and safety goals you never thought possible.

We hope you enjoy the journey.
About EY
EY is a global leader in assurance, tax, transaction and advisory services. The insights and quality services we deliver help build trust and confidence in the capital markets and in economies the world over. We develop outstanding leaders who team to deliver on our promises to all of our stakeholders. In so doing, we play a critical role in building a better working world for our people, for our clients and for our communities.

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