

THE BEST GETS BETTER

Autoliv Deploys Leading2Lean's Lean Execution System to Worldwide Success

Executive Summary

When Autoliv chose Leading2Lean's Lean Execution System (LES) for a global deployment to more than 80 plants, it was the culmination of proven success and the opportunity for a worldwide manufacturing standard and scorecard. Providing the right information to the right people at the right time unlocked the innovation and creativity of the entire workforce to achieve an improvement of 5% in operational availability (OA), 30% faster response time to equipment issues, and 12% reduction in cost of spare parts among other improvements, including throughput efficiencies and cost of product. The global deployment was completed in less than 2 years.

About Autoliv

Being at the top of an industry is never an end to itself. Being the best must come with a mandate to continually innovate and improve.

Autoliv, recognized for operational excellence, is the worldwide leader in automotive safety; the company makes seatbelts, steering wheels and approximately 40% of the airbag market. The company, headquartered in Sweden, has more than 80 plants globally, including 8 in the U.S.

Autoliv insists on seeking the best partners, technology solutions, and operations enhancements since the airbag industry is a no-fail environment. Autoliv's products must work from the day they are manufactured and for the life of the vehicles they are installed in.

Autoliv's Manufacturing Challenge

Initially, only a few Autoliv plants in Utah were using CloudDISPATCH, the core of Leading2Lean's Lean Execution System (LES). The goal of that first deployment was to improve operational availability of the production lines but, as the use of CloudDISPATCH increased, Autoliv improved quality, cost of product, employee training, employee certification and other production metrics.

In modern manufacturing, automation and mechanization are standard. When any process, material, equipment, quality or personnel abnormality impacts a production line's ability to perform at standard, immediate action is necessary to identify the root causes and implement resolutions that resolve them – fast. Production lines at Autoliv, as with any manufacturer, cannot fail – they are revenue generators and are critical to their mission of saving more lives.

What Autoliv wanted was a single common production system across all lines, functions and plants that would harmonize existing disparate systems, fix data gaps and drive Lean actions toward creating a sustainable culture of continuous improvement.

Autoliv found that Leading2Lean's CloudDISPATCH provided maintenance and production teams with real-time data visualization about production effectiveness, equipment, parts and history at their fingertips during abnormality assessments and line repair work. In short, it accelerated improvement by getting the right information to the right people at the right time.



Validate and Expand

By 2012, successful performance of the original plants convinced Autoliv's leadership to expand the use of CloudDISPATCH to several additional plants in North and South America.

Autoliv valued CloudDISPATCH's ability to overlay and harmonize existing disparate systems, create simplicity, provide operational visibility for management, and insight to the issues that disrupt production. Increased real-time visibility in Autoliv plants means problems are identified and resolved with greater speed and permanency because of integrated Lean tools such as Yokoten, Kaizen and Problem Solving. Best practice Lean principles on the plant floor incent workers to identify, correct and share problem resolutions.

Since CloudDISPATCH is Cloud-based, its deployment was not disruptive or risky to Autoliv's production lines and did not require any investment in computer technology, something all manufacturers are understandably reluctant to undertake. CloudDISPATCH reflects the reality of the plant floor and integrates existing legacy systems, eliminating any need for Autoliv to "rip and replace" across their global plant network. Autoliv's plants use different ERP, MES and CMMS platforms and CloudDISPATCH successfully overlaid them all, using an advanced API solution.

Equally important, Autoliv saw improved employee contribution and engagement. CloudDISPATCH did this by giving each employee not only visibility, but also the ability to act, make improvements, quickly identify abnormalities, report issues and suggest improvements while in the task, not after. Manufacturers know that systems that are not intuitive generate manual workarounds such as binders, spreadsheets and whiteboards. At Autoliv, full plant visibility fostered accountability and led to more effective and efficient abnormality problem solving. In short, it empowered the human element and harnessed human intelligence and intuition to realize production improvements.



Existing & Disparate Systems

Reflects Plant Floor Reality

Improve Employee Engagement

The Global Scorecard

In late 2014, Autoliv went through a structural reorganization, moving to a product-based organizational structure rather than one based on locale. One of the benefits of this organizational shift was more collaboration among sites across the world, which facilitated more communication and sharing of ideas globally. Company leadership could see which sites were performing better and why. In this way, best practices could be shared.

Autoliv's Executive Manufacturing Team initiated a process of looking across the whole organization for the best way to measure success and drive global alignment.

As they reviewed company performance, it was hard not to notice that the company's plants in North America were highly efficient in production, maintenance, and quality, and determined that Leading2Lean's CloudDISPATCH was a key factor in this increased efficiency.

Performance of these plants was a signal that what was already good, could be even better. If those plants were functioning with more efficiency, it was vital to standardize their best practices across all Autoliv plants. Using CloudDISPATCH as the common solution and scorecard throughout the company's plants could create a long sought after global plant standard, augment Lean performance, drive a culture of sustained continuous improvement and improve employee engagement. It would also reduce the number of systems employees had to interact with by allowing CloudDISPATCH to be the single interface.

"We saw that if we could achieve just half of the benefits we were seeing at the plants that were already using Leading2Lean's LES," the team agreed, "we would break even against the cost of the rollout at every site in just a few months and start to gain income in a year or two."

The global roll out included more than 80 Plants in 27 countries, and was completed in 2017, only two years later. It involved working across different cultural dynamics and languages.



27 COUNTRIES
Global Roll Out

Global Harmony

"The speed and smoothness of the global LES deployment has set a benchmark for us," said Brandon Jeppsen, VP of IT.

The unprecedented pace of the global implementation was possible because Cloud-based systems don't require the infrastructure investment that on-premise systems require. The LES was adaptable enough to work with different computer hardware and existing systems across Autoliv's entire network. Because of this, the average plant rollout took only 6-8 weeks from install to fully operational. Deployment training, on average, was less than a week per plant.



Autoliv had many systems across its plants but they were not fully standardized. Leading2Lean's LES became the interface that would be used by Autoliv's plants globally, allowing them to create a common standard language with terminology, failure codes, and critical data. Because of this, Autoliv has seen faster responses to problems, more accountability and greater efficiency across its plant network. Being able to leverage the same solution everywhere and quickly has positively impacted operational excellence.

Security Of Data

Manufacturers see their manufacturing processes as highly proprietary and a competitive advantage that must be protected. Autoliv would only partner with a Cloud solution provider with demonstrated security controls, availability and that met specific data protection measures for doing business globally.

"We evaluated Leading2Lean's security measures in great detail, and see them as a partner that we can work closely with now and in the future," said Jeppsen, VP of IT.

Autoliv recognized the benefits of a Cloud-based solution for their factories. They retained their uniqueness while taking advantage of the Cloud's ability to work across legacy systems, to be updated and enhanced quickly without full plant shutdowns, and improve efficiency, quality, and standardization.

Worldwide Benefits

The results of the partnership of Autoliv and Leading2Lean have been both substantial and impressive.

Measurable effects as of December 2017 include:

- **5% Global Improvement**
In operational availability, with some sites as high as 23%
- **30% Improvement**
In response time to production issues
- **12% Reduction**
In cost of spare parts
- Significant reduction in cost of product
- Improvements in other areas such as Preventative Maintenance (PM) completion, Overall Equipment Effectiveness (OEE), Mean Time to Repair (MTTR), and response time to quality issues

Those results are exciting. But they don't tell the full story. In each case, the true benefits stem from the empowerment of Autoliv's employees.

One of the core benefits of installing Leading2Lean's CloudDISPATCH, real-time visibility in the task, gave Autoliv leadership insights into the "Hidden Plant," the functioning real world workplace - the truth of what was happening on the plant floor.

Autoliv went beyond sensors and data to empower the most powerful computer of all – the human brain. The empowered workforce became engaged to leverage data, to problem solve, creating a sustainable culture of continuous improvement. Artificial Intelligence (AI) and sensors are not able to accomplish that alone.

Manufacturing 4.0

The partnership between Autoliv and Leading2Lean can also be interpreted as a glimpse of an evolution in manufacturing where efficiency and bottom line gains are created by the best technology matched with the power of human intelligence.

Leading2Lean has provided Autoliv an answer for Manufacturing 4.0. Manufacturing 4.0 is not merely the utilization of technological advancements such as the Internet of Things, automation and AI, but using them to engage and empower the workforce to innovate and solve problems.



Manufacturing 4.0 = IoT + Lean Tools + Human Thinking

Giving employees full visibility, more responsibility and more freedom to act, combined with fast, accurate data, leads to real and measurable results.

Jeppsen adds, "We've learned that the benefits to our company and the individuals can extend out of the traditional knowledge worker environment all the way down to the manufacturing process."

Best To Better

Autoliv and Leading2Lean are an ongoing proof point that manufacturing can evolve and still maintain quality excellence. As business and commerce change in the coming years, the winners in the new economy will be the companies that adapt quickly, problem solve with precision and speed, and utilize technology to harness the innovation and creativity of their employees to continually improve.

Autoliv is already a leader in the automotive safety industry. But they don't rest on laurels. Instead, they act in agile ways and recognize that they can always improve. That is how the best remain at the top.