



# North American Lighting

Lighting Manufacturer Supports Lean Methodologies and Increases Production Data Visibility with HighJump Manufacturing Advantage

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## Company Overview

North American Lighting, Inc. (NAL) designs and manufactures lighting systems for the biggest names in the automotive industry. The largest independent lighting supplier in North America, NAL has been manufacturing lighting products for the majority of vehicle manufacturers in North America for over 20 years. Started as a joint venture, the company is today a wholly-owned subsidiary of Koito Manufacturing Co., Ltd., of Japan.

## A Culture of Continuous Improvement

The foundation of NAL's success is a powerful belief in the Kaizen methodology for change, which means continually making small, incremental improvements to processes, materials and products. Elizabeth Moore, Assistant General Manager for Production Control at NAL, explains, "First and foremost, our business is about meeting customer needs, and how to meet customer needs in our industry is about driving costs down."

When a vehicle's body styling is refreshed, the exterior lighting often changes. This makes for an extremely dynamic business environment for NAL, and the drive for continuous improvements and always adding value pervades all departments in the organization.

## What Just-in-time Means at NAL

NAL's Just-in-time (JIT) production environment supports this culture of continuous improvement by manufacturing only what is needed, when it's needed.

"We take orders today for what is going to be delivered tomorrow," describes Moore. NAL has a firm shipping schedule and, in many instances, ships multiple times per day to the same customer. For example, product ships 8-12 times per day to Toyota's Indiana plant and even to Toyota Canada 2-3 times per day. Moore continues, "In this type of environment, you have to be



able to quickly identify problems and focus resources to fix them; you don't have days to see problems bubble up. You need good processes supported by good systems to help you recognize delays and issues. Missing a delivery is just not acceptable." Suppliers to automotive manufacturers are only too aware of the consequences of actually shutting a production line down.

## MES Project Goals

NAL has always tracked key production metrics such as the number of hours things should take to manufacture, the number of hours they did take, defects and demonstrated capacity, which taken together are used to calculate overall equipment effectiveness (OEE).

It wasn't, however, until the organization implemented a manufacturing execution system (MES) that technology began to play a pivotal role in the JIT environment.

Moore describes the evolution of production reporting at NAL. "We originally had decentralized reporting capabilities in every different department and functioned based on linked spreadsheets. This eventually gave way to a homegrown, MS Access-based application that supported three plants on one central server, which was a big improvement at the time."

The system, however, had its challenges. Only a handful of people could connect to it (via PC Anywhere over a WAN). It was unstable, difficult to support, and even routine maintenance meant one day per month of downtime. Reports were not accurate, and the system would not always generate the same answer twice. It was functionally limited, and difficult to enhance or expand. What Moore emphasizes though is the 2-3 day lead time to obtain production reports. "In many cases, the lead time to get a report exceeded the lead time to manufacture a product. And when reports were finally generated, they weren't in a useful format, so our engineers had to use Excel to make sense of the data visually. What we really needed was real-time visibility into our data."

## Compelling Results

NAL has now deployed HighJump™ Manufacturing Advantage across its four manufacturing operations, and the system is the standard source for production data

company-wide. Although each site executes unique business processes, the same core set of functionality is leveraged to improve data availability, accessibility and accuracy. The system is up 99.9% of the time, Webbased reports are available 24/7 to any networked user, and the lead time to report is less than a minute. Report accuracy has improved dramatically.



Across 300 work centers (e.g., molding, paint, metalizing, assembly), operators now report by intuitive, easy to use HighJump Manufacturing Advantage touch screens. The system has returned eight data entry operators back to production and left an MIS support position free for other projects. Approximately 50 HighJump Manufacturing Advantage touch screens are also used in NAL's service facility which runs low volume, mixed production in support of ongoing demand for after-market products. Simplified, fast user data entry supports the company's pull-based (Kanban) inventory model for JIT production and replenishment.

NAL now also has enhanced visibility of defects and scrap down to the machine level. On average, each engineer saves 3-4 hours/ week preparing data, which represents an 8-10 percent increase in productive time



for problem-solving. Machine utilization and downtime tracking have improved, and the company has decreased by half the work centers not meeting targeted utilization. Each morning, plant management can assess current conditions, identify the priorities of the day, check the previous day's results and identify areas for follow-up. When issues arise, reports are run immediately, instead of requesting and waiting for a report.

Moore also notes, "Another key JIT concept is visual control, or the ability to look broadly at the shop floor, quickly assess good or not-good conditions, and take any necessary action. Given we have multiple sites, this was previously a challenge, but HighJump Manufacturing Advantage is now assisting by extending visual control to remote locations." The HighJump system provides standard graphical reports to help visualize production status, as well as trend charts to compare current conditions to historical performance.

## Improved Business Agility

At NAL, change is the normal mode of operations—innovations in product design and styling are ongoing, new vehicle models launch while service for older models is maintained, development cycles are always being compressed and research into emerging lighting technologies continues. Since its implementation, the MES solution has been easily adapted to new needs and processes. "Relaying out a plant is not uncommon," says Moore. "In some instances, we've picked up and moved machines from Illinois to Alabama. We've also reconfigured production work centers. By simply changing key attributes in the HighJump system, routine production changes like these are supported in-house."

## Future MES Plans

NAL has identified a number of short-term projects for the HighJump Manufacturing Advantage system. Future plans include adding a "right first time" quality metric to the system, which will let NAL track anything on the assembly line that might prevent a part from being manufactured correctly the first time (e.g., machine fault, defects coming into the line, operator issue). The company will also implement an abnormality log as an additional tool of process control. Downtime is always an abnormality and the log will give NAL better visibility into the events that trigger it.

New production report requests are ongoing and, for enhanced visual control, NAL plans to define graphical "dashboards" for display on large monitors installed in key locations on the shop floor in its plants. A certifications-and-skill-level matrix by employee will also be incorporated into the system as a reference tool.

## Conclusion

For NAL, introducing an MES solution has resulted in more timely information for production, downtime and defects; reduced costs in terms of improved efficiency, utilization and scrap—and better focus and clarity on root cause analysis and problemsolving. According to Moore, "With the HighJump Manufacturing Advantage solution, we're now much more aware of day-to-day production situations and we have more follow-up at all levels. Management is focused and responds faster to identify immediate issues and long-term trends to help ensure quality and continuous improvement."

