

Automotive Manufacturers: Ahead of the Curve Again

Market Segment

Nowhere are the principles of Lean manufacturing more deeply ingrained than in the automotive industry. Automobile manufacturers have a long history of Lean principle adoption: including 5s, value stream mapping, kan-ban, and level-loading. However, manufacturers in this industry do not have the same reputation for adopting technology to support these principles. In fact, common perception points towards the opposite being true, which is why the following results are so compelling.

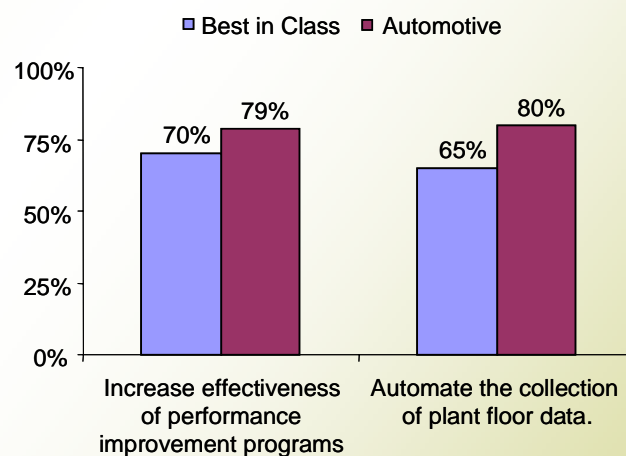
Best-In-Class

In the Aberdeen Group Benchmark Report, *The Business Value of Plant Floor Visibility*, manufacturers are categorized as Best-In-Class, Industry Average, or Industry Laggard based upon a weighted average across five KPIs (key performance indicators): On Time Delivery, Stock Outs, OEE (Overall Equipment Effectiveness), Direct Material Variance, and Throughput. The following analysis begins with the pressures and strategic actions motivating the plant floor data initiatives of Best-In-Class manufacturers and then extends this to the automotive industry specifically.

Continuous Improvement and Automated Data Collection

The number one pressure driving Best-In-Class manufacturers' plant floor data initiatives today is the desire to increase the effectiveness of performance improvement programs, such as Lean, Six Sigma, and TQM (Total Quality Management). In response, the number one strategic action Best-In-Class manufacturers are taking to improve the performance of these initiatives is automating the collection of plant floor data. This trend is amplified among automotive manufacturers. Automobile manufacturers are more likely than Best in Class manufacturers to be implementing plant floor data initiatives for the purposes of increasing the effectiveness of continuous improvement programs. Similarly, they are more likely to be automating the process of data collection than Best-In-Class manufacturers.

Figure 1: Plant Floor Data: Drivers and Strategies for Best-In-Class and Automotive Manufacturers

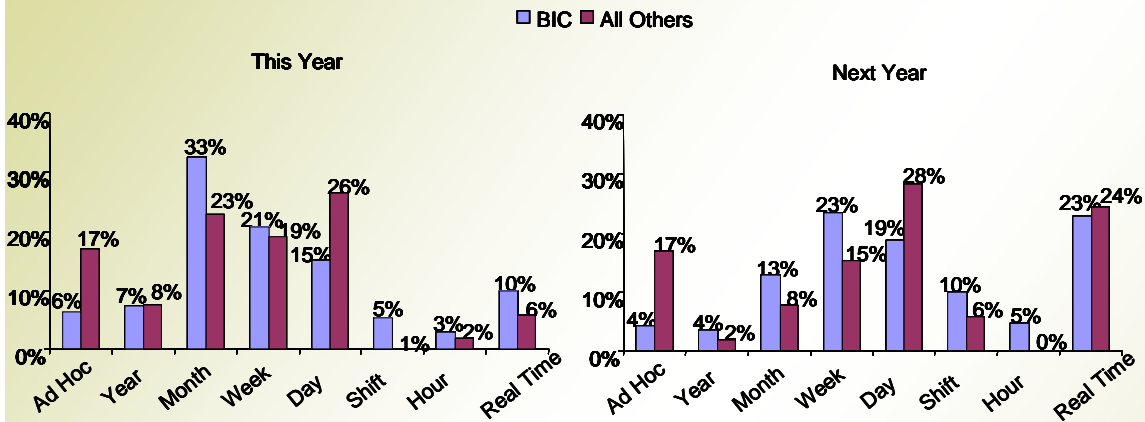


Source: AberdeenGroup, June 2007

Real Time KPIs, OEE, and Manufacturing Intelligence

One of the ways Best-In-Class manufacturers differentiate from other manufacturers is in the real time measurement of KPIs. Best-In-Class manufacturers are 40% more likely than other manufacturers to be measuring KPIs in real time, albeit the overall adoption rate is relatively low, 10% and 6% respectively.

Figure 2: Trending of KPI Measurement Frequency



Source: AberdeenGroup, June 2007

When considering automotive manufacturers independently, the adoption rate falls right between Best-In-Class and other manufacturers at 8% of automotive manufacturers having real time plant floor data capabilities. As a whole, not just Best-In-Class manufacturers or the automotive industry in particular, manufacturers understand the benefits of measuring KPIs in real time. Consequently, the entire industry trend is moving in the direction of real time capabilities. If manufacturers follow through on current plans, the level of real time capabilities in the market place today will triple to nearly a quarter of the market. However, there is more to the analysis than overall adoption; the specific KPIs that manufacturers are most likely to be measuring in real time are also of interest.

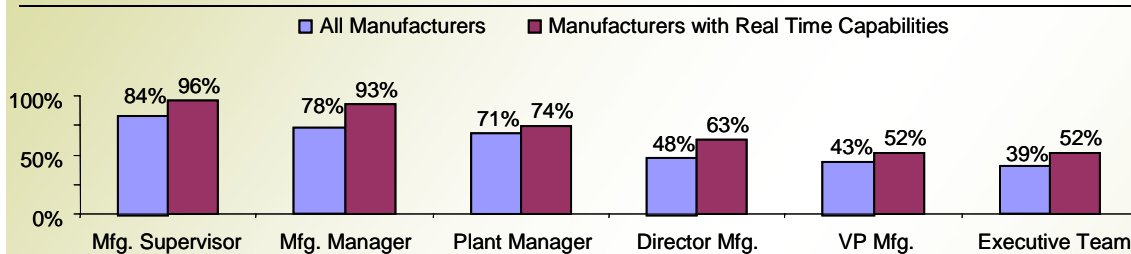
When considering which KPIs to measure, the automotive industry truly differentiates itself from other industries. The overall share of manufacturers utilizing OEE to gauge the success of operations is 28%; but 40% of auto manufacturers currently measure OEE. As a composite KPI, with three distinct measurements constituting the final value: availability, performance, and quality; OEE, by its very nature, lends itself to drill-down and root-cause analytics. When these functionalities are coupled with real time measurement capabilities the results, can be very powerful. It gives manufacturers real time visibility into exactly what is affecting the performance of assets, whether it is scrap and rework, machine down-time, or a throughput bottleneck. Manufacturers can then make intelligent decisions to improve performance while there is still opportunity for corrective action.

“Collected correctly, data turns into information and aids us in our ‘Genchi Gembutsu’ or Go and See activity to grasp the situation. Grasping the Situation is one of the first things that we are taught to do at Toyota, as it is part of the Toyota Way. The plant floor visibility we gain from our Manufacturing Intelligence solution enables our decision makers and the Go and See Process.”

Parker Shannon,
Project Manager
Toyota

Both real time capabilities and KPIs enabling drill down analytics, such as OEE, are essential components of any manufacturing intelligence initiative. However, to enable intelligent decision making more is needed, specifically, the ability to present role based factory floor data. When examining those manufacturers that have already made the investment in real-time KPI measurement, it is of interest to test whether these manufacturers are also presenting such data to the proper decision makers. Not surprisingly, the answer is a resounding yes. In fact, manufacturers having already established real time capabilities, a group of manufacturers more likely to be Best in Class, are also more likely to be rolling the data up to the proper job roles.

Figure 3: Manufacturers Rolling Factory Floor Data Up to Necessary Job Roles



Source: AberdeenGroup, June 2007

Manufacturing Intelligence Enables Best-In-Class Performance

There are two ways the technology strategies of the Best-In-Class differ from other manufacturers. Best-In-Class manufacturers are 31% more likely to integrate plant floor data with ERP (58% having done so already). These manufacturers are also more likely to use technology to collect plant floor data. In fact, Best-In-Class manufacturers are nearly four times more likely than other manufacturers to be utilizing a Manufacturing Intelligence solution for this purpose, albeit the overall adoption rate is still low, at 11% for Best-In-Class manufacturers.

Automotive manufacturers are following the lead of the Best-In-Class and integrating plant floor data with ERP and utilizing MI for data collection. These adoption rates are at higher levels than the general population but not yet at the level of Best-In-Class manufacturers. To facilitate the plans automotive manufacturers have with regard to increasing the effectiveness of operational excellence programs and increasing real time KPI and OEE measurement capabilities, it is imperative they continue adopting the aforementioned Best-In-Class strategies.

Required Actions

- ✓ To maintain the competitive advantages associated with continuous improvement programs, manufacturers must utilize automated data collection technology in conjunction with these programs.
- ✓ Manufacturers must follow through on plans to acquire real time measurement capabilities and focus these capabilities on dynamic KPIs such as OEE.
- ✓ To extract the maximum value from real-time data collection manufacturers must utilize an automated technology such as MI with drill down analytics and the capability to present data to the proper decision maker, in the proper context, at the proper time.



Related Research

[Manufacturing Intelligence](#); October 2006

[The Business Value of Plant Floor Visibility](#);
June 2007

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