

Global Materials Management Standard Charts a Course for Industry Advantage

As the manufacturing centres that emerged just five or 10 years ago are maturing, new ones are coming up. Their growth is thanks in part to the dedication and investment of automotive original equipment manufacturers (OEMs) and suppliers. For manufacturers, investment has been in pursuit of high-quality, reliable supply, while start-up vendors have had to quickly familiarize themselves with their customers' operations and requirements.

One area of significant progress is materials management. As OEMs embrace lean manufacturing principals and seek to balance production with demand, it's paramount that the right supplies are at the right plant at the right time for production to stay on-schedule. For suppliers, that means delivery performance must be perfect: Anything less incurs a penalty.

Over the years, each OEM established its own best practices for the way materials should be managed – internally and by suppliers – to achieve that balance. These disparate rules have been standardized through industry collaboration. And although the rules were intended to improve efficiency and accuracy, as well as reduce costs from errors and waste, insights from early adopters suggest that these standards serve their purpose – and more: They have the potential to bring about a vital transformation in the supply chain.

Getting a Handle on Materials Management

Some time ago, North American and European OEMs recognized that effective, efficient materials management can help minimize supply-related risk, from overstocking to getting the wrong components. Consequently, some manufacturers set rules at the start of the '90s: For example, Ford Motor Co. created materials systems requirements, and Volvo put logistics evaluation documents in place.

Industry associations such as the Automotive Industry Action Group (AIAG) in North America and Odette International in Europe took note of these practices and the fact that each manufacturer had a different set of rules. So each trade group took on the task of establishing materials management standards for their respective regions. Initially, this meant creating a single, common materials management self-assessment for suppliers to use to serve different OEMs in the same region. In North America, this was called the Materials Management Operations Guidelines, while in Europe, OEMs used a set of principles called the Logistics Evaluation guidelines.

Recognizing the value in taking standardization a step further, and given that many of the same suppliers served North American and Western European OEMs, AIAG and Odette combined and refined their guidelines into a single standard issued in 2004: the joint Global Materials Management Operations Guideline/Logistics Evaluation (MMOG/LE).

Today, Global MMOG/LE principles are being used by OEMs and suppliers to help ensure effective, efficient management of materials that saves time and costs. Materials management is one of the functions that forward-thinking manufacturers are making consistent from site to site. They also are doing so to ensure they are capable of serving customers wherever the next hot market emerges.

For suppliers, the Global MMOG/LE self-assessment helps identify what process adjustments are needed for world-class function. Michael Howard, supervisor of supplier manufacturing performance for Ford's MP&L Supply Chain, observes that in the absence of systems for materials resource planning, bar-code scanning, electronic data interchange (EDI) and the like, "it's no coincidence that manual processes coincide with more errors."

Consensus is that the latest version of the guidelines released in July 2006 is more user-friendly and provides even clearer indication of deficiencies. According to Morris Brown, program manager - Materials Management, AIAG, the initial focus is on materials flow process and continuous improvement. Then, updated guidelines show where enterprise technology can help automate best practices, from bar-code scanning or integration of electronic data interchange (EDI) and materials resource planning (MRP) software.

Fortifying Lean Production

Enterprise technology brings some uniformity to data capture and communication; it also provides a means of tracking and tracing the accuracy of data and how it was calculated. Above and beyond accuracy and automation, enterprise technology helps get the right information to companies at the right time, creating what economists would call a “perfect market” in which participants compete effectively and efficiently. For manufacturers, the right supply and demand information at the right time can mean the difference between lean and wasteful operations.

Global MMOG/LE guidelines explain best-in-class materials management process, and then indicate where technology must be applied because manual procedures simply won’t lead to the fast, consistent operations required for world-class performance. By encouraging the use of technology for key aspects of supply chain communication, materials management standards make progress toward a perfect *lean* market.

OEMs: Extending Lean to the Supply Chain

Early adopters are seeing progress in their lean initiatives since the introduction of Global MMOG/LE guidelines in 2004. More than 1,000 supplier audits have been completed worldwide, sometimes with remarkable results. Ford reports a 75 percent increase in up-to-date reports from suppliers regarding compliance or progress toward it, which in turn helps the manufacturer better gauge how far lean practices extend into its supply chain. Table 1 shows OEMs’ current and future adoption plans for the global standards.

| OEM | EMEA | North America | South America | Asia/Pacific | Frequency of Submission | MMOG/LE V2 Usage | Comments |
|--|--|---------------|---------------|------------------|--|------------------|--|
|  DaimlerChrysler | Partially implemented in Europe | Yes | TBD | China in process | Annually | Next submittal | |
|  Ford | Europe only | Yes | MS9000 | MS9000 | Annually - a requirement for Q1 | Next submittal | |
|  PSA | Western Europe and Central and Eastern Europe only | | Yes | | New vehicle project | Next submittal | Strong involvement of plant management is required to ensure progress. |
|  Renault | Western Europe and Central and Eastern Europe only | | Yes | | Required for all suppliers | Next submittal | |
|  Volvo Car | Yes | Yes | Yes | Yes | Annually - a requirement for Q1 | Next submittal | |
|  Volvo Truck | Europe, a few suppliers in the Middle East | Yes | Yes, Brazil | India, China | Annual self-audit submission and follow-up to be implemented | Next submittal | |

Table 1. OEMs are using or plan to use Global MMOG/LE with suppliers worldwide.

According to Gerhard Paulinz, responsible for supply chain management at Volvo Truck Corporation, Global Manufacturing, Program and Logistics Development, as of May 2006, the Volvo Group including Volvo Car had received nearly 900 self-assessments from suppliers and had validated about one quarter of these. In his division's experience, suppliers who comply with the guidelines generally show greater delivery accuracy and customer care, correcting problems more quickly when they occur.

At DaimlerChrysler, Sheila Manning, MSO – Supply Systems & Strategy also reports positive supplier response, as the OEM advances on its goal of acquainting its suppliers with the self-assessment process this year.

Suppliers: Improving Customer Satisfaction

Suppliers are reporting benefits from compliance, as well. Philippe Rouche, group ERP project director, Information Systems for Faurecia puts it very simply: "Compliance makes us better." He points out that the Global MMOG/LE guidelines match with Faurecia's production control and logistics core procedures, which can be mapped to the materials management standard.

Paulinz notes that Volvo supplier Nitator, a Swedish sheet metal company reduced its internal costs by following materials management guidelines, and also improved delivery accuracy: For example, one customer measured Nitator's shipment accuracy rose from 67 percent to a consistent rate of 98 percent or better.

Another European automaker surveyed nearly 50 of its compliant domestic and off-shore suppliers and 65 percent of them reported reduction in line stoppages, while more than half reported a reduction in rework. Suppliers also reported improvement in delivery performance and reduction in logistics incidents, premium freight, obsolete material, inventory carrying costs and data entry time.

Other suppliers anticipate the importance of compliance in relation to the rest of the supply chain, and expect that all parties will be measured on the way they receive, manage, verify and process materials all the way through to shipping the finished product. Randy Whitehair is director of enterprise resource planning for Freudenberg-NOK, which makes elastomeric sealing and noise, vibration and harshness (NVH) products. He believes that as suppliers in the second tier of the supply chain and beyond learn about the guidelines, the sooner they will experience reduced operating expenses and scrap/obsolete materials; improved inventory management, lead times and customer satisfaction; and increased profit margins.

Strengthening Long-Distance Supply Chains

The benefits of materials management compliance are available to both domestic and offshore or out-of-country suppliers. In fact, global MMOG/LE guidelines can help bring new suppliers from emerging markets up to speed with the requirements of their multi-national customers and industry practice, as well.

Taiwanese supplier JCC Piston Inc. (JCC) is a good example. The company makes aluminum alloy pistons and casting parts for automobiles, motor air compressors, diesel engines and outboard engines for domestic and multinational automotive customers such as Ford, DaimlerChrysler, Delphi, GM, Mitsubishi and PSA Peugeot Citroen, as well as domestic Chinese OEMs.

While Ford and JCC's other customers require vendors to conform to Global MMOG/LE guidelines, JCC executives understood that the end result of compliance had to be impeccable

long-distance delivery performance. JCC pursued compliance in tandem with its integration of its ERP and EDI systems and automation of functions such as material release, shipping schedule and advance ship notice. The effort earned Ford recognition of Q1 and boosted the supplier to Tier-1 status. Now the company is implementing supplier EDI with 10 key customers. (See sidebar.)

AIAG's Brown points out that the intention is for suppliers beyond Tier-1 to adopt the standard. Ford's Howard says that the OEM is aware that suppliers in emerging markets may not have the resources or technology in place to conform easily to the global standard, so Ford has made it a priority to work with suppliers on solutions to those challenges.

Even in emerging manufacturing centres, long-distance suppliers already recognize the importance of perfect delivery performance. Thierry Koscielniak, logistics program manager for Odette, says that Global MMOG/LE guidelines help smaller suppliers in emerging markets such as the Czech Republic, Turkey, Romania and Slovakia understand what they can do to improve their materials management practices and their delivery performance, adding that Odette has observed an increase in compliance training participation by companies throughout Central and Eastern Europe.

More Reliable Communication

Whether suppliers are as far along as JCC or just beginning to assess their compliance, their distance from their overseas customers adds another dimension to the supply-related risk that materials management guidelines were designed to eliminate.

Labor- and materials-related cost savings – not to mention business relationships – could be wiped out by the expense of expediting a late shipment, or the delay to exchange the wrong components for the right ones. One European automaker says that expediting a delayed shipment – somewhere around \$250,000 – virtually erases the savings associated with the low-cost production of that shipment. And considering that 91 percent of survey respondents told AIAG and AMR Research that they track shipments by methods such as telephone and fax,ⁱ the potential for delays and losses is quite real.

Global materials management guidelines help address some of the variables that impact supply quality and that keep inventory from getting to the cargo hold – and to the customer. By encouraging suppliers to adopt technology for certain types of communication such as EDI and bar-code data, materials management standards encourage automation and uniformity that makes the communication aspect of supply chain interaction more reliable.

Charting the Course Ahead

Brown says there's another way that the Global MMOG/LE standard contributes to reliable supplier performance and supply chain function: It enhances measurement. Table 2 shows OEMs' present and planned self-assessment requirements for suppliers. Brown says, "Our members are coming to understand that materials management guidelines can help them measure functions that they might not have been able to track as recently as five years ago."

| OEM | Supplier Audit Policy |
|--|---|
|  DaimlerChrysler | Supplier evaluations are completed by DCX personnel using the Supply Process Analysis (SPA) for new suppliers, new supplier locations and problem suppliers. The SPA encompasses elements inclusive of the MMOG self-assessment. Additional audits will be conducted on suppliers that have a significant variance in the self-assessment ranking and their actual DCX Supply performance rating. |
|  Ford | North America and Europe only; potential suppliers, new suppliers and problem suppliers. All suppliers eventually will get an audit. Major and problem suppliers will be prioritized. |
|  PSA | Suppliers are consulted on the Global MMOG/LE in the Project Phase. Audits are not required annually, only during the project phase. In the Trial phase, evaluations are carried out if there are problems with the supplier. |
|  Renault | New and problem suppliers. |
|  Volvo Car | An attempt is made to visit all new suppliers and big volume suppliers. For potential suppliers, self-assessment is the first step. |
|  Volvo Truck | Existing high-volume suppliers, potential suppliers, new suppliers and problem suppliers |

Table 2. OEMs are evolving their requirements for supplier self-assessment.

To that end, AIAG and Odette are putting the finishing touches on a standard set of key performance indicators (KPIs) that OEMs and suppliers can use to monitor how materials compliance impacts their business. Global Materials Management and Logistics Key Performance Indicators (MMLKPI) complement materials management guidelines by showing users how to measure the effectiveness of the logistics processes between customers and suppliers. Ranging from ASN performance to delivery accuracy, vendor managed inventory (VMI), production disruptions and supplier communications and cooperation, the KPIs may even help automotive companies gauge what they've never been able to measure before.

With updated materials management guidelines and with the means to measure their impact, now AIAG, Odette, enterprise software vendors and consultants are focused on translation and training. Both are extremely important to global adoption and industry benefit. Brown says the Global MMOG/LE workgroup has been meticulous in preserving a consistent message across multiple languages and training sessions conducted at AIAG headquarters in Southfield, Michigan, as well as at customer sites throughout North America, at UnicenP (Centro Universitário Positivo) in Curitiba, Brazil, and in Europe and most recently, in China.

He observes, "On-site training makes it easier to address a particular company's environment and personnel. That said, some of the most dynamic sessions we've conducted have taken place off-site, where users have the opportunity to learn and get new ideas from their peers."

Sandy Burr, senior manager, Business Systems for TRW Automotive, says that workshops held on-site also have allowed plants to share best practices and ways to meet standards criteria.

Furthermore, by having its ERP vendor at its workshop, TRW has been able to get clarification on the meaning of self-assessment criteria and to provide feedback to the joint AIAG and Odette workgroup.

One of the key subjects covered in training is how to assemble a team to implement materials management best practices. From Whitehair's perspective at Freudenberg-NOK, business executives should be the driving force behind effective use of technology and MMOG/LE compliance, with help from information technology personnel to achieve that goal. Brown agrees: "It's a job that taps multiple aspects of the company, from executive management to HR, IT staff, quality assurance staff and factory floor personnel," he explains.

Riding a Rising Tide

If widespread adoption of Global MMOG/LE principles will put every manufacturer and every supplier on more equal footing with respect to materials management, a pessimist might say that would erase competitive advantage and threaten the future of the automotive industry.

That's not how OEMs and suppliers see things. Volvo regards its efforts as part of a long-term commitment to making the industry's supplier base – beyond the first tier – more cost effective and therefore more competitive in the long run. Paulinz cites a long list of benefits, including a positive influence on optimal stock levels and delivery accuracy that in turn "reduces costs for transport, goods receiving, storage, internal handling, line sequence changes" and more.

Not surprisingly, the Volvo Group has a number of trained auditors working to verify suppliers' self-assessments. In a stroke of insight, the company has placed a number of these auditors on a global sourcing committee in order to provide perspective on prospective suppliers' logistics performance.

Meanwhile, Ford hopes for all of its material planning guidelines to conform to the industry global standard by the end of 2007. The manufacturer has assigned a North American representative to help South American, Asia Pacific, Australian and Russian counterparts transition their supply base from compliance with Ford guidelines to conformance with global materials management standards. This will put all production sites on equal footing so that Ford is poised to strike wherever the business goes.

Manning of DaimlerChrysler says that ultimately, the manufacturer would like to see significant improvement in suppliers' delivery performance. In future, the company plans to compare compliance results to the delivery performance ratings for high- and low-performing suppliers, as well as compare the data for suppliers based on volume of business and possibly by region.

And suppliers are optimistic about the impact on their business. At Freudenberg, Whitehair believes that enforcement of Global MMOG/LE requirements will be well worth the efforts of suppliers to adapt their business processes. In his view, the rising tide will lift all boats: With more widespread adoption of materials management standards, the industry should benefit from improved quality of parts, reduced operating costs, improved profit margins, less safety recalls, safer vehicles and reduced time to market, among other benefits.

Rouche of Faurecia adds that standardizing the criteria for suppliers would streamline performance evaluation, as well. TRW's Burr suggests that the self-assessment process also affords opportunities for suppliers and customers to collaborate on the path to compliance and even develop a few best practices of their own.

With the added bonus of accurate supply and demand information where and when it's needed, those are perfect lean market conditions that industry members won't want to miss.