A QAD White Paper for Global Manufacturers

Embracing the IATF 16949 Automotive Standard

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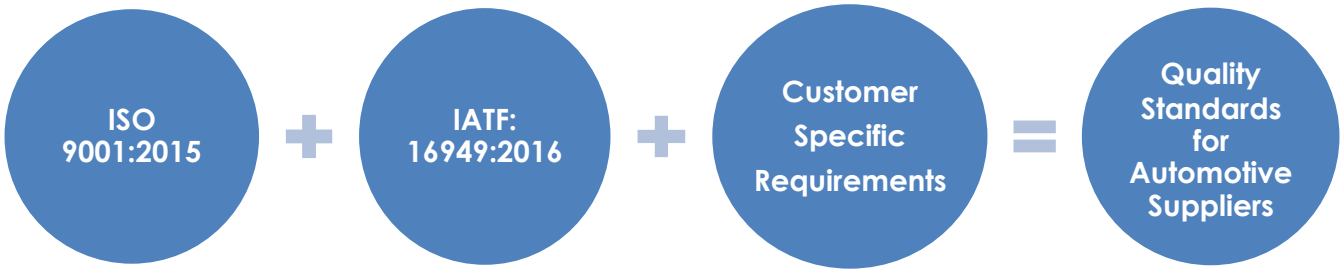
IATF 16949:2016: A New Automotive Standard

The International Automotive Task Force (IATF) recently released its new global quality standard known as IATF 16949:2016. The new standard, combined with International Organization for Standardization (ISO) 9001 and customer-specific requirements, define the core quality management system obligations for global automotive production and service parts organizations (see Figure 1). The goal of IATF:16949, ISO 9001 and customer-specific requirements is to guide the development of quality management systems that provide continuous improvement, prevent defects and reduce variation and risk in the supply chain.

Figure 1



IATF has set a deadline of September 18, 2018 for 16949:2016 compliance. Fortunately for automotive suppliers, ISO and IATF align standards: When ISO updates ISO 9001, IATF subsequently updates IATF:16949. In the autumn of 2015, ISO released the current version of its standard, ISO 9001:2015. The IATF then released 16949:2016 which supplements ISO 9001:2015. This means that organizations seeking IATF 16949:2016 certification must also comply with ISO 9001:2015. In addition, many automotive OEMs and Tier 1 suppliers provide customer-specific quality requirements.

Given that there are **approximately 68,000 certified manufacturing sites around the world in the automotive supply chain**, suppliers clearly have much to work to do to complete transitioning to IATF 16949:2016 by the September 18, 2018 deadline.

Organizations that do not meet the transition deadline face a decertification process which could result in a supplier needing to restart the initial certification audit. The inability to recertify limits an organization's access to new business opportunities and places existing business in jeopardy. **The compliance stakes are high and automotive suppliers are rightfully concerned.**

Since the last revision of the quality standards in 2009, many global events have disrupted supply chains and demonstrated the impact of failing to properly address risk. Recalls, financial crises, natural disasters, distressed suppliers and knowledge erosion have all contributed to a greater need to evaluate and mitigate supply chain risk. Customer demands, internal challenges and supplier constraints, combined with the

accelerating pace of new vehicle technology and global platforms, make real-time visibility into the supply chain more critical than ever.

It is not surprising that risk-based thinking now appears in the quality standards and has become a key initiative for the industry and some see the new IATF standard and the application of risk-based thinking as a positive situation rather than a compliance burden. **Industry leaders view the uncertainty associated with the new standard as a chance to introduce novel ideas and embrace new opportunities.**

This paper delves into details about the risks and opportunities associated with pursuing compliance of IATF 16949:2016.

Preparing for IATF 16949:2016

Considering the challenges in recent years and the opportunity in coming years, it is imperative that executive management of automotive tier suppliers address the following key areas articulated in IATF 16949:2016:

- Risk-Based Thinking
- Knowledge Management
- Total Productive Maintenance (TPM)
- Supplier Selection and Evaluation
- Materials Management Operations Guideline/Logistic Evaluation (MMOG/LE) Assessment

An analysis of each area follows.

Risk-Based Thinking

According to ISO/9001:2015, risk is the effect of uncertainty on objectives. For top management to commit to risk based thinking and mitigate exposure, they need a formal process to identify risk, they need supply chain visibility and they need the ability to react in a timely manner.

Though automotive quality standards do not dictate a process for identifying risks, common methods include process failure modes and effect analysis (PFMEA) or turtle diagrams. Once risks have been identified, the organization needs to prioritize them. Risks that have a high impact and high probability of occurrence will require action or contingency plans. To manage this process effectively, executives need solutions that offer insight and highlight potential exposure. A holistic risk management solution provides the capabilities to:

- **Track supplier performance**: Many automotive organizations monitor supplier performance to ensure it does not fall below an acceptable rate, like 80 percent. A rating below 80 percent is typically a sign that disruptions are occurring. Left unattended, this could lead to a major disruption within the supply chain. A best practice is to assign a corrective action for every point deducted on a monthly performance rating. This ensures that small problems do not turn into large issues.

- **Monitor corrective actions and audit results**: Repeated corrective actions can be an indication that there is risk in a process. For example, when information is in disparate and disconnected spreadsheets, it becomes difficult to make accurate and timely decisions about new business contracts with existing suppliers. An organization might decide to award new business based on good performance at one site without visibility into poor performance at another site.
- **Prioritize risks**: Organizations need to define and prioritize each potential risk, generate a heat map, establish a plan with actions and generate reports. Once an organization has a view of potential risks it can focus on those risks with a high probability of occurrence and high impact.
- **Ensure proper validation and updating of action plans**: Action plans are ineffective without proper validation. Ensuring that training and testing have occurred will save companies costly errors and reduce exposure.

Knowledge Management

After the economic crash of 2008, the automotive industry lost many talented people. Employees were terminated, positions were eliminated and senior staff retired. When employees departed, skill sets and knowledge departed with them. This situation painfully demonstrated that lack of employee knowledge and training were often key reasons why sites ran inefficiently.

One OEM experienced a scenario where 30 percent of its supply base suddenly became poor performers against key metrics. The OEM discovered that this group of suppliers lost critical personnel without understanding the duties they were performing. Additionally, the suppliers lacked appropriate replacement personnel to fill the positions. The new employees did not understand the OEM's requirements and deliveries suffered as a result. This situation resulted from poor documentation and training processes.

An effective knowledge management solution has the following capabilities:

- **Store work instructions, processes and procedures and inform employees of updates**
- **Record and monitor employee information** such as date of hire, education, experience, job history and performance
- **Ensure job descriptions and training records are kept up to date**
- **Store customer specific requirements for training and skill sets** required for each job
- **Generate training matrices and analyze data** to determine training quality
- **Identify qualified employee backups**

Total Productive Maintenance (TPM)

To implement TPM, organizations must manage physical assets effectively to achieve conformity. TPM applies across the lifecycle, encompassing design, construction, commissioning, operations, maintenance and replacement. TPM is critical to maximize asset utilization and minimize related risk.

TPM was added to IATF 16949:2016 to address insufficient equipment maintenance and the associated negative impact to the customer. Performing basic preventative maintenance is no longer enough good enough. To ensure the organization has a robust process for maintenance, IATF 16949:2016 requires:

- **Documented objectives** such as Overall Equipment Effectiveness (OEE), Mean Time Between Failure (MTBF) and Mean Time to Repair (MTTR).
- **Regular management reviews of objectives**
- **Assignment of corrective actions** for unmet performance targets or insufficient maintenance plans
- **Periodic overhaul of equipment**

The ability to manage equipment effectively depends on meeting stated objectives and recording activities when equipment fails. For example, organizations should record all failures, even one as small as fixing a circuit breaker. If circuit breaker failures are not recorded, the organization may not realize that over time the circuit board was overloaded or that the electricity is not functioning properly. Tracking activities helps improve planning by providing failure evidence and tasks needed for overhauling equipment.

An effective TPM solution allows organizations to reduce maintenance, inventory and procurement costs and to achieve performance targets. Most importantly, it keeps equipment in peak operating condition and minimizes risk of not meeting customer delivery commitments.

Supplier Selection, Evaluation and Risk

Given global platforms and complex supply chains, any disruption can have a major impact. When an earthquake and tsunami hit Japan's east coast in March 2011, it devastated the entire electronics supply chain. It cost one supplier $615.3 Million due to canceled contracts because of its inability to operate, including lost time to make repairs and lost inventory.

Since OEMs lack visibility into location, financial viability, quality and delivery performance of Tier 2 and lower suppliers, they place pressure on Tier 1 suppliers to manage the supply chain and associated risks. Understanding the capabilities of sub suppliers is critical in both the initial selection process and on-going evaluation. It is important that the Tier 1 supplier track all pertinent information such as locations, financial viability, corrective actions, quality and delivery performance.

OEMs need to ensure that a Tier 1 supplier has mapped all the locations of their Tier 2 suppliers. Why is this critical? In the event of a typhoon, the Tier 1 supplier would know if any sub suppliers are experiencing disruptions. In addition, with locations mapped, a Tier 1 supplier would have visibility of Tier 2 suppliers shipping through a port that is preparing for a labor strike. By mapping supplier locations, the Tier 1 supplier can prepare and recover more quickly in case of a disruptive event.

Tracking the financial viability of Tier 2 suppliers has become more important after the economic crash in 2008 as well. If the financial crisis taught the industry anything, it is that risk can come in many unanticipated forms.

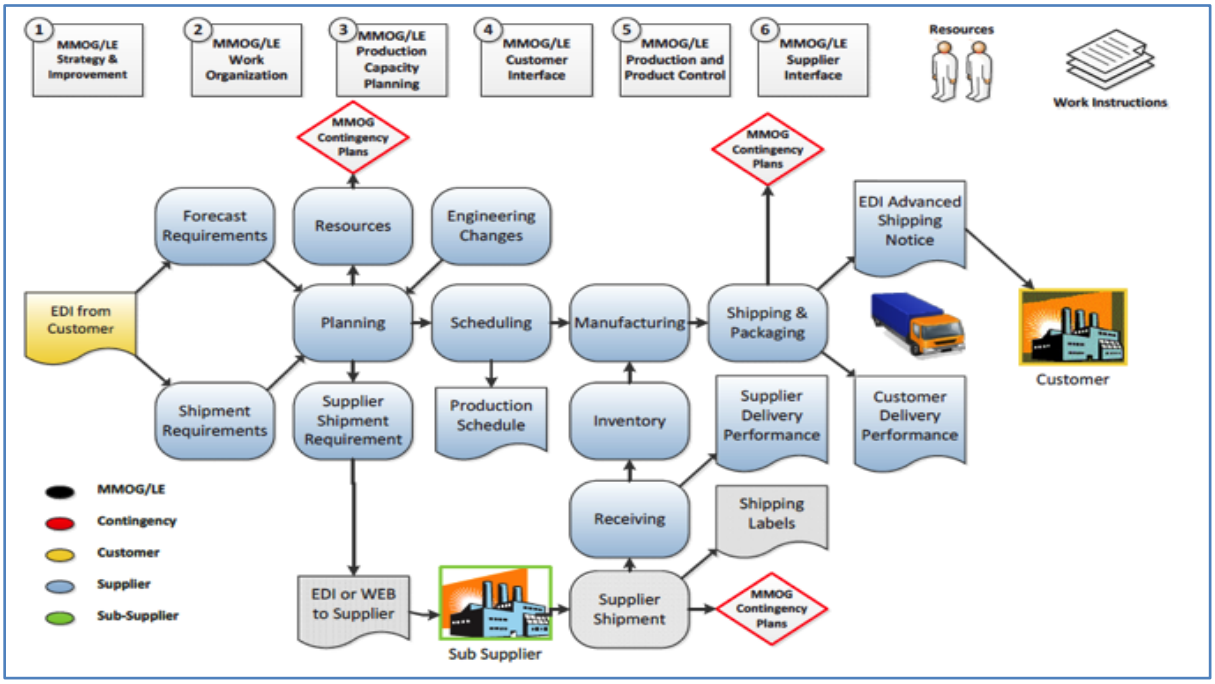
Lastly, Tier 1 suppliers should assess the quality and delivery performance of Tier 2 suppliers monthly and should evaluate overall capabilities on an annual basis. By tracking performance, corrective actions and audit results, it allows the organization to monitor, prevent and avoid any potential risks.

MMOG/LE Assessment

The latest revision of IATF 16949:2016 recognizes global MMOG/LE for assessing production control. MMOG/LE is a tool that OEMs and Tier 1 suppliers use to assess plant facilities regarding best practices in supply chain management. MMOG/LE is essential to an effective risk management strategy. **MMOG/LE is to supply chain management and delivery performance what IATF16949:2016 is to quality.** Automotive suppliers around the world use MMOG/LE to improve materials management operations and logistics. They report benefits like improved delivery performance (up to 20 percent) and reduced inventory (up to 50 percent).

MMOG/LE focuses on supply chain best practices for customer requirements, capacity and production planning, risk management, inventory, sub tier supplier capability, resource allocation and employee skills. MMOG/LE requires the use of Enterprise Resource Planning (ERP), Electronic Data Interchange (EDI) and bar coding to increase supply chain efficiency. It highlights where enterprise technology can significantly increase plant efficiency and help automate processes, eliminating error-prone manual operations. The supply chain process model shown below (see Figure 2) provides a visual overview of the chapters and business processes examined in MMOG/LE.

Figure 2



OEMs and Tier 1 organizations use MMOG/LE globally in the initial selection and ongoing evaluation of suppliers. Unlike IATF 16949, the customer, not a third-party auditor, reviews the assessment submitted by a supplier. Audits or reviews of the supplier's MMOG/LE occur for new business, new launches and poorly performing suppliers. In support of continuous improvement, customers typically require suppliers to review, update and submit the MMOG/LE assessment each year.

Conclusion

Traditional approaches to risk management often do not adequately consider the impact of supply chain risks like natural disasters, geopolitics, cyber security, lower tier supplier performance or labor disruption. ISO 9001:2015 and IATF 16949:2016 include rigorous quality management requirements that are rooted in eliminating and mitigating risk throughout the supply chain.

To fully and adequately address potential risk in their supply chains, executive management at automotive tier suppliers must demonstrate a commitment to evaluating and planning for risk and ensuring that appropriate remedial plans and actions are in place. Organizations often take a tactical approach to risk management and "deal with" contingencies as they occur without fully appreciating the potential exposure. For example, corporate risk management plans are often not well coordinated with site plans. Similarly, systems for managing and mitigating risk are often siloed and lack integration, increasing exposure.

Fortunately, there is a better way. By selecting integrated solutions for managing supply chain risk delivered by a technology partner with decades of industry expertise and commitment to global standards, automotive tier suppliers can gain insight into their exposure, quantify risk and put remedial plans in place. By choosing solutions that leverage and integrate MMOG/LE and industry standards as a basis for implementations, automotive tier suppliers can significantly reduce supply chain risk now and prepare for the future.

For more information on how QAD can help your company effectively address the challenges of IATF:16949, email info@qad.com or call +1-805-566-6100.

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