IATF 16949 –
Automotive Quality Management System

Strengthening your competitive capabilities

Abstract

The IATF 16949:2016 standard was published in October 2016, replacing ISO/TS 16949 - the most widely used global standard for quality management in the automotive industry. IATF 16949 is aligned with the Quality Management System standard ISO 9001:2015, and contains additional automotive customer-specific requirements. Its best practice approach delivers structure to process improvements, helping organisations within the automotive supply chain to improve their performance through more efficient use of resources.
About the TÜV SÜD expert

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Adam Biegaj has more than 15 years’ experience in automotive quality management systems and has been a Product Compliance Manager for TÜV SÜD since 2013. He is responsible for maintaining and developing TÜV SÜD’s automotive accreditations, covering standards such as IATF 16949 and VDA 6.x.
Facing industry challenges

The automotive industry is extremely competitive and today’s supply chain is faced with rapid technology developments and increasingly complex market structures. Market pressures are reducing product development times, alongside stringent quality and safety requirements which are being demanded across the global supply chain. Manufacturers must therefore deliver a highly reliable and innovative product in an ever-decreasing timescale.

In any industry, customer satisfaction is a vital element of business success, as organisations seek to offer products and services that not only meet, but also surpass customer expectations. At the same time, they are under pressure to control costs and product quality to remain competitive. This has made outsourcing the smart approach to reducing overheads and progressing performance. Consequently, as supply chain networks become more complex, this also intensifies the need for tighter quality control with cost effective standardisation.

Organisations within the automotive industry must therefore become increasingly agile, adapting to continuous change and innovation, while dealing effectively with pressures from both inside and outside the business. In order to seize new opportunities and succeed in a highly competitive environment, they must demonstrate a high level of flexibility, efficiency and quality.

A structured approach to quality, based on an effective quality management system, is of vital importance for any organisation committed to achieving product and customer satisfaction excellence, helping them to achieve:

**OPERATIONAL EXCELLENCE**
Multiple activities can be systematically evaluated and managed.

**BUSINESS GROWTH**
By more effectively addressing challenges, there is sufficient capacity within the business to pursue new opportunities.

**A POSITIVE REPUTATION**
Trust is an intangible element that is vital for customers and stakeholders in an increasingly diverse and globalised market.
Quality management in the automotive industry

The IATF 16949 Automotive Quality Management System (QMS) was developed to meet the need for a globally harmonised QMS requirements document. This standard combines all important overlaps from previous and published national automotive quality standards such as QS-9000, VDA 6.1, EAQF 94 and AVSQ. IATF 16949 delivers a comprehensive approach to quality improvement, formally demonstrating a commitment to excellence, cost efficiency and on-time delivery.

IATF 16949 is a voluntary certification scheme, which is aligned to ISO 9001:2015, the world’s most widely adopted QMS standard. Developed by the IATF and the ISO technical committee, IATF 16949 specifies the requirements of ISO 9001 for automotive production. Organisations now have access to an efficient quality management tool, regardless of their size or location, bringing quality and continual improvement into the heart of the business.

The International Automotive Task Force (IATF) is comprised of automotive manufacturers and trade associations, and aims to improve the quality of automotive products worldwide. IATF members include:

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<th>AUTOMOTIVE MANUFACTURERS</th>
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<td>BMW Group</td>
<td>AIAG (U.S.)</td>
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<td>FCA US LLC</td>
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Committing to a QMS approach

The global automotive industry upholds rigorous and specific standards of quality for vehicle original equipment manufacturers (OEMs) and suppliers of products and production materials. Obtaining IATF 16949 certification demonstrates that an organisation has met the QMS requirements to create a process of continuous improvement, with an emphasis on defect prevention, and the reduction of variation and inefficiency.

By identifying opportunities for improvement, organisations can enhance product quality, avoid supply chain issues, and minimise the production of defective products. Aside from improving production related processes, IATF 16949 also focuses on the human element, demanding that organisations commit to ethical working practices and instigate a series of corporate responsibility policies. With a new emphasis on risk-based thinking throughout all systems, alongside increased traceability requirements and a consequent continuation on the PDCA approach (plan-do-check-act), the standard aims to mitigate risk across the entire supply chain.
Scope

The IATF 16949 standard defines the requirements for a QMS of any organisation within the automotive industry supply chain, helping them to become more responsive to market demands within this rapidly growing industry where technology is driving product development.

The IATF states that the goal of IATF 16949 is the development of a QMS that:

- Provides for continual improvement.
- Emphasises defect prevention.
- Includes specific requirements and tools from the automotive industry.
- Promotes reduction of variation and waste in the supply chain.

With a strong customer-led focus, this international standard defines the core QMS requirements for the design, development, production, installation and servicing of all automotive related products. It is applicable to all types of manufacturers and suppliers within the supply chain, on sites where customer specific parts, for production and servicing, are made. By taking a structured and comprehensive approach to quality management, the standard helps companies to overcome the combined challenges, while minimising costs.

Structure and terminology

IATF 16949 is based on the high-level structure of ISO 9001:2015, sharing an identical sequence of clauses, text and terminology. This aims to achieve consistent structure across all management-system standards (MSS) to improve the mutual compatibility of management systems.

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The standard comprises 10 clauses:

- Clauses one (1) to three (3) address the scope, normative references and terms and definitions.
- Clauses four (4) to ten (10) form the P-D-C-A cycle (Plan–Do–Check–Act).

IATF 16949 encourages commonality throughout the automotive industry by incorporating many common industry practices that were previously found in customer-specific requirements. There is a clear distinction between customer requirements and customer-specific requirements, and IATF 16949 defines these two terms as follows:

**Customer Requirements** - all requirements specified by the customer (e.g., technical, commercial, product and manufacturing process-related requirements, general terms and conditions, customer-specific requirements, etc.)

**Customer-Specific Requirements** - interpretations of, or supplemental requirements linked to a specific clause(s) of IATF 16949.
Key topics

Key topics addressed by the IATF 16949 standard include:

**Product safety:** A product should perform to its designed or intended purpose without causing unacceptable harm or damage. Organisations must have processes in place to ensure product safety throughout the entire product lifecycle.

**Risk management and contingency planning:** IATF 16949 includes a number of specific risk-related requirements to minimise the likelihood of failure during new programme development, as well as maximise the potential of planned activities. This is intended to make businesses safer and more stable by identifying and mitigating risk.

**Requirements for embedded software:** The standard references embedded software in the requirements for product validation, warranty and troubleshooting of issues in the field. A product requiring embedded software may need to comply with a customer’s sourcing-from-origin requirements.

**Change and warranty management:** The warranty management process must address and integrate all applicable customer-specific requirements, as well as warranty party analysis procedures to validate No Trouble Found (NTF). When applicable, decisions should be agreed with the customer.

**Management of sub-tier suppliers:** This outlines a progressive approach that goes from compliance to ISO 9001 via second-party audits, all the way to certification to IATF 16949 through third-party certification. The IATF website contains a document (Minimum Automotive Quality Management System Requirements for Sub-Tier Suppliers) to support specific requirements in this area.

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**THE IATF 16949 STANDARD FOCUSES ON THE FOLLOWING TOPICS**

- Product safety
- Risk management and contingency planning
- Requirements for embedded software
- Change and warranty management
- Management of sub-tier suppliers
Certification requirements

Covering the complete automotive manufacturing value chain, IATF 16949 certification applies to manufacturers as well as supply chain companies.

Certification is based on an assessment (audit) according to defined criteria (certification standard). A certificate is issued after the effective implementation of corrective actions to all identified nonconformities. Their root causes must be identified and corrected before a certificate can be issued.

An IATF 16949 certification demonstrates that your business has a continuous improvement process in place. Core requirements of the standard are fulfilled when the organisation has established a suitable, process focused management system which includes mechanisms for:

- Risk identification.
- Self-assessment.
- Preventive and corrective action.
- Continuous improvement of performance and evaluation.
- Distribution and implementation of customer-specific requirements.

Recognised by leading automotive manufacturers and OEMs, most insist that their suppliers hold IATF 16949 certification and adhere to the strict technical specifications laid out in the standard. In several countries, IATF 16949 certification eliminates the need for compliance to multiple third-party registrations.

The requirements are described in the sections 4 – 10 of the standard.

The IATF 16949 requirements follow the Plan-Do-Check-Act cycle

**Plan**
- 4. Context of the organisation: The context of the organisation includes the expectations of interested parties, the scope of the QMS, as well as overall requirements.
- 5. Leadership: The commitment of top management is vital to the success of the QMS, including the allocation of resources and appointment of process owners.
- 6. Planning: Risk and opportunities need to be thoroughly analysed and addressed. Further topics include contingency plans, quality objectives and preventive actions.

**Do**
- 7. Support: Requirements for supporting processes and resources apply to assets such as persons, infrastructure, working environment, competence, communication and documentation.

**Check**
- 8. Operation: Operational aspects which are covered in this chapter include product requirement reviews, planning, design, purchase, manufacturing and monitoring processes and tools.

**Act**
- 9. Performance evaluation: A set of processes need to be established to monitor the effectiveness of the QMS. These include customer satisfaction assessment, management review and internal audits.
- 10. Improvement: The QMS needs to be continuously improved through corrective actions, problem solving, error-proofing processes and other measures as specified in this chapter.
How to get started

The success of a quality management system largely relies on the commitment of an organisation’s top management. To secure management attention and the required resources, business benefits must be clearly laid out to all key stakeholders. With management support in place, your organisation is ready to start the process of implementing and certifying a QMS according to IATF 16949.

Before a certification audit can take place, your organisation will need to implement a quality management system, as well as document its effectiveness and compliance to the standard requirements, through the following steps:

**Upskilling:** Which requirements apply to your organisation? In addition to requirements made by the IATF 16949 standard or by customers, laws and regulations that are relevant to your business must be identified.

**Gap analysis:** Match the established requirements with the scope of your QMS – including all departments and processes that can influence quality management. Outline measures to close any gaps by designing and adapting relevant procedures and processes.

**Implementation:** Implement the new processes and procedures throughout the defined scope.

Training should be provided for employees that work within the system, to ensure that the required results can be achieved.

**Documentation:** Operate the QMS for a period of at least 12 months to track its effectiveness, improve processes and record results. If internal audits or management reviews disclose any issues, the root cause must be found and action taken to correct it.

When the QMS has matured sufficiently, to ensure continuous improvement in your organisation and its effect can be thoroughly proven, the certification process can be initiated.
An internationally accredited Certification Body for IATF 16949, TÜV SÜD provides the expertise and experience to assess your organisation to the requirements of IATF 16949 and other industry-relevant standards.

During a certification process, TÜV SÜD’s independent and qualified auditors apply the following techniques:

**Stage 1 audit (Readiness review):** evaluation of the organisation’s requirements and/or documentation to ensure the systematic control of all processes relevant to IATF 16949.

**Stage 2 audit (On-site):** verification, in the form of interviews and on-site inspection at the customer’s premises, that the requirements of IATF 16949 are being implemented effectively. This includes checking processes based on records kept by the organisation, such as available measurement results, minutes of meetings, training and qualification records, complaints management records, and the resulting improvement projects instigated by the organisation.

In addition to offering comprehensive evaluations and reports, we can provide you with our TÜV SÜD certification mark, which is globally recognised and synonymous with quality and safety.

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**GET YOUR IATF 16949 CERTIFICATION**

**DOCUMENTATION REVIEW AUDIT**
TÜV SÜD evaluates your documentation and company records

**ON-SITE AUDIT**
TÜV SÜD reviews the compliance of your actual activities to standard requirements and company records.

**CLOSING THE GAP**
Your organisation identifies and implements measures to correct the root cause of any non-conformances identified by the audit.

**CERTIFICATION ISSUANCE**
TÜV SÜD issues the IATF 16949 certification and certification mark, and enters the certification into the IATF database.

**SURVEILLANCE AUDITS**
Annual audit required to maintain certification validity.
TÜV SÜD has more than 100 years of experience in automotive solutions, working with top OEMs and suppliers across the entire value chain, and is an official IATF-contracted and registered Certification Body. This ensures that certification is conducted with the highest degree of professionalism and conformance to international guidelines and standards. Our services will therefore help your organisation to gain the confidence of manufacturers in the automotive industry.

Our international network of subsidiaries on every continent enables us to serve organisations worldwide and certify their compliance to IATF 16949 on a global scale. TÜV SÜD’s experts hold various international and national accreditations to satisfy local requirements for combined auditing exercises. Your organisation can take advantage of our many local TÜV SÜD offices for immediate and cost-effective support.

Our auditors are required to follow a strict code of conduct through Auditor Codex that assures both you and your customers of our complete independence and professionalism. As an internationally accredited Certification Body for various management systems, TÜV SÜD's certificates are accepted and recognised globally, and our world-wide recognised certification mark efficiently demonstrates your commitment to compliance and quality.

Why choose TÜV SÜD?

Internationally accredited IATF Certification Body

A century of experience in automotive solutions

Globally recognised TÜV SÜD certification mark

Available in all key regions across the world
Conclusion

While accredited certification to IATF 16949 is not a mandatory requirement, with organisations under increasing scrutiny from stakeholders many benefits can be gained from the adoption and implementation of this QMS. Indeed, most leading automotive manufacturers now require that suppliers adhere to the requirements of IATF 16949, and will only work with those that have an IATF 16949 certification.

IATF 16949 certification demonstrates a strategic commitment to continuous improvement, and will minimise costs, as well as improve staff morale and brand reputation. Third-party certification informs your buyers, customers, suppliers and other stakeholders that your organisation is serious about implementing the standard correctly. When meeting regulatory or contractual obligations, audit by an independent certification body delivers your supply chain added assurance that you are meeting the standard's requirements.
Demonstrate commitment to continuous improvement with IATF 16949 certification

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Add value. Inspire trust.
TÜV SÜD is a trusted partner of choice for safety, security and sustainability solutions. It specialises in testing, certification, and auditing services. Since 1866, the company has remained committed to its purpose of enabling progress by protecting people, the environment and assets from technology-related risks. Through more than 24,000 employees across over 1,000 locations, it adds value to customers and partners by enabling market access and managing risks. By anticipating technological developments and facilitating change, TÜV SÜD inspires trust in a physical and digital world to create a safer and more sustainable future.