



Mayville Engineering Co., Inc

Supplier Requirements Manual

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[Parenthetic notes refer to sections in IATF:16949:2016 Standards]

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INTRODUCTION

Suppliers	Mayville Engineering Co., Inc. (MEC) recognizes the very important role our suppliers have in the value we offer our customers. As an extension of our own operations, we rely on our suppliers to provide material, products, and services which meet all the requirements of MEC purchase orders, applicable specifications, and the quality management requirements outlined herein.
Purpose	The purpose of this manual is to inform MEC suppliers of the core expectations we have regarding the suppliers' quality management systems, design requirements, and manufacturing process controls required for the purpose of doing business with MEC. This manual describes what MEC expects its suppliers to do to ensure that all MEC requirements and expectations are met.
Scope	This manual applies to all suppliers providing MEC with materials, products, processing, and related services that directly impact the quality of product that MEC provides to our customers. This includes sequencing, sorting, rework and calibration services as well as intra-company suppliers, and when applicable, to supplier sub-tier sources. The general requirements outlined herein do not supersede conflicting requirements in the MEC purchase order, contract, or drawing, including applicable engineering specifications and process specifications, or applicable long-term agreement(s). It is the responsibility of the supplier to verify and monitor compliance with their operations and sub-tier source operations.
Requirements	In this manual, the terms "shall" and "must" mean that the described action is mandatory; "should" means that the described action is necessary and expected with some flexibility allowed in the method of compliance; and "may" means that the described action is permissible or discretionary.

SUPPLIER CODE OF CONDUCT

Suppliers shall ensure operations are being performed in a manner that is appropriate, as it applies to their ethical, legal, environmental, and social responsibilities.

Ethics

Suppliers are required to reject all evidence of corruption, bribery, conflict of interest, or any other form of illegal/unethical practices.

Confidentiality

The supplier shall ensure the confidentiality of MEC-contracted products and projects under development, and related product information, as well as intellectual property shared because of the working relationship.

Compliance with Local Laws and Regulations

Suppliers must adhere to the laws and regulations in the locality in which they reside. This includes all local, state, and federal laws/regulations in the country of origin.

Compliance with Environmental, Health, and Safety Laws

The supplier must comply with local, state, and federal laws/regulations regarding environmental health and safety laws in the country of origin.

Conflict Minerals

The supplier must be in compliance with the Dodd-Frank Wall Street Reform and Consumer Protection Act, which requires U.S. publicly traded manufacturing companies to conduct due diligence into their supply chains, and disclose any products containing “Conflict Minerals” (including tin, tantalum, tungsten and gold) originating from the Democratic Republic of Congo (DRC) or adjoining countries. The reporting requirement under the SEC rules resulted from concerns that revenues obtained from mining and transport of Conflict Minerals are being used to finance the ongoing conflict in the DRC and surrounding countries and may be aiding human rights abuse.

Product Regulations (For applicable products)

MEC requires all suppliers to provide, upon request, information and documentation for all applicable product regulations related to import, export, manufacture, or distribution of items pursuant to Purchase Orders. Regulations include, but are not limited to, Section 1502 of the Dodd Frank Wall Street Reform and Consumer Protection Act (Conflict Minerals), California Health & Safety Code Section 25249.5 et. seq. (Proposition 65), U.S. Toxic Substance Control Act (TSCA), Country of Origin, and the following EU Directives; Registration, Evaluation, and Authorization of Chemicals (REACH), Restriction of Hazardous Substances (RoHS), and Carbon Border Adjustment Mechanism (CBAM).

International Material Data System (IMDS)/End-of-Life Vehicle (ELV)

The environmental compatibility of our products is one of the primary concerns of our company. Environmental compatibility, recycling compatibility as well as waste disposal must be taken into consideration beginning with quoting and development phase as well as technological and economic decisions.

It is our goal in close cooperation with our suppliers to prevent environmental risks right from the start and to find solutions together that exceed the requirements of existing statutory regulations. MEC requires its suppliers to provide IMDS information with PPAP and upon request. MEC encourages its suppliers to visit www.mdsystem.com and www.aiag.org to learn more about, and take advantage of, IMDS on-line and classroom training. The End-of-Life (ELV) directive, 2000/53/EC, was enacted by the European Commission 'to minimize the impact of end-of-life vehicles on the environment. The use of lead, mercury, cadmium, and hexavalent chromium are prohibited in vehicles and their components, except for certain exemptions published in Annex II of the Directive. This is a mandated requirement for European Union (EU) Member States and required by North American, and some Japanese vehicle manufacturers. To meet the reporting requirements of the directive, vehicle manufacturers need suppliers to report information on materials within their respective components. The International Material Data System (IMDS) was designated to house the required data. An Automotive Industry Action Group (AIAG) committee has developed a guideline for a common set of rules and formats for data collection: the AIAG End-of-Life Vehicle Reporting Tool. Based on product line requirements (prior to or with the PPAP submission), suppliers shall submit data consistent with ELV Reporting and the AIAG E#LV Reporting Tool.

Human Trafficking

MEC is opposed to human trafficking and forced labor in any form. Suppliers shall not engage in any human trafficking and or forced labor. Suppliers must comply with FAR 52.222-50, Executive Order 13627 issued 9/25/2012 and the proposed FAR amendments strengthening protections against trafficking in humans.

Product Safety

In all instances where a product is manufactured to a new design, for a new system, or for a new application, it is important that Suppliers shall allocate responsibility for assuring that all performance, endurance, maintenance, safety and warning requirements are met.

Non-Discrimination

Suppliers shall not discriminate against race, color, sex, religion, age, physical disability, political affiliation, or other defining characteristics as prohibited by local, state, and federal laws/regulations in the country of origin.

Child Labor

Suppliers shall employ workers of minimum legal age in accordance with local, state, and federal laws/regulations in the country of origin. Child labor laws must be followed.

Forced/Indentured Labor

Suppliers shall not practice the use of forced or indentured labor.

Work Hours/Days

Suppliers shall not exceed the daily and weekly working hours as permitted by local, state, and federal laws/regulations in the country of origin.

Wages and Benefits

Suppliers shall compensate workers in accordance with local, state, and federal laws/regulations in the country of origin. This includes minimum legal wage, overtime wages, and benefits (required by law).

Employee Competency

All suppliers of parts, processes and service having a direct impact on MEC or MEC customer quality and/or delivery shall have employees competent to perform the work they are assigned.

Supplier Communication

All communications to MEC must be in English, including but not limited to part approval submissions, product quality approval documentation and general communication.

All communication regarding part qualification and quality requirements shall be communicated in a timely manner to the appropriate MEC personnel.

Immediate notification is required regarding all non-conformance situations, including those at sub-tier suppliers. The supplier is responsible for and shall include containment and resolution activities in order to minimize impact to MEC. The MEC Quality Manager shall be kept informed as to the status of these non-conformances.

COMPLIANCE TO CONTRACTUAL REQUIREMENTS

Upon accepting a MEC Purchase Order, the Supplier is responsible for compliance to all engineering drawing, specification, purchase order requirements. Neither audit, surveillance, inspection or tests made by MEC, representatives of MEC or its customer(s), at Supplier's facilities, at any sub-tier facilities, or upon receipt at MEC, relieves the Supplier of the responsibility to furnish acceptable products or services that conform to all contract requirements; nor does it preclude subsequent rejection by MEC or its customers.

International Traffic in Arms Regulations (ITAR)

If your company is sourced a product with ITAR requirements:

- Your company certifies that it is registered or will register with the Directorate of Defense Trade Controls in accordance with 22 C.F.R. Part 122 if it manufactures or will manufacture ITAR-controlled defense articles.
- Your company acknowledges that it will be subject to ITAR requirements for export-controls and have a signed "Supplier Export Control Certification" form on file with MEC. When this requirement is specified, the suppliers have the right to use the Export Controlled items only as required to fulfil their contract and within the limitations of the applicable US Government export authorization. The processors shall exercise appropriate controls to ensure that technical documents or data, which are subject to the International Traffic in Arm Regulations (ITAR) or Export Administration Regulations (EAR), are not released to "Foreign Persons" inside or outside the United States without the proper U.S. Government authority.

- Your company acknowledged that it will be subject to ITAR requirements for cybersecurity. If product definition data is digitally received, your company agrees to meet DFARS 252.204-7012 and comply with all related cyber security measures. Your company also agrees to share SPRS score upon request and submit it to audit if needed.

MEC DESIGNATED SOURCES

Where specified, the supplier shall purchase products, materials or services from MEC designated sources. However, the supplier is responsible for ensuring that items procured from such sources meet all applicable technical and quality requirements.

1 • QUALITY MANAGEMENT SYSTEM REQUIREMENTS

The supplier shall establish, document, and maintain a quality system as a means of ensuring that product conforms to the specified requirements. The supplier shall prepare a quality manual and formal procedure covering all control points of the supplier's product or service.

1.1 QUALITY MANAGEMENT SYSTEM CERTIFICATION

Suppliers shall develop, implement, and improve a quality management system (QMS) with the ultimate objective of becoming certified to the current version of the automotive standard.

Unless otherwise authorized by the MEC customer, all automotive identified suppliers will have a QMS certified to ISO 9001 as the initial minimum acceptable level of development. Based on current performance and the potential risk to the customer, the objective is to move suppliers through the following QMS development progression:

- 1) certified to ISO 9001 through third-party audits.
- 2) certified to ISO 9001 with compliance to other MEC automotive customer defined QMS requirements (such as Minimum Automotive Quality Management System Requirements for Sub-Tier Suppliers [MAQMSR] or equivalent) through second-party audits.
- 3) certification to ISO 9001 with compliance to IATF 16949 through second-party audits
- 4) certification to IATF 16949 through third-party audits, by an IATF-recognized certification body.

In the absence of third-party certification, depending on the product, its application, value, and criticality, the MEC Buyer and Quality representative may authorize the acceptance of other evidence of compliance. This may include second party (MEC) audit or first party (self) assessment to the applicable criteria above, or to a set of alternative basic quality requirements. Suppliers could also be selected based on written authorization by customers to purchase from that supplier.

Suppliers of automotive product-related software, or automotive products with embedded software must implement and maintain a process for software quality assurance for those products. In addition, those suppliers identified through review of risk and potential impact to customers, shall also retain documented information of a software development capability self- assessment.

Suppliers shall provide a copy of their most recent registration certificate to the MEC Purchasing/Quality Assurance representative.

If a supplier loses its Quality System certification, MEC is to be notified immediately.

1.2 QUALITY MANUAL

Upon request, where applicable, the supplier shall furnish MEC with a copy of the supplier's Quality Management System Manual, which is to be current and approved by the supplier's management, including or referring to related documents. The quality management system documentation shall include suppliers' statements of a quality policy and quality objectives. Top management shall define quality objectives and measurements which should address customer expectations and be achievable within a defined period. The supplier shall promptly notify MEC of any substantive changes to the supplier's quality management system or personnel.

1.3 QUALITY POLICY

The supplier's management, with executive responsibility, shall define and document its policy for quality, including objectives for quality and its commitment to quality. The quality policy shall be relevant to the supplier's organizational goals and the expectations and needs of its customers. The supplier shall ensure that this policy is understood, implemented and maintained at all levels of the organization.

2 • SUPPLIER SELECTION AND ASSESSMENT PROCESS

MEC requires all suppliers to be approved prior to the issuance of contracts or purchase orders.

2.1 SUPPLIER SELECTION

Suppliers are selected based on the following:

- a) Assessment of supplier risk to product conformity and uninterrupted supply of MEC's products or services to customer.
- b) Quality and delivery performance.
- c) Evaluation of suppliers QMS. (Minimum ISO9001 QMS or Letter of approval from the applicable customer.)
- d) Multi-disciplinary decision making (input from Procurement, Engineering, Quality, and Manufacturing groups).
- e) Assessment of software development capabilities if applicable.

Other criteria that may also be considered include:

- f) Volume of automotive business.
- g) Financial stability.
- h) Purchased product, material, or service complexity.
- i) Required technology.
- j) Adequacy of available resources, including people and infrastructure.

- k) Design and development capabilities.
- l) Manufacturing capabilities.
- m) Change management process.
- n) Business continuity planning.
- o) Logistics process.
- p) Customer service.

2.2 SUPPLIER APPROVAL ASSESSMENT AUDIT

The Supplier Approval Assessment/Audit Process *may* include the following:

a) Supplier Self-Assessment Survey

MEC shall request the supplier to provide a copy of its ISO 9001 or related certificate issued by an accredited certification body and/or complete a self-assessment of its quality management system and capabilities.

In those cases where a supplier's quality management system has not been certified by an accredited certification body, MEC may request a copy of the supplier's Quality Manual and supporting procedures (and perhaps internal audit reports) to determine if the supplier's quality management system meets MEC requirements.

b) On-Site Assessment

An on-site audit is performed by a Supplier Development representative for a 'new' supplier, unless otherwise agreed upon by Purchasing and SDE.

2.3 SUPPLIER ON-SITE ASSESSMENT AUDITS

MEC utilizes Second-Party on-site assessment auditing to evaluate suppliers and validate Corrective Action Report (CAR) responses.

Generally, when a supplier is certified to ISO 9001 or a related standard by an accredited certification body, MEC will not conduct an on-site assessment of the supplier's quality management system against the same criteria. However, MEC and/or its customers, due to product/process complexity or criticality, may elect to conduct on-site assessments of a supplier's product or process capabilities. As a result, findings may be issued. These assessments could include:

- Business and Manufacturing Operations – to determine whether the supplier has the financial resources, production capacity, and other business resources needed to fulfill MEC volume production needs and continuity of supply.
- Continual Improvement Initiative – to determine if the supplier's culture, methods and skills are present to actively pursue continual improvement.

- Technology Assessment - to determine whether the supplier has the needed technical resources, including production and inspection equipment, facilities, engineering resources, MEC-specified computer-aided design language/format, electronic commerce capability, etc.
- Sub-Tier Supplier Control – to evaluate the effectiveness of the supplier’s sub-tier management processes and ensure that products or services procured from sub-tier sources and delivered to MEC conform to all applicable MEC requirements.

Upon completion of the supplier audit the results are reviewed with the Procurement team and a sourcing decision is made.

If a supplier receives an unacceptable audit score, the supplier may be required to complete a supplier improvement plan. This plan shall address any/all areas that were cited as unacceptable or requiring follow-up during the audit. The timing of the plan is to be agreed upon with the supplier.

A follow-up audit may be scheduled with supplier to review non-compliances cited during original audit, and review supplier improvement plan.

The supplier may be re-evaluated once improvement plan is completed and approved, or the on-site audit has been completed with an acceptable score.

3 • GENERAL REQUIREMENTS

The following set of general quality requirements applies to all suppliers.

3.1 STATUTORY, REGULATORY, & CUSTOMER SPECIFIC REQUIREMENTS

Statutory and regulatory requirements shall be communicated to the supplier via the quoting process. Customer Specific Requirements (CSR) will be communicated during quoting process. Adherence to the CSR is required.

All suppliers shall ensure that any sub-tier suppliers are compliant to all Customer Specific Requirements.

3.2 CONTROL OF SUB-TIER SUPPLIERS

The Supplier, as the recipient of the contract, is responsible for meeting all requirements, including work performed by the Supplier's sub-tier suppliers (also known as sub-suppliers or subcontract suppliers). When the Supplier uses sub-tier sources to perform work on products and/or services scheduled for delivery to MEC, the Supplier shall include (flow-down) on purchase orders or contracts, to its sub-tier sources, all of the applicable technical and quality requirements contained in the MEC

contract, including quality system requirements, the use of MEC designated sources, and the requirement to document and control 'key characteristics' and/or 'key processes,' and to furnish certifications and test reports as required. MEC and its customers reserve the right-of-entry to sub-tier facilities, subject to proprietary considerations.

MEC may purchase materials through certain distribution/warehousing suppliers that are not certified to ISO 9001, however, providing the actual processing Supplier is certified. MEC shall request the distribution/warehousing supplier to identify the processor and provide an ISO 9001 or related certificate issued by an accredited certification body and/or complete a self-assessment of its quality management system and capabilities.

3.3 CONTROL AND RELEASE OF MEC FURNISHED DOCUMENTS

Documents furnished by MEC to the Supplier are furnished solely for the purpose of doing business with MEC. Proprietary documents may be furnished to the Supplier in hard copy, electronic or other media. The Supplier is responsible for controlling and maintaining such documents to preclude improper use, loss, damage, alteration and/or deterioration.

Unless authorized by MEC in writing, the Supplier may not transmit or furnish any MEC furnished documents, or copies of such documents, to anyone outside the Supplier's business organization except to a sub-tier source used by the Supplier for performance of work on the MEC contract. The Supplier shall return to MEC, or purge electronic copies of, all proprietary documents with the last delivery of products or services on the contract. MEC may request the Supplier to furnish objective evidence or certification that proprietary documents have been purged. The Supplier shall flow down this requirement to all sub-tier sources, when such sources will be in receipt of MEC proprietary documents during performance of work for the Supplier.

3.4 SPECIAL PROCESS SUPPLIER CONTROL

Special processes are defined as Heat Treatment, Plating, Coatings, Welding, etc. Automotive suppliers of these processes must complete the appropriate AIAG CQI Assessment on an annual basis and forward results to MEC Purchasing for review. Copies of the assessment can be obtained from www.aiag.org.

- CQI-9 Heat Treatment Systems Assessment
- CQI-11 Plating Systems Assessment
- CQI-12 Coating Systems Assessment
- CQI-15 Welding Systems Assessment
- CQI-23 Molding Systems Assessment
- CQI-27 Casting Systems Assessment
- CQI-29 Brazing Systems Assessment
- CQI-30 Rubber Processing Systems Assessment

In addition, suppliers of special processes must supply a Certificate of Conformance (C of C) with each delivery. The C of C must provide traceability to the actual production records from the lot being supplied so that conformance to specifications can be validated.

3.5 OWNERSHIP & CONTROL OF PRODUCTION TOOLING

Any tooling, gages, fixtures or equipment at a supplier, which have been paid for by MEC, remain the property of MEC. MEC may also have been reimbursed for tooling, gages, fixtures, or equipment and therefore may also be the property of a MEC customer.

No MEC controlled or owned tooling shall be scrapped, sold, altered or moved without the written permission of MEC purchasing.

All MEC owned and controlled tooling located on suppliers' premises must be identified with a tag stating it is "Property of MEC." or "Property of (final manufacturer)."

Tooling controlled by the Supplier: If another customer requests a change to the common tooling that produces the parts for MEC, then this change shall be treated as an engineering change. The supplier shall seek MEC approval prior to the change. MEC must get its customer's approval for the change. The supplier must PPAP the change to MEC. MEC must get its customer PPAP approval and no new parts should be shipped to MEC until authorized to do so by MEC.

Tooling controlled by MEC: The supplier may not produce product off of or provide any form of information about the tooling to another supplier without the written consent of MEC Purchasing.

Tooling controlled by a Supplier Customer other than MEC:

This tooling may be owned by another customer of the supplier or a common customer to both the supplier and MEC. If there is a requested change to the part the tooling produces, the supplier must notify MEC. This would serve to MEC of the change to allow us to contact our Customer to obtain approval for this change, or to allow MEC to source this product elsewhere if Customer approval is withheld.

All suppliers with tooling controlled by MEC or a MEC Customer must adequately monitor, maintain, and protect said tooling. Additionally, all suppliers with tooling controlled by MEC or a MEC Customer must provide information on the tooling when requested and, at a minimum, provide notice when any tooling requires repair or replacement. This notice shall include details on the repair or replacement, the expected tooling life remaining, and cost of said repair or replacement.

4 • PRODUCT QUALIFICATION

Verification of Supplier provided products and outside services to MEC are verified or validated upon receipt per procedure. At times it may be necessary to perform these verification or validation activities on the supplier's premises.

This section defines the generic requirements for production part qualification and approval. The purpose is to determine if all MEC design and specification requirements are properly understood by the supplier and that the manufacturing processes have the capability to consistently meet these requirements.

In all instances where a product is manufactured to a new design, for a new system, or for a new application, it is important that Supplier and MEC allocate responsibility for assuring that all performance, endurance, maintenance, safety and warning requirements are met. It is preferred that this allocation of responsibility be in writing.

4.1 FIRST ARTICLE INSPECTION

As a minimum, a First Article Inspection (FAI) is required to initially qualify a part/process for supplier approval, unless the PPAP process (below) is used instead. Furthermore, a new FAI is required for:

- a) Correction of a discrepancy from a previously submitted (first submission) part that was accepted through a MEC approved deviation.
- b) Product modified by an engineering change to the existing design records (Engineering prints, material and test specifications).
- c) Process changes, including changes in material, machines, or manufacturing location.
- d) An extended gap of time (greater than one year) since last production.

Suppliers are responsible for submitting an initial FAI and updates in accordance to conditions above as a result of their contract review process not due to purchase order requirements only.

The FAI requires that all features and characteristics on the design specification and control plan be inspected and verified prior to production. When submitting the FAI report, the supplier is permitted to use a generic form, if that form is compliant to the AIAG form requirements. Actual measured values shall be recorded as opposed to general statements of conformance or other notations simply indicating acceptance. In addition to a FAI, suppliers shall, as a minimum, develop a Control Plan by identifying special product and process characteristics that are key to achieving quality. The supplier shall also include those special characteristics designated by MEC in the drawing, specification, or purchase order.

For First Article Inspection guidance, see AIAG PPAP Manual (Appendix C, D, & E) – Production Part Approval Process (available from www.aiag.org)

4.2 PRODUCTION PART APPROVAL PROCESS (PPAP)

The overall purpose of PPAP is to ensure the supplier understands MEC's design record and specification requirements, as well as to determine if the supplier's manufacturing process can consistently meet those requirements.

MEC does not accept separate charges for the cost of PPAP development. Suppliers shall factor the cost of PPAP development into the overall cost of doing business. Suppliers shall comply with the current edition of the AIAG Production Part Approval Processes (PPAP) Manual, as well as additional requirements and expectations below. All elements listed in the latest edition of the AIAG PPAP manual shall be maintained by the Supplier and subject to submission to MEC as requested on the PPAP check list.

Suppliers will be notified by MEC through a Purchase Order/PPAP Check list when a PPAP is to be submitted. The supplier will also submit under the following circumstances:

- a) Correction of a discrepancy from a previously submitted (first submission) part that was accepted through a MEC approved deviation.
- b) Process changes, including changes in material, machines, or manufacturing location.

The submission package is to be addressed and mailed to the location identified by the Purchasing Department. All containers shall be marked with "Sample Submission Parts" identifying their contents.

The supplier shall submit the PPAP package prior to the due date listed on the PPAP Purchase Order/Check list.

The supplier must obtain written approval of submission from MEC, before shipment of production quantities of product.

Suppliers are required to manage PPAP activities, submissions and approvals with all their Sub-Tier suppliers. Sub-Tier supplier PPAP submissions (including signed and approved Part Submission Warrants (PSW)) must be available for review upon request by MEC.

The supplier is required to retain a copy of the approved PPAP documentation for the period of Life of Production + 15 years after the last production run. This documentation shall be made available to MEC upon request.

The supplier is responsible for obtaining the latest revision of the applicable AIAG core tool reference manuals and forms. See AIAG APQP Manual for related guidance on associated product and process design and development methodology and techniques.

4.2.1 Additional PPAP Submission Information

All Submissions are to be in English from the supplier. Additional elements may be added to the PPAP process due to MEC's specific customer demands. If the initial order quantity produced exceeds the number of PPAP samples required, all remaining material must be dispositioned as suspect nonconforming material at the supplier's location until PPAP approval has been received.

Annual Validation

Annual Validation must be performed and available upon request.

5 • PROCESS CONTROL

This section defines the necessities for suppliers to control their manufacturing processes.

5.1 SPECIAL CHARACTERISTICS

When the MEC print shows a Significant, Critical or Special characteristic, suppliers are required to establish appropriate process control monitoring plans for those identified characteristics.

Use of Asterisk (★) or black circle (•) for Significant Product Characteristics (Fit / Function)

Use of Inverted Delta (▼) or (SC) for Critical Characteristic (Safety)

Use of Diamond (◆) or (SC) for Special Characteristic

Process capability results showing conformance to MEC significant, critical or special characteristics should be based on a minimum of 100 consecutive pieces. When a characteristic is impractical to measure using variable measurement techniques, it may be treated as an attribute and controlled with appropriate methods. Agreement from MEC is required prior to utilizing an attribute measurement technique. Preliminary process capability studies are required for supplier- or customer- designated special characteristics (variable data) for all new product or processes. A Ppk value of ≥ 1.67 should be achieved for preliminary results (less than 30 days). Ongoing process capability requirements for all special characteristics (variable data) are required to maintain a Cpk value of ≥ 1.33 .

When submitting the FAI report and PSW, the supplier is permitted to use any document that is compliant to AIAG form requirements. For First Article Inspection guidance, see AIAG PPAP Manual (Appendix C, D, & E) – Production Part Approval Process (available from www.aiag.org)

Significant, Critical or Special characteristic Process Capability:

Process capability results showing conformance to MEC significant, critical or special characteristics should be based on a minimum of 100 consecutive pieces. When a characteristic is impractical to measure using variable measurement techniques, it may be treated as an attribute and controlled with appropriate methods. Agreement from MEC is required prior to utilizing an attribute measurement technique. Preliminary process capability studies are required for supplier- or customer- designated special characteristics (variable data) for all new product or processes. A Ppk value of ≥ 1.67 should be achieved for preliminary results (less than 30 days). Ongoing process capability requirements for all special characteristics (variable data) are required to maintain a Cpk value of ≥ 1.33 .

- a) Laboratory data from commercial / independent Labs must be from an accredited lab and less than one-year old to be used in submission.

- b) Additional elements may be added to the submission process due to MEC specific customer demand. Further information on PPAP is available through the AIAG.

The supplier shall demonstrate conformity to those special characteristics designated by MEC through means of documentation and appropriate control methods. In addition to any special characteristics identified by MEC, the supplier shall also review, identify, document, and control other product and process characteristics that are key to achieving quality.

5.2 ERROR-PROOFING

The supplier should use error-proofing devices and techniques as a form of process control; especially for repetitive functions, difficult tasks prone to mistakes, or where the cost of error is high.

5.3 WORK INSTRUCTIONS

The supplier shall ensure that all employees who have responsibilities for the operation of processes that impact product quality are competent in those positions. The supplier shall prepare documented work instructions for processes that impact product quality. These instructions shall be maintained current and accessible for use at the workstation.

Document and Data Control

General

The supplier shall establish and maintain documented procedures to control all documents and data that relate to quality including, to the extent applicable, documents of external origin such as standards and customer drawings.

Document Identification for Special Characteristics

Where special characteristics are noted by the customer, the supplier's process control guidelines and similar documents shall be marked with the customer's special characteristic symbol (or the supplier's equivalent symbol or notation) to indicate those process steps that affect special characteristics.

5.4 CONTROL OF MONITORING AND MEASURING DEVICES

The supplier shall determine the monitoring and measurement to be undertaken and the monitoring and measuring devices needed to provide evidence of conformity of product to determined requirements. As a minimum, where necessary to ensure valid results, measuring equipment shall:

- a) Be calibrated or verified at specified intervals, or prior to use, against measurement standards traceable to international or national measurement standards; where no such standards exist, the basis used for calibration or verification shall be recorded; and
- b) Be identified to enable the calibration status to be determined.

5.5 STATISTICAL PROCESS CONTROL

Where specified in the Control Plan, the supplier is required to apply effective statistical process controls. Suppliers should consult the Statistical Process Control (SPC) manual published by AIAG for guidance, methods, examples, and related reference information.

5.6 PREVENTIVE MAINTENANCE

The supplier should identify key process equipment and provide resources for machine/equipment maintenance activities and develop an effective planned total preventive maintenance system.

5.7 CONTINGENCY PLANNING

The supplier should have a contingency plan which would allow for the safeguarding, storage and recovery of engineering drawings, electronic media, and production tooling in the event of damage or loss. This plan should also contain contingency plans to satisfy MEC requirements in the event of significant utility interruptions, labor shortages, equipment failure and field returns.

The supplier shall periodically test the contingency plans for effectiveness (e.g. simulations, as appropriate). Cybersecurity testing may include a simulation of a cyber-attack, regular monitoring for specific threats, identification of dependencies and prioritizations of vulnerabilities. The testing is appropriate to the risk of associated disruption. The implementation of cyber protection shall include equipment and systems supporting manufacturing.

6 • CHANGE CONTROL

The supplier is responsible for controlling changes and notifying the MEC Buyer of all changes to the approved part design, manufacturing process, or site.

6.1 CHANGE CONTROL PROCESS

The supplier shall have a process to ensure that relevant versions of applicable documents furnished by MEC (as well as those specified of external origin) are available at points of use. The supplier is responsible for the timely review, distribution and implementation of all MEC engineering standards/specifications and changes in accordance with the schedule required by MEC. Timely review should be as soon as possible and shall not exceed two working weeks. The supplier shall maintain a record of the date on which each change is implemented in production. Implementation shall include updated documents.

6.2 SUPPLIER CHANGE REQUESTS

Suppliers shall not make changes to their processes, location, facilities, equipment, material, or product design without written approval from the MEC.

Any planned changes by the supplier to the design, process, or manufacturing location, such as:

- a) Use of other material than was used in previously approved part or product
- b) Production from new, additional, replacement or modified tools, dies, molds, patterns, etc.
- c) Production following upgrade or rearrangement of existing tooling or equipment
- d) Production from tooling and equipment transferred to a different plant site or from an additional plant
- e) Change of sub-tier supplier for parts, nonequivalent materials, or services (e.g. heat treating, plating, etc.)
- f) Product produced after tooling has been inactive for production for 12 months or more
- g) Change to test/inspection method – new technique (no effect on acceptance criteria)
- h) For bulk materials: new source of raw material from new or existing supplier, or change in product appearance attributes, etc.

Before submitting to MEC a request for a permanent change to a supplier-controlled design, the supplier shall review the FMEA and Control Plan, as applicable, to ensure that all process-related issues have been addressed and resolved. MEC may require the supplier to submit an updated FMEA and Control Plan prior to approval of such permanent changes. MEC may also require other portions, or all, of the related qualification process to be repeated. In some cases, MEC may elect to review supplier proposed permanent changes at the supplier's facility.

7 • CONTROL OF NONCONFORMING MATERIAL

For nonconforming products supplied to MEC, including those that reach a MEC customer, the supplier must cover all costs to correct the nonconformance.

7.1 SUPPLIER REQUEST FOR NONCONFORMANCE DEVIATION

A supplier shall not knowingly ship product that deviates from the drawing, specification limits, or design intent without prior written authorization from the MEC. If such a condition exists, the supplier may petition the MEC, in writing, to allow shipment of the product under a written nonconformance deviation.

If requested by the MEC, the Supplier must send samples of such nonconforming items to MEC for evaluation. The cost of shipping, inspection, and testing to determine the potential acceptability of such product will be charged to the supplier.

MEC approval of a deviation is specific to the products for which it has been submitted and approved and shall not be construed as a permanent engineering change. The Supplier must begin work immediately on corrective action. In all cases, the Supplier shall fully contain all product suspected of being nonconforming. In addition, nonconforming product may be returned to the supplier at supplier expense, or the Supplier may be required to sort any suspect product already shipped to MEC sites or be charged back for the cost of sorting by MEC. Any parts shipped to MEC that have been approved

for deviation shall be clearly identified as such externally on the box, container, or other packaging and on shipping documentation. A copy of the MEC-approved deviation document shall be included inside each box/container.

7.2 CONTROL OF REWORKED PRODUCT

Rework is defined as additional operations, that are not part of the basic production process flow, which will bring product in full compliance with applicable drawings and specifications. Instructions for rework, including re-inspection requirements, shall be accessible to and utilized by the supplier's appropriate personnel. All rework shall be documented and accepted by MEC.

7.3 SUPPLIER CONTAINMENT

For product quality problems reported by MEC to the supplier, the supplier shall provide documented evidence with subsequent shipments that such product has been inspected for the identified non-conformances and meets all applicable requirements.

8 • PACKAGING, LABELING, DELIVERY & RECORD RETENTION

Preservation, packaging, labeling, and shipping methods must comply with common industry practices and MEC requirements specified on the purchase order.

Preservation

To detect deterioration, the condition of product in stock should be assessed at appropriate planned intervals. The supplier should use an inventory management system to optimize inventory turns over time and should assure stock rotation, such as "first-in-first-out" (FIFO).

Packaging

The supplier must adequately plan for packaging designed to prevent product contamination, deterioration or loss and to eliminate shipping damage. Suppliers should provide expendable packaging or returnable containers, where appropriate, that provide for sufficient density and protection from any likely damage that may occur. Expendable materials and packaging must meet local and national standards for safe disposal and/or recycling. MEC requires all individually packaged products to not exceed 40 pounds, to protect the health, safety and well-being of our employees.

Labeling

Labeling and bar code requirements may vary among MEC divisions.

All shipments of production purchased parts must have a printed label affixed to each container and be visible on the pallet lift truck side. This label shall contain the following information:

MEC Part Number

Engineering Revision Level
Supplier Lot Number
Supplier Name
P.O. Number
Part Description
Quantity

Suppliers are encouraged to use the AIAG B16 and/or B10 Label Standard for all labels.

All shipments of raw material must have one (1) of the same label as stated above securely attached to the product.

The MEC Buyer will provide the supplier with the necessary specifications.

Suppliers are expected to have a detailed written lot control/traceability system. Lot number determination is left up to the supplier. Lot control numbers shall provide traceability of material from the point of usage back to the point of manufacture and raw material. The system shall also have the ability to trace back to all inspection test results for material used for the lot. The system shall be based on first in first out (FIFO) stock control program.

Delivery

The supplier should systematically inform MEC of any delay in delivering product. The supplier is responsible for additional transport costs due to delays.

Record Retention

The supplier shall retain quality records for a time period specified by the MEC purchase order or related reference documents. Upon request, the supplier shall be capable of retrieving and delivering required records to MEC within ten (10) working days from date of request by MEC.

9 • CONTINUOUS IMPROVEMENT

Suppliers should define a process for continuous improvement.

9.1 PROBLEM SOLVING PROCESS

Suppliers should use a closed-loop corrective action process whenever a problem is encountered internally or upon notification from MEC. For example:

Discipline	Description
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1 Describe the Problem	State what the problem “Is,” and “Is Not” with respect to what, where, when, who, how, and how many. Use quantitative terms.
2 Use a Team Approach	Consult and coordinate with relevant stakeholders.
3 Apply Containment	Immediately contain any suspect product to protect MEC and its customers.
4 Root Cause Analysis	Identify potential causes, analyze causes for failure mode, validate root cause(s), and identify solutions.
5 Implement Permanent Corrective Action	Implement solution. Update applicable FMEA, control plan and work instructions.
6 Verify Effectiveness of Corrective Action	Use check sheets, auditing, sampling, and/or control plans to monitor process performance for effectiveness and sustained improvement.
7 Implement Preventive Corrective Action	Implement changes to prevent the same type of error from occurring in similar products/processes. Update applicable documents.
8 Management Support	Review, approve, and support. Provide resources and team recognition.

If required, an 8D form will be requested by the MEC plant quality representative.

For additional guidance on problem solving methods, tools, training, and related references, refer to Automotive Industry Action Group (AIAG).

9.2 CORRECTIVE ACTION REPORT

MEC may issue a request for a Defective Material Report (DMR) or a Supplier Corrective Action Report (SCAR) to the supplier when nonconforming material, components, or assemblies are found. When a formal reply is requested use the AIAG standard 8-D reply format, or other convenient media of equivalent content. When documenting the root cause, the supplier shall include the underlying reasons:

- a) why the specific nonconforming condition or incident occurred,
- b) why it was not detected by the supplier’s quality controls, and
- c) why the related process, from a systemic viewpoint, allowed the nonconformance (and potentially others like it) to occur.

The supplier should apply the following criteria to determine whether the underlying root cause has been identified:

1. It initiates and causes the event you are seeking to explain.
2. It is directly controllable.
3. The elimination of that root cause will result in the elimination or reduction of the problem.

Statements from the supplier indicating that the corrective action is to alert or retrain the operator, and/or increase inspection, alone, are NOT acceptable corrective actions. These kinds of actions would be considered insufficient and not address the real underlying root cause(s) of why the supplier’s

policy, instructions, process, procedure, and/or system allowed the problem to develop and occur and not be detected by quality controls.

Unless otherwise requested by MEC when notified, the supplier shall respond to a request for corrective action as follows:

Required Action & Timing (from initial notification by MEC)

The supplier shall promptly acknowledge receipt of notification and within 24 hours communicate to MEC the immediate containment actions to be taken.

The supplier shall provide an update of the containment plan to protect MEC within 24 hours during the interim period. This update must include:

- Confirmation that the supplier has identified all suspect products in process, in stock, in transit, and potentially at any MEC site by lot number, MEC purchase order number, and quantity.
 - Additional specific containment actions needed to be taken by the supplier.
-

The supplier shall provide a final corrective action within 30 days of the original complaint. This must include:

- Permanent and preventative corrective action.
- Verification of the corrective action effectiveness.
- Update of lessons learned.
- Any supporting documentation updates.

If the containment and corrective action measures are not received within the specified time frame, the product received from your facility will be considered suspect and will be placed on inspection upon receipt at the MEC facility. This inspection will be performed at the supplier's cost. To protect against any additional nonconforming material reaching our assembly processes, this quarantine / inspection process will remain in effect until the containment and short-term corrective action(s) are received from you, the supplier.

A processing fee may be charged for each nonconformance issued by MEC. MEC reserves the right to forward any costs associated with defective purchased material to the supplier responsible (i.e. production disruptions, line shutdowns, sorting of product, etc.)

10 • SUPPLIER PERFORMANCE

MEC's evaluation system uses Quality and Delivery metrics to develop an overall supplier performance rating. This rating serves as an objective measure to determine whether MEC expectations are met.

Supplier performance is monitored monthly to ensure the supply base is meeting the minimum goals established. Suppliers must maintain a minimum score of 80 points out of the total 100 available. If the supplier's score falls below the minimum score of 80 points the supplier will receive a letter asking for root cause and corrective action. If the supplier continues to have repeat issues, there will be a meeting called with the supplier to discuss the issues, and escalation may occur.

Supplier performance is also reviewed prior to awarding new business. Suppliers must maintain acceptable scores to be considered for new sourcing opportunities.

10.1 PERFORMANCE MEASURES

QUALITY

This metric defines the Parts Per Million (PPM) shipped using the following formula. The definition of "rejected parts" is the total number of parts returned/scrapped to the supplier for any valid quality reason (including those caused by shipping and administrative errors):

$$\text{PPM} = \frac{\text{Number of Rejected Parts (or pounds)}}{\text{Number of Parts Received} \times 1,000,000}$$

The total number of points available for quality is 50. Points are allocated according to the PPM.

Quality: PPM Points Allocation

0-249	50
250-499	48
500-749	46
750-999	44
1000-1249	42
1250-1499	40
1500-1749	38
1750-1999	36
2000-2249	34
2250-2499	32
2500-2749	30
2750-2999	28
3000-3249	26
3250-3499	24
3500-3749	22
3750-3999	20
4000-4999	10
5000-5999	5
6000+	0

DELIVERY

This metric defines the on-time delivery percentage using the following formula: "On time" is based on the purchase order or contract date.

$$\text{OTD} = \frac{\text{Total number of purchase orders delivered on time}}{\text{Total number of purchase orders}} \times 100$$

The total number of points available for delivery is 50. Points are allocated according to on-time delivery percentage.

Delivery: OTD% Points Allocation

99.9+	50
99.0-99.8	49
98.0-98.9	48
97.0-97.9	47
96.0-96.9	46
95.0-95.9	45
94.0-94.9	44
93.0-93.9	43
92.0-92.9	42
91.0-91.9	41
90.0-90.9	40
89.0-89.9	39
88.0-88.9	38
87.0-87.9	37
86.0-86.9	36
85.0-85.9	35
84.0-84.9	34
83.0-83.9	33
82.0-82.9	32
81.0-81.9	31
80.0-80.9	30
79.0-79.9	29
78.0-78.9	28
77.0-77.9	27
76.0-76.9	26
75.0-75.9	25
74.0-74.9	24
73.0-73.9	23
72.0-72.9	22
71.0-71.9	21
70.0-70.9	20
60.0-69.9	10
0.0-59.9	0

• APPLICABLE DOCUMENTS

The following documents are referenced within this manual and may be applicable to the extent specified by MEC in the purchase order and applicable reference documents. Copies may be obtained from the sources shown. It is the supplier's responsibility to obtain applicable documents and to ensure that current revisions are maintained and available to its operations, as required.

<u>Document</u>	<u>Document Title</u>	<u>Available From</u>
ISO 9001	Quality Management System Requirements (General)	www.iso.ch
ISO 9004	Quality Management Systems Guidelines for Performance Improvements –	www.iso.ch
IATF16949	Quality Management System Requirements (Automotive)	www.aiag.org
ISO 17025	General Requirements for the Competence of Testing and Calibration Laboratories	www.aiag.org
APQP	Advanced Product Quality Planning & Control Plan Manual	www.aiag.org
PPAP	Production Part Approval Process Manual	www.aiag.org
SPC	Statistical Process Control Manual	www.aiag.org
MSA	Measurement System Analysis Manual	www.aiag.org
FMEA	Potential Failure Mode & Effects Analysis Manual	www.aiag.org
CQI-10	Effective Problem-Solving Guideline	www.aiag.org

SUPPLIER ACKNOWLEDGEMENT CONFIRMATION:

We hereby confirm that we have received and understand the Supplier Requirements Manual.

We agree to meet these customer requirements in all our facilities working with MEC.

We understand that it is our responsibility to ensure that only the latest revision of this Supplier Manual is used by periodically checking the MEC supplier page website or by contacting MEC Purchasing Agent for revisions and updates.

We understand that it is our responsibility to deploy this Manual into the current future facilities working with MEC products.

Supplier name and supplier code	
Supplier Address	
Submitted by (printed name)	
Function	
Telephone number	
Email address	
Date	
Signature	

Version	Date	Description
1.0	9/21/2020	New document
2.0	12/15/2022	Revision bump to match SharePoint. Removed underlying .pdf properties. Removed approval from every page and updated document number to match SharePoint doc number.
3.0	5/4/2023	Revision to Section 3.3 adding Customer Specific Requirements detail. Updated table of contents to reflect Section 3.3 change. Update last paragraph in Section 3.7 Ownership & Control of Production Tooling.
4.0	09/22/2025	Added a requirement for ITAR in the Supplier Code of Conduct. Complete review/update.