Customer Specific Requirements

Tesla
Supplier Handbook
BMS-0000051, Rev. 06

AGENDA:

1. Scope

This Customer Specific Requirements Document (CSR) is an integral part of Corporate Supplier Manual (CSM) and aims - defines to transfer the specific and special requirements of the final customer (OEM) and Huf. This document contains the most restrictive requirements that have to be fulfilled by the Huf https://www.iatfglobaloversight.org/oem-requirements/customer-specific-requirements/ The supplier is obliged to sign this document.

Note: Tesla forms are preferred to use, but not mandatory.

2. Targets

Targets for suppliers (PPM, Logistic Performance, 8D evaluation) are set for all components (material groups) in the Huf Supplier Portal, available on www.huf-group.com website and update annually.

3. Definitions

Supplier: A Direct Supplier to Huf
TIER N: TIER N means all the supply chain (suppliers and all sub suppliers).

4. General Expectations & Procedures

4.1 Supplier Responsibilities

1. Suppliers are expected to provide 100% conforming products, on time and in the specified quantities, along with all required supporting data.
2. Suppliers shall immediately and openly communicate with Tesla any quality or delivery related problems and are expected to respond to issues immediately.
3. Suppliers shall leverage their expertise and provide feedback on part or process devised by Tesla to highlight concerns or improvements that could be made to meet quality requirements, reduce cost, time, yield, etc. Lack of feedback shall be deemed as acceptance of the design and process.
4. Suppliers are strongly encouraged to apply continuous improvement techniques that impact quality, service and cost.

5. Suppliers shall maintain a contingency plan to satisfy Tesla's requirements in the event of an emergency. These plans, and those of all sub-suppliers, are to be made available upon request to Tesla. Emergencies may include, but are not limited to, utility interruptions, labor shortages, key equipment failures and warranty returns.

4.1.1 Senior Management Responsibilitie

Supplier Senior Management shall:

1. Oversee the quality planning and quality system activities as well as all regulatory compliance activities.
2. Ensure all Tesla documentation is understood and followed within the supplier's organization.
3. Ensure adequate resources are provided to meet all Tesla requirements and all related departments are trained in regard to the requirements and guidelines of this document.
4. Ensure the control and retention of document copies and any subsequent revisions provided by Tesla.
5. Oversee quality of communication and documentation released to Tesla and ensure clear and concise information and information integrity.
6. Ensure control and retention of documentation regarding regulatory compliance for the time periods required by specific regulations (up to 30 years after end of production in some cases).

4.1.2 Confidentiality

In addition to the Non-Disclosure Agreement, the following is required:

1. The Supplier shall establish a system to manage confidentiality that begins at sourcing decision and continues through the life of the part.
2. Any data, information, or knowledge (general and specific) obtained through activities with Tesla shall be securely controlled, treated with strict confidence, and properly destroyed when no longer necessary.
3. Any breach of confidentiality, or concerns, must be reported to Tesla management immediately.

4.2 Quality Management System (QMS) Requirements

1. The quality system shall be defined and documented to describe the requirements for all quality related activities.
2. The supplier shall establish, document, and maintain a quality management system as a means of ensuring that the product conforms to the specified requirements.
3. Quality records shall be maintained to demonstrate conformance to specified requirements and the effective operation of the quality system.
4. The quality system shall ensure all quality activities have been properly implemented during trial builds and monitored thereafter.
5. The system shall, at a minimum, meet Tesla's Supplier Handbook requirements. It is also desired that the quality system is certified to the ISO 9001 and/or IATF 16949 standards.

4.2.1 Quality Activities

The supplier is responsible for the following activities needed to ensure products are consistently manufactured to Tesla requirements.

1. Program Schedule
   - The supplier shall establish advanced quality planning as part of the overall program based on timing provided by Tesla.

2. Process Monitoring and Operator Instructions
   - The supplier shall prepare documented process monitoring and operator instructions for all employees having responsibilities for operation of a process or processes.
   - These instructions shall be accessible at the workstation and include proper visual aids.

3. Verification of Equipment Set-ups
   - Equipment set-ups shall be verified whenever a set-up is performed (e.g., initial run of a lot, material changeover, tool change, etc.).
   - Change-over instructions shall be available for set-up personnel.
   - First-off, last-off part comparisons are recommended.

4. Receiving Inspection
   - The supplier shall ensure incoming product is inspected, or otherwise verified, as conforming to specified requirements.

5. In-Process Inspection and Test

- The supplier shall inspect and test the in-process product as required by the relevant control plan or documented procedures.

6. Final Inspection and Test
   - The supplier shall carry out all final inspections and testing in accordance with the relevant control plan or documented procedures.

7. Inspection and Test Records
   - The supplier shall establish and maintain records which provide evidence that the product has been inspected and/or tested.

8. Inspection Measuring and Test Equipment
   - The supplier shall establish and maintain documented procedures to control, calibrate, and maintain inspection, measurement and testing equipment.

9. Internal Quality Audits
   - The supplier shall plan and implement internal quality audits to verify whether quality activities and related results comply with planned arrangements.
   - Results shall be made available to Tesla upon request.

10. Quality Records
    - Quality records shall be maintained to demonstrate conformance to specified requirements and the effective operation of the quality system.

11. Engineering Change Order (ECO) Implementation
    - The supplier shall have a system in place for the control and implementation of Engineering Changes. Process flow and standard timing must be made available on request.

12. Process Change Implementation
    - The supplier shall have a system in place for the control and implementation of process changes.

13. Nonconforming Parts
    - The supplier shall establish and maintain documented procedures to ensure that parts which do not conform to specified requirements are prevented from unintended use, installation or shipment.

14. Packaging, Labeling, Preservation and Shipping
    - The supplier shall establish and maintain documented procedures for handling, storage, packaging, preservation and delivery of product.

15. Training and Qualification of Team Members
    - The supplier shall effectively manage a comprehensive training program for all employees. Individual needs shall be identified through an evaluation process that includes references to retained employee training records.
    - Employees working on Tesla projects are expected to have completed a comprehensive training program which focuses on developing the employees' capabilities and motivation.
    - All training necessary to meet Tesla objectives shall be completed by the first off process trial.
    - The supplier should develop a method for documenting team members' progress and capability.

16. Identification and Traceability
    - The supplier is responsible for preparing the Inspection Standard. Identification and Traceability information should be included in the original draft.
    - Identification and Traceability actions must comply with the requirements set on the Engineering Drawing and/or Inspection Standard.
    - The supplier must adhere to the identification requirements specified on the part drawing or Inspection Standard. In cases where there is no specification, the supplier must work closely with Tesla to determine the appropriate level of identification that must be agreed upon.
    - Traceability
      Each supplier must control the traceability of their own and sub-suppliers products, from received raw materials through shipping. Where appropriate, suppliers are encouraged to add serial numbers, or other forms of traceability to each part.

17. Sub-Supplier Control
    - The role of the supplier in coordinating and guiding all sub-supplier quality assurance activities must be similar to the suppliers' requirements in this document.
    - The supplier is responsible for the part quality and production readiness of all sub-supplier's (directed by Tesla or otherwise), as well as evaluating all sub-supplier's parts / materials and conducting quality approvals.
    - Tesla MUST NOT be delayed by a sub-supplier being unprepared for Mass Production start-up.

18. Supplier Contact Sheet
    - A Supplier contact sheet shall be submitted to Tesla to identify key personnel to be contacted in the event of a quality problem or concern.
    - The contact sheet shall be re-submitted to Tesla as changes occur.

19. Annual Validation
    - Suppliers may be required to perform annual assessments per the direction of Tesla.
    - Assessments may include, but are not limited to: On-Going Reliability Testing (ORT), layout, testing as possibility, etc.

20. Regulatory Compliance Management Process (RCMP)
    - Suppliers shall implement an RCMP to ensure that pertinent product substance data is gathered from their supply chains, reviewed for accuracy and adherence to data structure requirements, consolidated into a single compliance profile for each product and submitted to Tesla in a timely manner.

4.3 Industry Standards

Where applicable to their business, suppliers shall maintain the latest revisions of the standards shown below. Applicable assessments must be conducted annually at a minimum and the results made available.

1. AIAG - Advanced Product Quality Planning (APQP) and Control Plan
2. AIAG - Failure Mode & Effects Analysis (FMEA) Reference Manual
3. AIAG - Measurement Systems Analysis (MSA) Reference Manual
4. AIAG - Production Part Approval Process (PPAP)
5. AIAG - Statistical Process Control (SPC)
6. CQI-09 - Heat Treat System Assessment
7. CQI-11 - Special Process: Plating System Assessment
8. CQI-12 - Coating System Assessment
9. CQI-15 - Welding System Assessment
10. CQI-17 - Special Process: Soldering System Assessment
11. CQI-23 - Molding System Assessment

5. General Requirements

5.1 Safety & Critical Characteristics

1. Critical characteristics shall be identified based on features that are critical to safety, reliability, function or fit and/or by FMEA methods to identify important features of high risk.

2. Critical characteristics shall be identified on the Drawing and Inspection Standard using the symbols in Section 7.2.
3. For critical features, Tesla requires the submission of Process Performance (Ppk) data for trial builds and Process Capability (Cpk) data for parts produced after start of production . Trial builds include all builds from the prototype stage through start of production.
4. Suppliers must identify critical characteristics on their Inspection Standards, Control Plans, Work Instructions, Process Flow Charts, and other relevant documentation also using the symbols shown in Section 7.2.

5.1.1 Safety Critical Components and Characteristics

Tesla requires suppliers of safety critical components (components that contain safety critical characteristics, as indicated on the components drawing using the symbols defined in Section 7.2) to demonstrate that they control all aspects of the manufacturing process. The following requirements shall apply:

1. When assigning personnel to the production of a safety critical component, the supplier shall:
   - Ensure that all personnel involved in the manufacturing and testing of these components have completed designated training and demonstrate the required level of skill and knowledge to carry out the process.
   - Maintain training records for all employees that clearly show the employees ability to work on a product with safety critical characteristics.
2. All test equipment used to verify a safety critical component shall be listed on the Control Plans.
3. All test equipment and machinery used in the manufacturing of a safety critical component have an associated preventative maintenance plan.
4. No alterations to the manufacturing process are permitted without approval.
5. The supplier shall audit processes used to produce safety critical components at regular intervals. Records shall be available to show the audit findings and corrective actions.
6. Where safety critical characteristics are subject to a sub-supplier's process control plan, Tesla requirements shall be applied to the sub-supplier.
7. The supplier shall be able to demonstrate process capability for processes used to produce parts with safety critical characteristics. Each characteristic must have a Process Capability, in accordance with requirements in Section 6.4.4, or documented inspection and / or verification date to show appropriate process control.

8. Notification must be provided for any rework that could impact a safety critical characteristic. Where practical, a Tesla approved indelible mark shall be used to identify reworked parts. All records shall be retained for part identification.
9. Safety critical components have batch control and/or traceability requirements which must be met, as outlined in BMS-0000151 - Traceability Specifications.

5.2 Change Control

5.2.1 ECO - Engineering Change Order

ECO's are issued to suppliers by Tesla for changes to the design drawing or specifications. They can apply to any part, from the time of drawing issuance through the life of the part.

1. The supplier shall have a system in place for the control and implementation of engineering changes.
2. The supplier must receive approval of their project plan prior to the start of implementation.
3. Prior to implementation of an ECO, it is the supplier's responsibility to update any internal standards, Inspection Standards, Control Plans, etc. to reflect ECO changes and submit for approval.
4. ECO's should be implemented in a timely manner.
5. ECO's shall not increase the applicable Purchase Price or change the applicable Schedule unless such change is expressly approved in writing.

5.2.2 PCR - Process Change Request

PCR's are used to ensure part quality by identifying and controlling any process changes following initial TQP approval, and to ensure adequate communication with Tesla.

1. The following are guidelines only, subject to Tesla approval:
    a. PCR approval is required for:
    - Addition or replacement of tooling or machines for mass production.
    - Manufacturing location changes within a plant or to a new location.
    - Significant manpower change (additional shift, etc.)

- Changes in approved production process, tooling and/or layout, process flow, inspection & testing etc. in sub-supplier approved production processes.
- Change of sub-supplier for parts or raw materials.

b. PCR approval is not required for:

- Relocation of small tools, jigs, fixtures that are not part of the main production line and do not affect process or part quality.
- Regular replacement of perishable tools or preventative/predictive maintenance.
- Minor day-to-day Kaizen activity.

5.3 Control Plans

A Control Plan is used to define all key process and part control points, control criteria such as location, target, method and frequency of checks, from incoming material to shipping of finished goods. It is recommended that the supplier use cross-functional teams to develop any Control Plans.

1. The supplier shall prepare a Control Plan, as specified by Tesla, for all products supplied during a TQP development stage or stages. Several control plans are used throughout the TQP approval process and are detailed further in their respective locations.
2. The Control Plan should be updated as necessary for process changes or corrective actions.
3. The Control Plan may be submitted in the supplier's format; however, it must meet all of the requirements below:
    - The identification of all special & critical Characteristics using the correct symbols.
    - The identification of other specific characteristics on the part inspection standard.
    - Identification of measurement equipment or data collection where applicable.
    - Detailed reaction plans with designated responsibilities.
    - Process, machine, and part potential failure modes must be identified and utilized to develop the Control Plan in order to ensure that potential failure causes can be controlled and monitored.
    - The Control Plan should consist of additional controls, inspection audits, and testing to identify non-conformances during the production process.

- Consideration should be given to the build quantities required when establishing inspection frequencies.

5.4 MSA - Measurement Systems Analysis

1. Suppliers are expected to provide all technical staff and facilities required to develop robust part and process control systems.
   - When control systems involve the acquisition of information (e.g. measurement data), the supplier shall ensure the information is at a quality level that allows for valid data analysis.
   - The measurement system used to acquire part and process information shall be developed, validated, and available for use to support all associated control plans and inspection standards.

2. Suppliers shall adhere to all requirements set in the following standards:
   - TS-0003139 - Gauge and Check Fixture Standard
   - TS-0003403 - Dimensional Data Transfer
   - TS-0003413 - Measurement Systems Analysis Standard
   - TS-0003552 - GRR
   - TS-0003687 - Gauge and Check Fixture Buyoff Check Sheet
   - TS-0003986 – MDSS

3. Validation of the measurement system shall include, but is not limited to, evidence of calibration certification traceable to a national or international certifying body, control and maintenance planning, proper use instructions, and validation of the quality of data collected (e.g. GR&R).

4. Suppliers must submit requests in writing to Tesla through the PCR process to obtain approval prior to implementing any changes. Changes may be needed as a result of:
   - Engineering Change Order (ECO)
   - Part Inspection Standard change
   - Process change
   - Repair (major damage; outside of normal maintenance)

5. Before disposing of any Tesla owned equipment or tools (eg. checking fixtures, etc.), the supplier must contact their Tesla representative and receive written authorization.

5.5 Transportation Requirements

5.5.1 Preservation

1. The supplier shall establish and maintain a material handling system that eliminates the potential for damage throughout all operations and transportation to Tesla facilities.
2. The supplier shall systematically review material handling processes and equipment to prevent damage to in-process parts and finished goods.
3. Adhesives and other perishable or environmentally sensitive products should be stored and transported in the appropriate environmental conditions.

5.6 Regulatory Compliance

Suppliers of Components may be required to provide evidence of compliance conformance outlined by international bodies in support of Tesla vehicle sales.

5.6.1 Material Regulatory Compliance

Tesla suppliers are required to adhere to international material compliance requirements in order to meet regional material and environmental regulations. This is a mandatory requirement for all suppliers who supply products or raw materials to Tesla; vendors who provide only non-material related services are exempted. Specific requirements may be found in BMS-0000408 - Material Compliance Reporting.

5.7 Nonconforming Parts

When a nonconformance is discovered, the supplier is by default assumed responsible for the faults. Investigations shall be conducted by the supplier until the cause of the nonconformance has been identified and a plan proposed to prevent the problem from occurring again

5.7.1 Product Containment / Controlled Shipping

Controlled Shipping Level 1

Controlled Shipping Level 1 is a demand by Tesla that a supplier put in place a redundant inspection process at the supplying location to sort for a specified non-conformance, implement a root-cause problem solving process, and isolate Tesla from the receipt of nonconforming parts/material. The redundant inspection is in addition to normal controls and is enacted by the supplier's employees. If placed on Level 1 Containment by Tesla, the supplier will do the following:

- Submission of a Level 1 containment plan and/or corrective action plan to Tesla.
- Evidence based on data from the controlled shipping area that the normal production process is free of all non-conformances for a minimum of 20 working days after the start of mass production or implementation of permanent corrective action.

Level 1 Containment may be elevated to Controlled Shipping Level 2 and/or New Business Hold if zero defects and/or permanent corrective action is not achieved.

Controlled Shipping Level 2

Controlled Shipping Level 2 is a Tesla requirement to a supplier to put in place a 3rd party redundant inspection process to sort for a specific nonconformance, while maintaining Controlled Shipping Level 1 inspections, and implementing a root-cause problem solving process. The data obtained from the 3rd party redundant inspection process as well as process audits are critical as both a measure of the effectiveness of the secondary inspection process and the corrective actions taken to eliminate the initial nonconformance.

Controlled Shipping Level 2 will be initiated for one or more of the following reasons:

- Repeat Non-Conformances.
- Repeat failure to submit compliance data that accurately reflects the physical component.
- Supplier's current controls not sufficient to ensure conformance to requirements.
- Controlled Shipping Level 1 failures.
- Major Production Line Disruptions.

- Quality Problem in the field (Warranty).
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Level 2 Containment will be initiated with a formal meeting between Tesla, the third-party and the supplier to establish all containment criteria. Exit from Controlled Shipping Level 2 will be based on data that the normal production process is free of all non-conformances for a minimum of 20 working days after the implementation of permanent corrective action.

Level 2 Containment may cause the supplier to be subjected to a new business hold if timely permanent corrective action is not achieved.
The Supplier may submit a written request to Tesla, after the minimum 20 working days, to be removed from any containment level. This request must provide evidence that all the criteria of the containment have been met. Tesla will remove the supplier containment status after verification of the effectiveness of implemented actions.

5.7.2 Warranty

1. Tesla will provide all relevant warranty claim information associated with warranty return part(s) and provide a sample of warranty return part(s) when available. Supplier may also request part(s) and/or data from Tesla.
2. Suppliers are required to analyze all warranty return parts and:
   - Report the investigation results to Tesla.
   - Propose/implement countermeasures.
   - Confirm effectiveness of the countermeasure.
3. Supplier is responsible for all costs incurred by Tesla resulting from the delivery of non-conforming products and in accordance with the General Terms.
4. In the event where analysis results are inconclusive (NTF or “No Trouble Found”) after 30 days or within the timeframe set by Tesla, the supplier and Tesla will jointly analyze the cause of failure and cost ownership.
5. A warranty recovery contact at Tesla will send a warranty claim based on the results of the analysis. The supplier will promptly send an agreement in writing. If the Supplier does not respond within 14 days from when the claim is made, the supplier will be deemed to have accepted the charges.
6. If additional time is required for the supplier to appeal for charges, the supplier shall submit a written communication to request more time or a meeting to discuss the rationale for the appeal.
7. Field quality performance and cost recovery concerns will be a significant factor in new product sourcing decisions.

5.8 HVPT- High Volume Production Trial

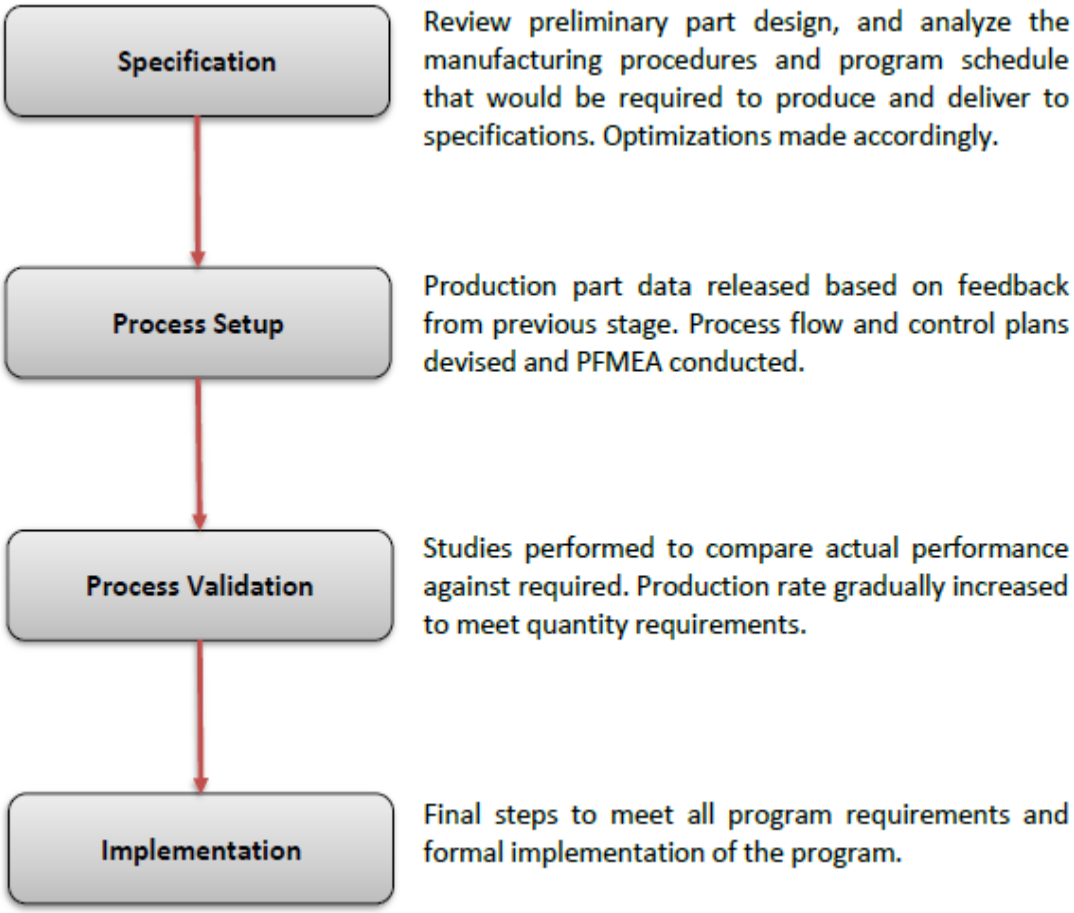
1. A HVPT is required for each new TQP and PCR.
2. The pre-launch control plan must be followed during the production trial run.
3. The scope and reporting of the HVPT and associated studies shall be performed according to their individual requirements.
4. Concerns identified during the trial run must be added to the Problem Follow Sheet.

6. TQP - Tesla Qualification Process

By implementing the APQP Elements for New Parts, each supplier has developed robust production processes with a sufficient process assurance level to ensure the continuous production of conforming products. Each supplier must maintain and continuously improve this process assurance level and product quality for quality assurance of Mass Production Parts.

6.1 Overview

A successful launch at mass production is achieved through coordination and study of production trials, sample evaluation, part fitment and assembly trials. Tesla employs the preparation stages below as incremental steps towards mass production.



6.2 Program Schedule

The Program Schedule is the overall project plan for supplier quality activities, from drawing issuance through TQP approval, to initial shipments of mass production parts.

1. The initial schedule is to be drafted with RFQ submission and finalized shortly after if awarded the business. It shall, at a minimum, define timing for the following:
   - Tesla Master Schedule – Prototype, Assembly trials, Start of Production.
   - Supplier Master Schedule – Prototype, TQP trials, Start of Production.
   - Production Level – Process and test equipment.
   - Evaluations – Part evaluations to be done during trials.
   - Testing – Plan for testing parts to Drawing and Inspection Standard.
   - TQP documentation – Timing for each TQP task.

2. If awarded business, future schedule planning and changes shall be performed through the Supplier Portal.
3. A schedule resubmission is required for each new TQP Approval or PCR.
4. The schedule shall be reviewed regularly in intervals designated by Tesla.

6.3 Specification

6.3.1 Inspection Standard

The Inspection Standard is a document that supports a part's associated drawing(s) and details significant part characteristics, their acceptance criteria and the method and frequency by which they must be monitored and controlled by the supplier.

1. Suppliers are required to make Inspection Standards for all parts.
2. The Tesla format provided in BMS-0000259 - Supplier Quality Toolkit must be used.
3. The part Inspection Standard, at a minimum, must define the following part characteristics:
    - Datum Structure.
    - Dimension and Tolerance.
    - Performance.
    - Weight.
    - Material.
    - Appearance standards.bh
    - Function.
    - Color and/or Grain (if applicable).
    - Critical Items.
    - Identification and Traceability Methods.

4. The Inspection Standard must consider and include inspection related criteria as indicated on the Control Plans, PFMEA studies, etc., and the frequency of inspection must be developed based upon process capabilities.
5. The approved Inspection Standard criteria, subject to revision, must be followed for the life of the part without exception.
6. Drawing requirements not specifically stated on the part Inspection Standard must be revalidated annually at a minimum.

6.3.2 Measurements Systems Analysis (MSA) for Equipment

An MSA shall be conducted on all components that meet any or all of the following conditions:

- Require a capability analysis be conducted.
- Contain critical or special characteristics.
- Require on-going production monitoring.

6.3.3 Control Plan (Prototype)

1. The Prototype Control Plan shall be created
2. The scope of the plan should extend to cover either the production of prototype parts or any production using tooling, equipment, or processes that are not mass production intent.
3. Control Plans for prototype part production must consider factors such as the production methods, production quantities, and any added validation requirements associated with the intended use of the prototype parts.
4. Control Plans for tooling, equipment, and processes that are not mass production intent must consider factors that could result from the potential failure modes of the alternative production methods.

6.4 Process Setup

6.4.1 Process Flow Chart

1. A Process Flow Chart shall be drafted to detail each and every step in the supplier's manufacturing process.
2. Any expected re-work processes must be shown in the Process Flow Chart.

6.4.2 PFMEA - Process Failure Mode and Effects Analysis

Suppliers are required to complete a PFMEA and update it with improvements made during the trial phases, as a result of process changes, or changes due to corrective actions. The supplier must use cross functional approach to complete the PFMEA.

1. Follow the industry standard AIAG - Failure Mode & Effects Analysis (FMEA) Reference Manual.
2. Design Failure Mode Effects Analysis (DFMEA) (if applicable) and Process Failure Mode Effects Analysis (PFMEA) must include reviews of both the equipment and the process. These activities should be completed prior to drawing release, tooling/process design, Process Control Plan, Inspection Standard, and Inspection Plan development.
3. Significant product failure items identified through DFMEA development that are not corrected with a design change must be indicated on the PFMEA and Control Plan documents, with sufficient inspection and prevention / detection capabilities to prevent non-conformances.
4. Equipment / Process capability deficiencies identified based on the results from analytical studies such as PFMEA, etc., must be represented in the inspection plans and associated documents (ie: Process Control Plan, Inspection Standard, etc.) as required with 100% inspection criteria to ensure consistent achievement of quality requirements.
5. Sub-suppliers that provide materials or components that impact the supplier part safety or regulatory requirements must develop, submit, and gain approval from the Supplier of a specific quality control plan, that assures conformance of their material, component or assembly. In the case of direct supply, the responsible Tesla representative has approval responsibility.
6. The supplier must ensure that documented systems are in place at all sub-suppliers to control traceability and confirm specification compliance for all critical components including raw materials, parts, and assemblies.
7. Safety, regulatory and FMVSS related processes must be continually monitored and controlled in regards to capability, utilizing industry accepted methods of statistical control.
8. Specific plans and methods must be developed and utilized to ensure full traceability to include material lot identification, date, shift, assembly process, and delivery, verification of repair, and containment assurance.

6.4.3 Control Plan (Production)

The scope of the Production Control Plan should only cover parts produced during mass production.

6.5 Process Validation

6.5.1 Measurement Systems Analysis (MSA) for Equipment Validation

An MSA shall be conducted as per TS-0003413 - Measurement Systems Analysis Standard using inspection personnel with conditions as similar to the mass production operations as possible at the supplier site.

6.5.2 Validation Testing

Validation tests will be conducted as per the Inspection Standard .All tests will be conducted on parts/processes representative of final production intent pedigree.

6.5.3 Capacity Study

A Capacity Study shall be prepared for every process/line used by the supplier.

1. A study shall be conducted for each line, machine, tool, etc. used and whenever a line, machine, tool, etc. is added, changed or removed.
2. Run at Rate (R@R) studies shall be conducted to confirm that production capacity is correct to the supplier's original planned capacity and capability.
3. The study shall include the actual measured takt time for each operation.
4. The study shall follow the steps outlined in the Process Flow chart. If more than one operation is performed at a given station, the operations should be separate line items on the Capacity Study.

6.5.4 Capability Study

1. Capability data (Ppk and Cpk) must be submitted at each trial up to, and including, the initial shipment for SOP. If a trial requires more than one shipment of parts, capability data will not be necessary after the initial shipment, provided the parts were manufactured in the same lot as the initial shipment.
2. Capability demonstrations, consisting of a minimum 30-part study, must be conducted per line, machine, tool, etc. or whenever a line, machine, tool, etc. is added, changed or removed.

3. Cpk / Ppk data is required on all critical characteristics.
    - All characteristics for safety, regulatory, and FMVSS requirements must have a **Cpk and Ppk ≥ 1.67**. All other special characteristics with **Cpk or Ppk < 1.33 will not be accepted without 100% inspection.**
    - Ppk / Cpk requirements may be established for additional specific part characteristics that significantly affect performance, fit, function, installation workability, or other identified FMEA items.
    - The Inspection Standard will be used to define additional characteristics requiring a capability analysis.
4. Continuous long term Ppk verification must be carried out for every critical characteristic, with acquired data maintained and utilized for continuous improvement.
5. Inspection frequencies must be in conjunction with Cpk results. Depending on machine or process capabilities, the inspection requirements may increase or decrease.
6. Cpk / Ppk Inspection Sampling / Guidelines:

Action Necessary	C_{pk}	P_{pk}
Accept Product. Continue to reduce process variation.	≥ 1.67	≥ 1.33
Accept Product. Increased sampling frequency until stability is re-established	$1.33 \leq C_{pk} < 1.67$	N/A
100% inspection required.	< 1.33	< 1.33

6.5.5 AAR - Appearance Approval Report

Tesla will include Color and Grain information in the Drawing, if applicable. The Appearance Approval Report (AAR) is used for color, parting line, and grain approval.

Suppliers must obtain Color and Grain approval prior to TQP approval, when applicable. The Tesla format provided on the Supplier Portal must be used.

Boundary Samples

A boundary sample is a method which establishes a subjective visually approved sensory standard when a characteristic is difficult to define or communicate by any other method.

1. Boundary samples may be temporary or permanent but should only be used when absolutely necessary. If corrective actions cannot be implemented due to excessive cost, technology, etc. a boundary sample may be considered.
2. Boundary samples must be representative of the Supplier's confirmed process capability and be consistently achieved.
3. Boundary samples are not intended to reduce scrap. Scrap reduction should result from process improvements. If, however, process improvements, technology, etc. fail to reduce scrap quantities, a boundary sample may be considered.
4. The master boundary samples must be maintained at the supplier in a manner which will prevent damage or deterioration to them.
5. The supplier must provide sufficient lead time for the boundary samples to be evaluated. Expectations should be established prior to tooling and parts cannot be shipped until the boundary sample has been approved, signed and returned to the supplier.
6. Revisions or change requests to approved boundary samples must be handled in the same manner as the original submission.

6.5.6 Packaging Plan

All pack size, packaging, container or pallet dimensions and/or type must be pre-approved by the appropriate representative. The supplier must also receive approval for temporary use of packaging which does not meet requirements.

6.5.7 Control Plan (Safe Launch)

A Safe Launch Plan (SLP) shall be used as requested for all pre-production and production requirements. The purpose of a SLP is to verify product & process stability in an organized manner. Collected data shall be monitored and analyzed, and adjustments made to product and/or processes when necessary. As directed by Tesla the supplier shall establish a safe launch control plan based off of the following elements:

1. The Control Plan shall be created and submitted for review.
2. The Control Plan must validate the assumptions for control frequencies used in the Production Control Plan, capture potential non-conformances due to unforeseen or overlooked potential failure modes, and increase reactions to non-conformances.
3. A reaction plan shall be devised in case of non-conformances discovered, with immediate notification and implementation of containment and corrective actions at site of discovery.
4. Documented evidence of execution and validation of the control plan using an agreed format.
5. The duration of the SLP is to the discretion of Tesla, however by default the minimum periods for programs are as follows:
    - 100,000 pieces produced annually - 90 days from SOP
    - 1,000 to 100,000 pieces produced annually - 90 to 180 days from SOP.
    - < 1,000 pieces produced annually; first batch.

6.6 Implementation

6.6.1 Material Regulatory Compliance Submissions

Tesla suppliers must complete and submit the certifications, and other related items. This includes, but is not limited to:

1. Letter and information as required for Tesla to comply with any and all applicable Conflict Minerals requirements.
2. Evidence of material marks on applicable products.
3. Approval of data submitted into International Material Data System (IMDS) submission for each non-prototype production part.

6.6.2 Safety Regulatory Compliance Submissions

Tesla suppliers must complete and submit the certifications, and other related items. This includes, but is not li to:

1. UL Certification.
2. Regional or country specific compliance evidence.
3. Flammability compliance test results.

6.6.3 Traceability

Traceability grades are assigned by Tesla for each part on its associated drawing with regards to part, subcomponent and raw material traceability.

Suppliers are required to maintain traceability as per the requirements listed in BMS-0000151 - Traceability Specifications (specific to the designated traceability grade), for all delivered materials to both the raw material source and to the manufacturing tests and processes that were used to produce them. Suppliers shall also impose these requirements on their Suppliers such that clear and unbroken traceability is maintained to the lowest Supplier in the supply chain.

Evidence of meeting the traceability requirements shall be submitted by the supplier. Items required for submission will be defined by Tesla and may include (but are not limited to), labels, serial numbers, lot codes and photos of part markings.

7. Appendix

7.1 External Contact Information

AIAG	**Automotive Industry Action Group** Website: www.aiag.org
ASME	**The American Society of Mechanical Engineers** Website: www.asme.org
GADSL	**Global Automotive Declarable Substance List** Website: www.gadsl.org
IMDS	**International Material Data System** Website: www.mdsystem.com Tesla IMDS Account No: **113431**
ISO	**International Organisation for Standardization** Website: www.iso.org
OECD	**Organisation for Economic Co-operation and Development** Website: www.oecd.org
SAE	**SAE International** Website: www.sae.org
SEC	**U.S. Securities and Exchange Commission** Website: www.sec.gov

7.2 Critical Characteristic Symbols and Definitions

Characteristic	Nomenclature	Definition	Symbol
Non Critical Characteristic	Standard	A product characteristic for which reasonably anticipated variation is unlikely to cause nonconformity with government regulations, safety compliance, or component fit and function.	None
Critical Characteristic Not relating to Safety or Legal considerations	Fit / Function Critical Characteristic	A product characteristic (other than Safety or Regulatory compliance) for which reasonably anticipated variation is likely to significantly affect customer satisfaction with the product such as its fit, function, reliability or appearance, or the ability to process or build the product. These identified characteristics must be included in the Control Plan.	
Critical Characteristic With Regulatory considerations	Regulatory Compliance Critical Characteristic	A product characteristic for which reasonably anticipated variation could significantly affect the product/vehicle compliance with government regulations such as occupant protection, flammability, braking, emissions, noise etc. These identified characteristics must be included in the Control Plan.	
Critical Characteristic With Safety or Legal considerations	Safety Compliance Critical Characteristic	A product characteristic for which reasonably anticipated variation could significantly affect the product/vehicle safety with or without warning (e.g., steering, braking, etc.). These identified characteristics must be included in the Control Plan.	
Batch Control	Batch Control	Batch control is defined as the means by which a component fitted to a vehicle or sub system can be traced to its date of manufacture, raw materials, and process controls. This should ideally take the form of a permanent mark on the component in an agreed area.	
Process Critical	Process Critical	A process characteristic (other than Safety or Regulatory compliance) for which reasonably anticipated variation is likely to significantly affect customer satisfaction with the product such as its fit, function, reliability or appearance, or the ability to process or build the product. These identified characteristics must be included in the Control Plan.	[Pc]

8. References

AAR Supplier Presentation.
AIAG - Advanced Product Quality Planning (APQP) and Control Plan.
AIAG - Failure Mode & Effects Analysis (FMEA) Reference Manual.
AIAG - Measurement Systems Analysis (MSA) Reference Manual.
AIAG - Production Part Approval Process (PPAP).
AIAG - Statistical Process Control (SPC).
BMS-0000003 - Shipping Label Specification.
BMS-0000007 - Part Labeling Specification.
BMS-0000023 - Drawing Block and Notes Standard.
BMS-0000151 - Traceability Specifications.
BMS-0000259 - Supplier Quality Toolkit.
BMS-0000342 - Certificate of Compliance.
BMS-0000408 - Material Compliance Reporting.
CQI-09 - Heat Treat System Assessment.
CQI-11 - Special Process: Plating System Assessment.
CQI-12 - Coating System Assessment.
CQI-15 - Welding System Assessment.
CQI-17 - Special Process: Soldering System Assessment.
CQI-23 - Molding System Assessment.
Domestic Expandable Standards.
General Terms.
ISO 1043-1 - Plastics -- Symbols and Abbreviated Terms -- Part 1: Basic Polymers and their Special Characteristics.
ISO 1043-2 - Plastics -- Symbols and Abbreviated Terms -- Part 2: Fillers and Reinforcing Materials.
ISO 1043-3 - Plastics -- Symbols and Abbreviated Terms -- Part 3: Plasticizers.
ISO 1043-4 - Plastics -- Symbols and Abbreviated Terms -- Part 4: Flame Retardants.
ISO 11469 - Plastics -- Generic Identification and Marking of Plastic Products.
ISO 1629 - Rubber and Latices -- Nomenclature.
Overseas Expendable Standards.
Packaging Material and Equipment Codes.
TS-0003139 - Gauge and Check Fixture Standard.
TS-0003403 - Dimensional Data Transfer.
TS-0003413 - Measurement Systems Analysis Standard.
TS-0003552 - GRR.
TS-0003687 - Gauge and Check Fixture Buyoff Check Sheet.
TS-0003986 - MDSS.

Supplier Quality Development

Supplier signature and date
Quality Manger

CREATED	CHECKED	APPROVED
Erika de Lucas	Fernanda Martinez	Jörn Geisel
Erika de Lucas Digitally signed by Erika de Lucas Date: 2025.09.24 12:25:22 -06'00'	Fernanda Martinez Firmado digitalmente por Fernanda Martinez Fecha: 2025.09.24 12:47:06 -06'00'	10008097, Jörn Geisel Digital unterschrieben von 10008097, Jörn Geisel Datum: 2025.10.07 15:21:59 +02'00'
Signature	Signature	Signature

HISTORY			
REVISION	REASON	BY	DATE
01	Release document	E. de Lucas	25.09.2025
Document review once per 12 months or in case of any changes/updates in Customer Specific Requirements			