

Supplier Quality Requirements Manual

QF-001

OBJECTIVE

Establish guidelines to the interactions between PST Eletrônica LTDA (PST) and its suppliers related the quality and reliability required for supplied products.

Clarify what is required from the supplier for the development and application of necessary means to manage, plan, inspect and register the product control, the quality system and the process capability, as well as PST customers specific requirements related to IATF 16949.

Motivate the suppliers to persuade an organizational standard, which steers waste reductions, environmental people awareness and promoting the quality of the environment with focus on rationalizing the use of natural resources and the reduction of environmental impacts.

This manual applies to all the companies, directly or indirectly, that supply material to PST for the application on its products and services.

For suppliers of Stoneridge Inc., this document does not overwrite the Supplier Requirements Manual of other units of the group. Its application is valid only to supply to PST.

RELATED DOCUMENTATION

- Quality Management System – IATF 16949
- Environmental Management System – ISO 14001
- Production Part Approval Process (PPAP)
- Failure Mode and Effect Analysis (FMEA)
- Measurement System Analysis (MSA)
- Statistical Process Control (SPC)
- Special Processes: Heat Treatment System Assessment (HTSA) CQI-9
- Special Processes: Plating System Assessment CQI-11
- Special Processes: Coating System Assessment CQI-12
- Special Processes: Welding System Assessment CQI-15
- Special Processes: Soldering System Assessment CQI-17
- Special Processes: Molding System Assessment CQI-23
- Special Processes: Casting System Assessment CQI-17
- Internal Procedure: MP08/14 - Special and non-special Features Identification Procedure Manual
- Internal Procedure – MP18/001 – Corrective and Preventive Action

ACRONYMS AND ABBREVIATIONS

- AIAG – Automotive Industry Action Group (www.aiag.org)
- APQP – Advanced Product Quality Planning
- CQI – Continuous Quality Improvement
- CSL 1 and 2 – Controlled Shipping Level 1 and 2
- FMEA – Failure Mode and Effect Analysis
- IATF – International Automotive Task Force (<http://www.iafglobaloversight.org>)
- IAF MLA – International Accreditation Forum Multilateral Recognition Arrangement (www.iaf.nu)
- IMDS – International Material Data System
- LCQ – Quality Control Report
- MSA – Measurement System Analysis

- PPAP – Production Part Approval Process
- PSC – Pósitron Supply Chain
- QSB – Quality System Basic
- SPC – Statistical Process Control
- SOS – Supplier Occurrences Solution
- SPC – Statistical Process Control
- SQE/SQA – Suppliers Quality Engineer/Analyst

SUBJECT DESCRIPTION

SECTION 1 – QUALITY AND ENVIRONMENTAL MANAGEMENT SYSTEM REQUIREMENTS

1.1 Quality Management System

All suppliers must implement a Quality Management System according to valid International Standards ISO 9001 or successive updates and ensure its management. Third-party certification by IAF MLA accredited certification body is required.

Suppliers must develop its Quality Management System to reach the third-party certification on ITAF 16949 by IATF recognized certification body.

Suppliers in transition from ISO/TS 16949 to IATF 16949, the transition rules established by IATF are accepted.

1.2 Environmental System Management

PST expects the suppliers to promote the protection and preservation of the Environment, the awareness of their employees and supply chain to accomplish with the legal requirements. Therewith it is expect from suppliers the attitude to take the responsibility for possible impacts caused to the environment related directly or indirectly to their production process. Such attitude must be part of the code of conduct from the board to all employees through the company's policies, processes, standards and practices. PST, which shall be extended to the supply chain.

PST formally recommend its suppliers to implement, keep an Environmental Quality System according to ISO 14001 or successive updates certified by through third-party certification body.

Furthermore expects that these companies also proceed likewise with the sub suppliers in order to create a commitment with the environment.

1.3 Contingency Plan

Suppliers must define contingency plans according to the risk and impact to the customer in order to ensure the continuity of supply and a notification process to the customer and other interested parties. The contingency plan shall be reviewed using a multidisciplinary team and tested for effectiveness.

1.4 Continuous improvement

The supplier shall promote continuous improvement on its process and systems, focusing the support to the customer's expectations as well as loss and cost reduction, process improvement, extending product durability, tools and equipment, Layout improvement, capability process improvement, downtime reduction, among others.

PST reserves the right to visit the supplier process anytime for continuous improvement process assessment, making due recommendations when applicable.

1.5 Error-proof verification (POKA YOKE)

The supplier shall look for error proof system whenever possible. This system must be developed to support the troubleshooting and the decision-making.

The Poka Yoke devices shall seek for the optimization or automation of tasks, which may require attention or memorization by the operator, aiming at the error minimization or even the disposal of faulty parts.

SECTION 2 – GENERAL REQUIREMENTS FOR ALL SUPPLIERS

2.1 Supplier Development Audit

The supplier development audit is applied for the development of new suppliers, identify and improve Quality System Management topics, diagnose processes with potential failures to the Quality System, identified on PST's supplier performance evaluation. The audit is scheduled and performed at the supplier's site in order to assess the productive process. When necessary PST may request the supplier self assessment to map out the quality system for development proposals.

After the assessment the supplier receives a score, which will classify it with regards to the risks its system presents to PST process according to the table below:

Approved > 80%

The supplier that meets the established requirements and has no item scored Zero, that indicates controlled process/system. If an item is scored Zero an improvement plan might be required.

Conditionally approved >60 and ≤80%

When the supplier is conditionally approved, PST's SQE will analyze the result and require an improvement plan considering the items graded ≤ 6, and PST's SQE has authority to define if the item may be waved.

Failed ≤60%

When the supplier does not meet the established requirements, Purchasing an Supplier Quality may establish a deadline for the supplier to improve and adequate its quality system before new assessment.

Assessment can also be applied to process with changes or to any other SQE determination.

2.2 Suppliers Performance Evaluation

The Suppliers Performance Evaluation is a continuous monitoring of the suppliers performance and its achievement to PST requirements. This Assessment has the objective to reducing or eliminate failures.

The assessment is performed by Purchasing, Materials Planning and Supplier Quality Assurance.

Purchasing is responsible for consolidating the data and releasing them on the Positron Supply Chain (PSC).

Suppliers will monthly receive an initial score of 100 points. Suppliers will receive penalties or credits according to their performance. The following table shows the final classification:

Supplier Classification	
Score	Class
$IQF \geq 100$	Excellent
$90 < IQF < 100$	Good
$60 < IQF \leq 90$	Regular
$IQF \leq 60$	Bad

2.3 Customer technical information (PST)

According to component approval process, PST provides the supplier with the specific technical information (drawings, standards, tables, etc.) necessary to the type of contract stipulated.

Supplier must preserve the above-mentioned technical documentation and upgrades. Supplier also has to ensure that the documents are available to its production and quality control.

The supplier shall ensure the information extended to its own processes, as well as the documentation upgrades.

2.4 Supplier Technical Documentation

The supplier shall provide and update whenever necessary the written documents related to the quality assurance and reliability of the product provided to PST (drawing, manufacture and test cycle, quality manual, material specific standards, test list, etc.).

These determinations must always be available whenever requested by the SQE/SQA or whenever requested by PST customer (manufacturers).

2.5 Samples

Product, parts and material samples submitted to PST validation must be addressed to the designated representative on PST Purchasing department.

Samples submitted shall be followed by dimensional, material and performance report according in electronic format.

Every package supplied as sample shall be identified with sample label.

2.6 Packing and Labeling

The supplier must supply the materials in appropriated packages for the type of transportation in order to avoid damage to the material and appropriate label must be used. The packaging and labeling documentation must be part of the product datasheet or specification.

2.7 Suppliers Portal – Pósitron Supply Chain (PSC)

PST has developed a website named Pósitron Supply Chain (PSC) addressed to suppliers where different applications will be available in order to integrate PST and its suppliers. The website is the official tool for integration and information control. The link to PSC is:

<https://portal.pst.com.br/psc>

Users and passwords will be sent by PST but suppliers can request it anytime to the Supplier Quality Department.

System and application guidelines are available at PSC Library for subscribed users.

2.8 Product Quality

Supplier shall determine all required processes to maintain PST's expectation of Zero Defects. The criteria for incoming inspection and acceptance of inspected batches were based on IATF 16949. Exceptions must be analyzed and approved by PST's Quality department.

2.9 Quality Complaints and Corrective Action

The supplier must implement a methodology to analyze and solve products or processes failures. The methodology shall use quality tools and troubleshooting techniques 8 Disciplines, DMAIC (Define, Measure, Analyze, Improve, and Control) or any other quality tool, which includes containment action implementation for lots at the supplier, during transportation and at the customer, root-cause analysis, action plan and efficiency check.

Supplier's initial response shall be received within 24 hours after the initial notification, with containment occurring within 48 hours. The final response is required with detailed action plans within 10 working days.

In case defective products due to supplier fault, supplier subjects to the terms and conditions indicated on the contract and supply agreements. Supplier or supplier's representative may be required to be present within 24 hours in order to solve any supplier related problems that may cause line stoppage at PST or PST's customer or that may cause severe field problems (including call back).

2.9.1 Quality Control Report (LCQ)

PST Quality Control issues the Quality Control Report (LCQ) in order to register the quality complaints. The LCQ document is informed to supplier through the website (PSC), where it remains available to be analyzed by suppliers.

2.9.2 Suppliers' Occurrence Solution (SOS)

As consequence of a quality complaint (LCQ) the Supplier Quality department issues the Suppliers' Occurrence Solution (SOS) in which the supplier will inform the countermeasures, root cause, corrective action plan and relevant documentation to support the response.

The SOS document is informed to supplier through the website (PSC), where the supplier must reply it.

2.10 Controlled Shipment

Controlled shipment is an inspection process additional to the regular control of the process to select certain nonconformity while the root cause identification and corrective action are being implemented.

Controlled shipment entry and exit are formally notified by the SQE/SQA to the supplier.

The information obtained in the additional inspections shall be reported by the supplier to PST in order to assess process effectiveness through the FEC (Controlled Shipment Form) Level 1 or Level 2.

Controlled shipment criteria is established by PST based on the supplier capacity to contain or correct nonconformity by applying the SOS or other method (e.g. action plan). Problem severity can also be used as a criteria to establish the controlled shipment.

There are two controlled shipping levels:

I. Controlled Shipment Level 1 (ECN-1)

It includes problem solving process according to the SOS form as well as an additional inspection process. The supplier shall determine an area with infrastructure and qualified labor of his own for these inspections ensuring that the PST process is free from receiving nonconforming material/ product.

II. Controlled Shipment Level 2 (ECN-2)

It includes the same process of the Controlled Shipment Level 1 plus a third-party inspection process which represents PST interests in containing failure. The organization responsible for the third-party inspection is commonly indicated by PST. It must be approved by the PST SQE/SQA when indicated by the supplier. All cost related to third-party inspection is the responsibility of the supplier.

In special cases, PST may request the realization of Controlled Shipment Level 2 outside the supplier facilities, in an appropriate place indicated by it.

2.11 Change request

Every change proposed by the supplier must have written approval from the PST prior to its implementation.

Specification change or waiver must be requested through the Change Request document and submitted to the PST approval.

The changes are considered as the following:

- **Specification change** - Definite change related to the product. This request shall be addressed to Purchasing department.
- **Waiver** – Exemption related to PST quality requirement such as quality system standards, reference manuals (PPAP, FMEA, APQP, MSA, SPC), PST Suppliers Quality Manual, etc. This requirement shall also be conditioned to specific quantity and/or time. This request shall be addressed to Supplier Quality department.
- **Deviation** – Non-definitive change (related to the component or part), limited to specific quantity or time shall be addressed to Material Planning department,

Every item provided in the change concession, due to deviation and specification change shall be identified by Change Product Label on its package. Every side of the package shall have a label. As for waiver items, labels are not necessary unless it is requested by the SQE/SQA when necessary.

2.12 Records Retention

Production Part Approval Process documentation, tools records, engineering and corrective action records must be kept for the time during which the part or part family is active plus one more year of the calendar, unless otherwise specified by PST and/or PST customer.

This requirement does not supersede any regulatory requirements. Therefore, all filing periods shall be according to or exceed the minimum specified above, as well as any regulatory requirement.

SECTION 3 – ADITIONAL CUSTOMER SPECIFIC REUIREMENTS RELATED TO CAR MANUFACTURES (OEM/OES)

3.1 Production Part Approval Process (PPAP)

PPAP documentation shall be provided to PST in electronic form via Positron Supply Chain (PSC) website. All the related documents shall comply with the PPAP Manual and other related manuals of the AIAG.

Submission level will be defined by SQE upon notification and it shall be followed as determined.

When required, other parts approval formats may be requested by PST.

3.1.1 PPAP Sample

A sample of the process may be requested with the PPAP documentation, not for its approval but to be kept at PST plant. It shall take into consideration multiple cavities, position, mold, tool or matrix and shall be identified with the code, description and the date of manufacturing.

The main purpose of this sample is to help define the production pattern, especially when the data are ambiguous or the details are not sufficient to reproduce the part in its original approval state.

3.1.2 Internal or External Laboratory

The supplier, whenever possible, shall use ISO/IEC 17025 (or national equivalent) accredited laboratories for inspection, test or calibration services.

Whenever the supplier is ISO/TS 16949 certified, it may use internal laboratory according to its scope and capability.

3.1.3 IMDS

The supplier shall ensure that products designated to PST meet the Brazilian and the international security, governmental laws, as well as the ecological and environmental laws.

Therefore, the supplier shall issue a statement on chemical substances present in the product through the IMDS, by loading concerning data in the system (www.mdssystem.com), indicating the recycling rate for each product. To begin supplying, all information must be registered in the system through the **ID PST 56598**.





PST Engineering Department is responsible for analyzing and approving the MDS from suppliers.

3.2 Special and Non-special Characteristics

Product and/or process special characteristics when determined by PST in the project records, drawings, specifications among others, shall be duly identified by the supplier in its documents (e.g. FMEA, Control Plan, Work Instructions, Drawings) through PST specific symbols with special features or through equivalent symbols used by the supplier.

The supplier may request PST the authorization to use other symbols as long as formally agreed since Supplier submit characteristics correlation table.

Table1 - Symbols to identify Special Characteristics (PST)

Definitions	Symbol
Non-special feature (inspection rate): Product feature to which a variation has low probability of significantly affect the customer satisfaction due to adjustment need, function or appearance loss, difficulty to assemble, process or manufacture this product, as well as its non-conformity with governmental regulations.	
Special feature (not related to legal or safety considerations): Product feature with significant process variation probability, substantially affecting the customer satisfaction towards the product due to adjustment need, function or appearance loss, difficulty to assemble, process or manufacture this product.	
Special feature (related to legal or safety considerations): Product feature with significant process variation probability, substantially affecting product/customer safety or its conformity with governmental regulations (such as: flammability, passenger protection, steering control, brakes, etc.) noise, radiofrequency interference, etc.	 or 
Product/package traceability: Product with special feature related to legal or safety considerations.	N.A.

Dimensions in the project records established by the PST Engineering Department as non-special characteristics (inspection dimensions) must be inspected and monitored by the supplier. Additionally PST has the right of inspecting any characteristics considered necessary according to the SAP system.

The supplier must assure that products and services supplied are in conformity with statutory and regulatory requirements, currently applicable and in force in the country of incoming, shipping and destiny of the products. When defined by PST Electronics LTDA special controls for some products with statutory and regulatory requirements the supplier must ensure that they are implemented and maintained as defined by PST on POs and Technical Documentation.

Studying background data of incoming inspections along with good performance on the Supplier's Performance Assessment, PST may consider a restrict group of components as quality assured. However, the supplier must keep its process as approved by PST and assure a good quality history. Supplier and/or component will lose this status in case of quality problems and the supplier will be required to answer a corrective action report.

Non-compliance and fulfillment of such requirements can only be done upon PST approval. The requested by supplier and approved by the PST SQE.

3.3 Automotive product-related software or automotive products with embedded software

Suppliers of automotive product-related software or automotive products with embedded software must implement and maintain a process for software quality assurance for their products.

A software development assessment methodology must be utilized to assess the software development process, using prioritization based on risk and potential impact to

the customer. The supplier must retain documented information of its software development capability.

This process may be assessed and audited by PST.

3.4 Lay-Out Inspection

A lay-out inspection and a functional testing according to the performance and material specifications from project registration must be carried out every 12 months at least. The results shall be available for PST critical analysis. When the PPAP is applicable to the product, the lay-out inspection must be defined in its Control Plan.

In case of PST's customer specific requirement, a different procedure may be requested to supplier.

3.5 Special Processes - Heat treatment, Plating, Coating, Welding, Soldering, Molding and Casting.

Special processes must follow evaluation methodology based on CQI-9, CQI-11, CQI-12, CQI-15, CQI-17, CQI-23 and CQI-27 manuals of the AIAG.

If the supplier has directly or indirectly, one of the above-mentioned processes, applied to products supplied to PST, it shall implement the systematic established in the manuals previously mentioned.

PST will assess this requisite through check-lists, which may be provided if the supplier does not have the special process documentation already available and submitted to PST.

PST may select suppliers to check in loco whether the requirement is being followed, based on its critical analysis and representativeness.

The supplier shall keep the information and the audits related to the special process in which it takes part updated. Such information shall be updated at least every 6 months.

In case of a line transfer, stoppage for over two years and/or failure to accomplish any item of the CQI check-list, the supplier must inform the responsible SQE/SQA.

3.6 QSB Quality System Basic and BIQS – Built in Quality Supplier

The objective of this item is to reduce the loss of products when launched, prevention and quality improvement, zero flaw during process and to assure the high level of PST and its clients' fulfillment.

The application of this requirement will be aimed at suppliers of the items used in PST products to GM/FCA.

PST may analyze this requirement through self-assessment for suppliers who do not have the QSB or BIQS implemented or submitted to PST.

Specific Requirements

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REVIEW HISTORY

REVIEW #	DATE	NATURE OF REVIEW	NOTE
00	October 13 th , 2008	Release and disclosure	--
01	October 19 th , 2009	a) <u>The following items have been included:</u> <u>1.2.1 – The difference between the material report and IMDS;</u> <u>1.4 – Note 1 - special features (Cp and Cpk ≥ 1,67)</u> <u>1.5.3 – PPAP Sample;</u> <u>1.6 – Layout Inspection;</u> <u>1.14 – Quality System Basic;</u> <u>2.4 – Supplier Assessment.</u> b) <u>The following items have been changed:</u> <u>1.2 - Supplier Technical Documentation;</u> <u>1.8 – Continuous Quality Improvement (CQI);</u> <u>1.12 – Change Request.</u> c) <u>All appendices have been removed.</u>	All modification are identify with a lateral line in front the paragraph.
02	October 10 th , 2012	d) a) <u>The following items have been included:</u> ISO14001; Positron Supply Chain (PSC). b) <u>The following items have been changed:</u> PPAP; Lay-Out inspection, Laboratory; Special Process; Corrective Action; Change Request. c) <u>The following items have been removed:</u> FORMs (documents for reference are available at PSC); Supplier Assessment.	All modification are identify with a lateral line in front the paragraph
03	Sep.17 th ,2014	Manual was divided in two parts: General Requirements and Additional Requirements for Car Manufacturers. Included the "Requisitos FIAT Tier 1 e Tier 2". Text update and requirements addition.	All modification are identify with a lateral line in front the paragraph
04	Jan.15 th ,2018	Updated according to IATF 16949	General review.