Supplier Quality Book

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00	08/09/2017	New Release	R. Visini
01	20/05/2019	Chap. 4 (page 5): Service scores modified; Chap. 4 (page 6): Not Qualified replaced by Critical , TMM text modified;	F. Poggi
02	22/01/2020	Chap. 9 (page 16): Data for traceability *and weight* has to be clearly indicated on each single box of parts.	F. Poggi
03	10/03/2022	Chap. 4 (pages 5 and 6): Text entered: “or at least a plan to implement it”; Chap. 4 (page 6): OHSAS 18001 modified as ISO 45001.	F. Poggi

1. INTRODUCTION

ZAPI GROUP (hereinafter called ZAPI) considers quality and reliability as key factors in terms of competitiveness and therefore for the success of the company business. In this context, ZAPI gives the quality of supplies great importance, both as regards their very close relationship with the quality of its finished products and as regards the strong disturbance that problems on components may cause on manufacturing flow. To meet the ever-increasing quality targets that the market demands, the supply relationship cannot be based on a system that filters incoming goods, but upon making supplier responsible which must have availability of and use all the technologies and *resources* necessary to ensure excellent levels of quality and in any case of continuous improvement. Therefore, ZAPI demands to its suppliers to adopt and maintain a quality management system to ensure zero defects (regardless of the levels of acceptance used by the supplier). This system must prevent potential defects and assuring the quality and reliability of manufacturing processes and of the components supplied, but also include development of efficient and robust manufacturing processes, implementing appropriate verifications that keep under control deviations and operating costs. Suppliers should aim for Zero Defects and 100% On Time Delivery to ZAPI. Suppliers shall understand that any established PPM target is not an accepted quality level, but represents an intermediate continuous improvement step toward shipment of components/materials meeting the zero defects requirement. Safety comes first. Health and Safety is an integral part of our business and is encouraged in all stages to ensure the wellbeing of people.

2. PURPOSE AND APPLICATION SCOPE

This document defines rules and procedures to be adopted in relationships between Suppliers and the ZAPI with the aim of ensuring suitable quality and reliability levels in the supplies. This document is defined according to the Integrated Quality and Environment policy available on the web company site. These specifications form an integral part of the GTC as well as of the supply contracts. When a purchase order is accepted, including tacitly, the Supplier commits to comply with the rules laid out in this document. Supplier must check the availability for any document and version written on the purchase order. Respecting any local law or regulation is under supplier responsibility. Supplier is responsible for the development of his sub-suppliers according to the requirements of this SQB.

The Supplier is fully responsible for sub-suppliers, even if ZAPI originally selected and/or qualified them. The supplier can suggest sub-supplier changes (see § 6).

3. TERMS AND DEFINITIONS

GTC: General Terms and Conditions.

Supplier/Sub-supplier qualification: Process used to use only suppliers can respect specifics requirements.

SQE: Supplier Quality Engineer: it is the window person for the quality issues for the supplier.

Cm-Pp/Ppk-Cmk*:* Index which measures how much a sample of a pre-series item complies with specification limits in relation to the potential natural variability of the process. This is used when the process control cannot be assessed.

Cp-Cpk*:* Index which measures how much a sample of an item complies with specification limits in relation to the natural variability of the process.

QDC: Quality, delivery and cost performance.

PPAP: Product Part Approval Process is used in the supply chain for establishing confidence in component suppliers and their production processes. Actual measurements are taken of the parts produced and are used to complete the various test sheets of PPAP.

PSW: Part submission warranty, This is the form that summarizes the whole PPAP package. This form shows the reason for submission (design change, annual revalidation, etc.) and the level of documents submitted to the customer.

CE Matrix: Risk evaluation table calculated by key factors elements.

FIFO: First in first out.

Certification Program: Evaluation method for critical suppliers defined by CE Matrix.

4. SELECTION AND MONITORING OF THE SUPPLIER

The conditions under which a Supplier can supply ZAPI, and anyhow can continue the relationship, is that it can guarantee to meet the compliance of high quality standards and to maintain them over time.

For a supply contract to be awarded the Supplier must have at least specific *know-how*, the necessary technological, financial, patrimonial and human resources, as well as the machinery and premises needed. It is ZAPI's policy to give priority to and, if appropriate, to give exclusive admittance to suppliers who have a quality system, which complies with IATF 16949, and subsequent improvements. In all cases, it is a minimum requirement that a supplier has a Quality System that has been certified by an accredited third party in compliance with ISO 9001 or at least a plan to implement it. A good intermediate step is to work according to MAQMSR, the

minimum automotive Quality Management System requirement (available on http://www.iatfglobaloversight.org). The Supplier should have and maintain an environment and safety management system, conforming to at least the requirements set out in ISO 14001, ISO 45001 or an equivalent management system.

In addition, a preliminary condition to guarantee the quality of supply over time is that the Supplier has the necessary technical, financial and structural means. The check of availability of such resources is confirmed through the use of a questionnaire whose purpose is to gather the information aimed at assessing the initial ability to meet the standards of ZAPI. Supplier has to update this document for any changes or variation, at least information is updated every three years.

A risk evaluation of supplier is planned yearly (CE matrix) to put evidence on top priority supplier list. On these top suppliers is implemented a monitoring scorecard system:

Scorecard is carried out once every three months by calculating an index which summarizes the supplier performance in terms of Quality and Service. The score is from 0 to 100 (64 quality – 36 service).

This activity aims at informing the supplier about the level of satisfaction in relation to the assigned target.

- Quality
    - PPM (Defective Parts Per Million delivered max score18)
    - NCR Internal (Non-conformance report at ZAPI plant, max score 18)
    - NCR customer (Non-conformance report from ZAPI customer max score 18)
    - NCR Response Time (Feedback timing (8D report) max score 10)
- Service
    - Cooperation (max score 10)
    - OTD Requested Date (max score 13)
    - OTD Confirmed Date (max score 13)

The Certification Program index is calculated as the average of last year index, quarterly scorecard and the results of audit reports into the same period (see § 7).

Index rating:

90 - 100	CERTIFIED
80 - 89	QUALIFIED
< 80	CRITICAL

Action required:

CERTIFIED: Preferred suppliers for new business and partnership;

QUALIFIED: Action plan required and monitoring system (audit) activated according to evaluation;

CRITICAL: Action plan required and if the score is confirmed for 6 months, ZAPI will evaluate an exit strategy or new business on hold.

TMM (Top Management Meeting) can also to be scheduled in order to develop mutually beneficial relationships to create greater levels of innovation and competitive advantage. During the meeting all details are shared to create a common future strategic plan.

5. PROCESS AND PRODUCT QUALIFICATION

The process and product qualification shall ensure that purchased parts and components have been designed and manufactured without deviations in full compliance with specifications, with the present processes and with ZAPI requirements in terms of QDC. This process has to be performed on:

- New part
- Engineering change(s)
- Durable Tooling: transfer, replacement, refurbishment, or additional
- Tooling inactive > one year
- Correction of discrepancy
- Change to optional construction or material
- Sub-supplier or material source change
- Change in part processing
- Parts produced at a new or additional location
- Following a request from ZAPI to suspend deliveries due to Quality problems.

5.1 PRODUCT DEVELOPMENT AND FEASIBILITY STUDY

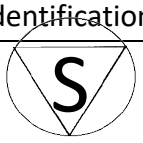
Before any offer proposal process, the supplier, once having taken into account all the requirements and information provided by ZAPI, must guarantee the full feasibility of requirements. In case of any deviation, the supplier has to inform ZAPI immediately and provide alternative solution.

5.2 SAMPLES STATUS

The status level of samples required is related to the design project management. During a new design the samples request starts from R&D according to the development gates. The supplier is required to deliver samples for specific approval in different steps, samples must be clearly identified.

Prototype Level A (concept units):	Size might be different. Connectors might change Not all requirements are defined.
Prototype Level B (verification units):	Final size of product. No change in external interfaces anticipated. Functions are operating. All requirements are defined.
Pre-series Level C (validation units):	Design is frozen. Only tooling/process planned to change. Minor modification due to qualification fails might occur. Samples are fully comply with all product requirements. Parts are coming from definitive process.
Pre - production Level D (production units):	No change other than production line. Samples are fully comply with all product and process requirements. Tools and production line are frozen.
Production Level P (production units):	No changes without customer approval.

5.3 MANAGEMENT OF SPECIAL CHARACTERISTICS

Identification	Description	Definition	To do *(minimum requirements)*
	Safety or regulation	Any failure on these products or	SPC: ***Cm-Pp/Ppk-Cmk*** > 2

		processes characteristics can introduce safety issue Severity 9-10	Cp/Cpk > 1.67 Reported on control plan Recorded Traceability request for 10Y R&R <10%
	Functionality	Any failure on these products or processes characteristics can introduce functional issue Severity 7-8	SPC: ***Cm-Pp/Ppk-Cmk*** > 2 Cp/Cpk > 1.67 Reported on control plan Recorded
None	Standard	Other failures	Batch inspection

Suppliers has to identify additional special characteristics beyond those defined by ZAPI coming from PFMEA or similar process risk analysis. Suppliers with Design responsibility must identify additional special characteristics. All identified key characteristics must meet the above standard requirements

5.4 PPAP

The Production Part Approval Process represents the development of the product and of the process to avoid any deviation during production time. Below the requirement list (recorded documents) that must be implemented by the Supplier. Samples represent the development status and supplier capacity. All samples (A, B, C, D) presented to ZAPI must be accompanied by appropriate documentation which makes them identifiable and shows the characteristics for the Prototype level requested. For the requested PPAP level (required documentation), see TECHNICAL SPECIFICATION or PPAP samples order. Unless otherwise specified, each sample must be accompanied, at the moment of its delivery, by a PPAP Sample label. Into the samples order ZAPI write the level of requested PPAP and the documentation required. List of the complete PPAP documentation detailed below:

1) **Presentation Report (PSW):** This document shows general information that is useful for understanding the reasoning behind sampling, the type of component, the status of sampling and also shows a list of the documents required. Requested for C-D samples. NA for production

2) **Functional validation Report of functional tests performed on the component:** This request is applicable when reliability is in charge of the supplier. For some type of product, tests can be requested to be performed by ZAPI. Requested for any samples and repeated periodically.
3) **Copy of requested homologation (e.g. UL):** The supplier will be asked for homologation certificates in cases of components that are homologated in the supplier's name.
4) **Dimensional report and drawings with measurements:** This document summaries the measurements taken by the supplier of all the characteristics of the component for the number of samples requested by ZAPI. In case of mould the measurement has to be taken on every cavity. The samples and measurements (drawing with measurements) must be identified to allow traceability and metrological comparison. All requirement has to be measured. Any deviation has to be justified and identified. NA for production.
5) **Raw material certificate of analysis/declaration of conformity:** This document comes from the (main) involved raw material suppliers and is used to demonstrate conformity with technical specifications. This document is drawn up as per UNI EN 10204 (or equivalent) paragraph 3.1. Requested for C-D samples. In production recorded.
6) **Raw Material Technical Data Sheet**: Documents from the manufacturer of all the raw materials used to allow to understand the nature and characteristics involved. Requested for A – B – C – D samples. In production recorded.
7) **Surface Treatment Information:** Information to help understand the nature and characteristics of surface treatments (if present), including the measurement of thickness. Requested for A – B – C – D samples. In production recorded.
8) **Capability Study:** This document confirms the records and results of the control charts (X -R) and the Cm/Cp and Cmk/Cpk Capacity Study statistical calculations. It depends if the production status. Requested for C-D samples. In production recorded.
9) **Aesthetic approval:** For components requiring aesthetic conformity, the criteria for acceptability and acceptance must be shared and approved. Also lists of defects pictures are included into this criteria. Requested for D samples. In production recorded.
10) **Process Flow:** A Flow chart describes all the manufacturing phases of components starting from raw materials and ending with packaging. The same reference has to be used for FMEA and control plan documents. Requested for C-D samples. In production recorded.
11) **(D)PFMEA ((Design) Process Failure Mode and Effects Analysis):** This is an analysis of potential failure modes and of related effects on the component (design) manufacturing process. The supplier must present the PFMEA that has been developed by its own company. Requested for C-D samples. NA for production.
12) **Control plan:** This document shows the scheduled actions taken by the supplier to keep full control of the manufacturing process. It should be available at production plant. The

control plan is the result between the customer requirements and D/PFMEA. Requested for C-D samples. In production recorded.

13) **MSA (Measurement System Analysis) Analysis of measurement system**: This study aims to determine the repeatability and reproducibility of the measurement system (forms available on request). Requested for D samples. In production recorded.
14) **Information about Moulds and/or Equipment:** Information about moulds and/or Equipment developed for manufacturing a component for sampling.

    Information in this case means:

    - Quantity and code,
    - Overall view drawings,
    - Pictures,
    - Materials used.
    - Requested for C-D samples. NA for production.

15) **Reference samples:** Samples of every mold cavity, spindle or jig representative of series manufacturing in dimensional and aesthetic terms (including samples representative of the criteria of aesthetic acceptability). Requested for C-D samples. NA for production.
16) **Description of Packaging and identification:** This document describes the packaging that the supplier intends to propose for the supply of sets of components. Requested for C-D samples. NA for production.
17) **Environmental requirements and substances of concern**: ZAPI aims to minimize its environmental impact by focusing on the material content of its products and CO2 emissions. In support of this aim; ZAPI expects suppliers, to:

    - Understand how their businesses and products impact on the environment.
    - Know and comply with federal, state, and local regulatory requirements.
    - Notify ZAPI of any significant environmental compliance violations.
    - Stay current with global classifications of hazardous substances.
    - Understand the requirements for registration of substances and how these requirements apply to their products.
    - Provide ZAPI Grey/Black material lists compliance declaration or (if required) complete full materials declaration, which includes reporting chemical and material content of component according to International Material Data System (IMDS). For more information see: http://www.mdsystem.com/
    - Provide information on substances on the Substances of Very High Concern (SVHC) “Candidate List” within products supplied to ZAPI. For more information about the REACH regulation see: http://echa.europa.eu/home_en.asp
    - Notify ZAPI immediately if SVHCs are detected in their products. Note; the SVHC list is regularly updated.
    - Do not deliver any products containing substances with higher weight-percent, defined by RoHS, REACH and GADSL, unless agreed with ZAPI.

- When operating outside of EU, respect REACH requirement: ZAPI will not act as an importer under REACH for any material purchased outside EU.
- Be responsible to assure implementation of these requirements through their supply chain.
- Be able to report on their environmental work, including organization, fulfillment of legal demands, and environmental results.
- Make environmental-related data from production, products and transport available upon request for ZAPI to enable environmental assessments (for example Life Cycle Assessment).
- Consider recycled/recyclable materials when selecting materials and design solutions.
- Document and report to ZAPI any deviation for approval.
- Have a conflict minerals program in place.

5.5 PPAP APPROVAL

PPAP approval is required only on samples level D. Any necessary deviation has to be managed. The requested documentation forms are integral part of the approval process and even just one missing document will compromise the progress of the procedure. Once the measurements and sample tests have been completed, ZAPI will assess the overall conformity of items with drawings and/or specifications, but also the submitted documentation in compliance with ZAPI requirements.

- ***APPROVAL***

Approval for manufacturing: indicates that the product meets requirements and that the supplier is authorized to deliver the quantities agreed in the delivery schedule.

- ***INTERIM APPROVAL (TIME LIMITED)***

Approval with a set time limit: allows deliveries of batches for a limited period of time. Such approval with a set time limit is only permitted in the event that:

  - The causes of non-conformity which led to non-approval are clearly defined.
  - It has been agreed and prepared an action plan approved by ZAPI.
  - A material which has been given temporary approval without the action plan being respected or which exceeds the time limit imposed in the exemption, will be rejected. Deliveries will not be authorized unless temporary authorization is extended.

- ***REJECTED***

Rejected: this means that the presentation, the manufacturing batch from which the product was taken and the accompanying documentation, do not comply with requirements. The product and correct documentation shall be submitted again before manufacturing quantities can be delivered.

Production quantities shall not be shipped before ZAPI Approval.

6. CHANGE CONTROL

The Supplier cannot change the product, its components, materials, making or manufacturing process or the location of manufacturing, compared to what has been approved by ZAPI. In the event that a change needs to be made to enable supply to be conducted correctly, the supplier must timely inform the ZAPI purchasing office in advance and provide a written explanation of the reasoning behind such change. The ZAPI purchasing office will assign personnel to contact the supplier offices to further investigate the proposed change and to assess whether to approve it. If ZAPI authorizes the change all costs for activities for the re-qualification (homologation) of the component and/or the process will be charged to the supplier. In the absence of this notification or authorization or in the presence of product or process conformity defects, the supplier will be responsible for all damages, costs and expenses and in general for any prejudices and ZAPI will also have in any case the faculty to halt supplies without prior notice.

7. QUALITY ISSUES AND PROBLEM SOLVING

ZAPI consider supply parts with no defects and able to use for the production, therefore no incoming inspection is performed. ZAPI will inform the supplier in case of any problem occurs during parts use. The supplier should have an internal procedure for the managing of non-conformities encountered during every phase of its manufacturing process. The supplier shall always make reference to ZAPI quality dept. for any problems involving supplies quality issues. For nonconforming products supplied to ZAPI, including those that reach a ZAPI customer, the supplier must cover all costs to correct the nonconformance.

7.1 REQUEST FOR DEVIATION

A supplier may, if absolutely needed, request an approval for deviation from the specification by sending a well-motivated “Request for deviation” to the ZAPI. A time-limited approval may be given if the customer is protected.

7.2 REWORKED AND REPAIRED 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 Suppliers appropriate personnel. All rework shall be documented and accepted by ZAPI if not previously agreed.

Repair is defined as using alternative manufacturing techniques, methods, materials, or processes that *may not* bring product into full compliance with applicable drawings and specifications. Repairs are not allowed without written approval from ZAPI if not previously agreed.

7.3 QUALITY ISSUES

Non-compliant products will be notified to the supplier by means of a non-conformity report that is written the description of the problem and all information supporting the supplier identifying the root cause of the deviation. The supplier shall provide a complete response within the time limit set by ZAPI. For each non-conformity received by ZAPI, the supplier shall respond by providing the information requested, in as much detail as possible, to define the actions he has implemented to resolve the problem using an 8D report.

Form 8D has eight key sections and time limit:

- D1 IDENTIFICATION OF THE PROBLEM
- D2 DEFINING THE WORKING TEAM
- D3 CONTAINMENT ACTIONS up to D3 (Containment) within 24h after claim received
- D4 DEFINITION OF ROOT CAUSES
- D5 CORRECTIVE ACTIONS AND UPDATE OF PROCESS DOCUMENTS up to D5 (Root Cause + Corrective Actions Plan) within 5 working days after D3
- D6 ASSESSMENT ON SIMILAR COMPONENTS/PROCESSES (PREVENTIVE ACTIONS)
- D7 EFFECTIVENESS CHECK OF CORRECTIVE ACTIONS
- D8 CLOSURE 8D closed within target date defined in D5

The supplier is required to provide immediate containment, sorting, and certification activities on all suspect product(s) at the affected ZAPI and/or ZAPI customer facilities in an effort to

segregate and eliminate all non-conforming products from the supply chain. This containment may be done by the supplier with its own personnel or by a third party company, approved by ZAPI, and at supplier's expense.

Notes:

- *If supplier decides to perform the containment action itself and requires assistance from a temporary labor firm, a representative from the supplier could be request to be on-site to manage all of the temporary firm's activities.*
- *Failure to provide certified product within the required 24 hr timeframe may result in containment to be initiated by ZAPI at supplier expense.*
- *ZAPI may initiate containment prior to 24 hours at the supplier's expense in order to sustain immediate production needs*
- *Supplier has to maintain extraordinary actions till corrective action have been implemented.*
- *Reworked parts (also sorted) has to be properly identified. ZAPI must approve any interim action on the suspected parts and decide the rejecting quantity*

Once the containment actions have been defined, the supplier is required to carry out a thorough investigation into the problem and provide ZAPI with information about the causes which led to the defect and as to why the defect was not detected in standard controls. This investigation into the causes shall be performed using a robust quality problem solving process. Only if the effectiveness is approved by ZAPI it possible closing the claim. In case of reoccurrence or risky situation ZAPI can ask to supplier any extra inspection performed from the supplier itself or third part.

7.4 CHARGES TO SUPPLIERS

Any costs come from quality deviation will be charged to the suppliers according to GTC.

8. SUPPLIERS AUDITS

To monitor suppliers manufacturing processes or evaluate new potential one the SQE will carry out periodical inspections (audits) at suppliers' plant. The supplier shall agree to provide the auditor with the utmost availability, collaboration and cooperation whereas the auditor undertakes to ensure the maximum confidentiality as regards the sharing of data and/or information that he becomes aware of during the audit. The SQE is responsible for coordinating activities related to audits at suppliers' premises, for preparing check lists, for performing audits and issuing reports of the visit/s. Prior the audits the used check list could be shared in order to explain the different requirements. According to different needs SQE can applied a quality system audit or a manufacturing process audit. In case of any recorded deviation supplier has to

schedule a corrective action plan. The feedback time depends from the deviation severity. The supplier shall write back with implementation action and time implementation. A follow up visit may be necessary in the case of Major Non-Conformity detected.

9. TRACEABILITY AND FIFO

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). All suppliers to ZAPI shall have an effective batch definition and traceability procedure. The delivered product batch should be traced back to the raw material. Data for traceability *and weight* has to be clearly indicated on each single box of parts. Unless otherwise approved by ZAPI a batch shall consist of the result of production using the same key factors in terms of people, machines, method and material. If required Inspections Documents have to be sent by mail to the nominated person. For any different request see specific product/process documents.

10. SUB-CONTRACTOR (outsourcing process)

Suppliers of processes shall ensure an organizational structure that can keep the processing procedure under control. The Supplier shall comply with the product/process requirements unless otherwise specified in writing by ZAPI. The Supplier is responsible for carrying out the activities required by the specifications detailed by ZAPI or by its customers at the start of manufacturing and/or at subsequent visits. The components to be used in the above-mentioned activities will be forwarded to manufacturing sites as and when specified in the delivery schedule. The Supplier is responsible for accepting and identifying components as well as for carrying out controls on determined items to prevent defective components from being used. All materials belonging to ZAPI shall be stored according to ZAPI requirements, in any case in suitable packaging to prevent them from being damaged. The original packaging on materials on arrival can only be replaced if the above-mentioned conditions are met. If during the above-mentioned activities, materials (components) are encountered that are nonconforming or unsuitable for their intended use, these items shall be immediately segregated from other materials so that they are not put to use. The Supplier cannot use these components unless authorized by ZAPI Quality Department. Non-conforming material can be returned to ZAPI, when reworked or repaired, only if agreed with ZAPI Quality department.