QUALITY ASSURANCE MEASURES FOR PROCUREMENT OF PURCHASED PARTS

1. INTRODUCTION

This procedure is intended to provide the requirements necessary to ensure for both Vibracoustic (VC) and its suppliers that new and change projects are carried out on schedule and without any quality problems. Excelling in the automotive market while attaining growth requires investment and continual improvements of quality and delivery along with rapid and flexible reactions to change. A core tenant of the Vibracoustic approach is a Zero Defect Strategy that protects customer satisfaction. This strategy is only attainable with the active co-operation of our suppliers.

This procedure is provided to our suppliers and has to be applied consequently by the supplier and must be implemented by the supplier and VC for each project.

This Global Procedure is part of the framework contract with the supplier. Deviations from the defined procedure must be agreed to in writing between VC and the supplier. The existing procedure specification identifies the minimum requirements for the secure handling of new projects and series production orders. In addition, the supplier must commit to employ suitable procedures and measures which ensure that the work/product satisfies the requirements with regard to quality, cost and target date.

Rev.	Date	Department/ Name	Page(s)	Modification notes
4	29.11.17	SCM/Kostka, Raffin, Andreasson	1-29.	QM system requirements, CSR, general revision, Safety Critical Characteristic, SQMS chart, PPAP list, Tooling info, Traceability and RACI
3	06.09.16	SCM/Andreasson	23, 26	Quality escalation level, supporting documents, RACI
2	10.12.14	QM/Apholte	5	Emphasis Characteristics added
1	11.12.13	QM/Höfle	23	Rules for finishing 8-D-Report

Producer / Department	Approver Management System	Approver Board of Directors	Date	Status*
S. Andreasson / SCM	-	-	29.11.2017	completed
	G. Staab / QM	-	08.01.2018	Approved
		F. Müller	12.01.2018	Approved
		Dr. J. Böcking	18.01.2018	Approved
		V. Christ	18.01.2018	Approved

* This document is valid without physical signatures.

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2. PURPOSE

In this procedure the procurement and quality assurance of purchased parts of production material for all VC companies is specified. Thereby we want to ensure that

- New products are launched on schedule and without any quality problems
- Quality problems are identified and robust solutions implemented prior to series production
- Quality capability of processes are evidenced at series approval and during series production

3. SCOPE

This GP is valid for all procurement processes of production material for all VC companies with partnership production of purchasing contracts and purchasing conditions. Exceptions to this procedure must be agreed in writing. Standard products (e.g. catalogue goods, standard parts, standard colors, lubricating materials, chemicals, etc.) and intercompany business are excluded.

4. TERMS / DEFINITIONS / ABBREVIATIONS

4.1. Definitions

SQMS

The Supplier Quality Management System describes the business process of supplier selection, evaluation, and development as well as actions for the protection of new projects and series parts.

Initial Samples

Initial samples finished product produced with the planned equipment, procedures, manufacturing staff, materials and semi-finished products produced exclusively for series production. They are used for Production Part Approval Process.

FMEA

Failure **M**ode and **E**ffects **A**nalysis

This method is described in VDA volume 4, part 2 resp. and the AIAG reference manual. OEM specific FMEA- requirements (i.e. Ford – FMEA) must be met by supplier.

Supplier

The term "supplier" refers to production facilities in this GP, not to trade organizations. Therefore, an "Approval of Suppliers" always applies correspondingly to the audited production site only, not to the general trade organization.

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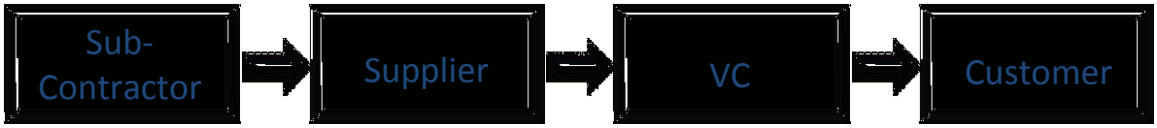
Sub-Contractor

The sub-contractor delivers to the supplier products or labor which have an effect to the products of VC. The supplier guarantees the sub-contractors quality.



Functionally critical purchased parts:

Functionally critical purchased parts highly influence field performance and a failure could create a safety risk. Functionally critical purchased parts must place higher focus on the test schedule of the supplier.

Production Trial Run (PTR)

Within the PTR, the systematic analysis of the first production lot (first batch) should be analyzed systematically to guarantee the early and systematic process optimization and do not require the complete planned series process.

Supplier Run@Rate (SRR):

Supplier Run@Rate serve as verification of processes and products. Parts must be manufactured with operating supplies used for series production over an extended period of time (300 parts or 1 shifts) With this milestone the production process will be technically evaluated (scrap, capacity) and the necessary production documents checked. If manufacturing is not possible under series conditions, the status must be communicated to VC and its effect on series production needs to be assessed.

Special Characteristics

Significant and critical characteristics are designated in the drawings using the following acronyms:

- Significant characteristic (Fit & function) = SC
- Critical characteristics = CC*
- Emphasis Characteristic = EC

* Safety relevant!

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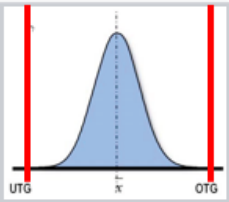
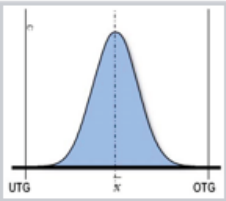
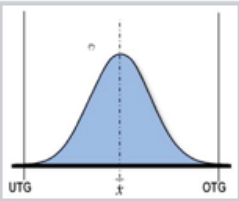
Special Characteristics

	Critical Characteristic	Significant Characteristic	Emphasis Characteristic
Symbol	CC | 10 ± 0,1	SC | 10 ± 0,1	EC | 10 ± 0,1
Where applicable	Safety characteristic identified by the customer or internally in the DFMEA	Important functional characteristic requiring Statistical Process Control	Important part or process characteristic requiring emphasis in the control plan
Explanation		An exceedance of tolerance has an influence on the function and / or durability	The usage of the complete tolerance has no influence on the function or durability but e.g. the dimension has an influence on the production / assembly process at Vibracoustic.
Requirements	Require 100% conformance to specification Poke Yoke where possible	P_p, P_{pk} ≥ 1.67 at launch C_p, C_{pk} ≥ 1.33 on going production or 100% control	Process Capability has to be verified Additional care in control plan to maintain tolerances have to be agreed with Vibracoustic. Increased frequency of checks – every shift/every batch
Visualization			

Requirement for Ppk, Cpk value may be higher as per specific Customer Requirement.

Production Part Approval Process (PPAP)

The process is designed for following purpose:

- to ensure that a supplier can meet the manufacturability and quality requirements of the parts supplied to VC
- to provide evidence that the VC engineering design record and specification requirements are clearly understood and fulfilled by the supplier
- to demonstrate that the established manufacturing process has the potential to produce the part that consistently meets all requirements during the actual production run at the quoted production rate

OEM specific requirements (PPAP acc. AIAG resp. EMPB acc. VDA2) must be met by supplier.

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4.2. Abbreviations

AIAG	Automotive Industry Action Group
APQP	Advanced Product Quality Planning
BU	Business Unit
BUM	Business Unit Manager
CM	Commodity Management
CSR	Customer Specific Requirements
DV	Design Verification
EMPB	Erst Muster Prüf Bericht
EPC	Early Production Containment
GP	Global Procedure
IMDS	International Material Data System
IR	Inspection Report
ISIR	Initial Sample Inspection Report
MSA	Measurement System Analysis
QMS	Quality Management System
QM- Site	Site Quality Manager
PG	Product Group
PPAP	Production Part Approval Process
Ppku	Ppk (upper specification limit)
Ppkl	Ppk (Lower specification limit)
PTR	Production Trial Run
SDE	Supplier Development Engineer
SPC	Statistical Process Control
SOP	Start of Production
SQA	Supplier Quality Assurance
SQMS	Supplier Quality Management System
SPM	Supplier Preparation Meeting

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SRR	Supplier Run@Rate
VC	Vibracoustic
VDA	Verein der Deutschen Automobilindustrie

QUALITY ASSURANCE MEASURES FOR PROCUREMENT OF PURCHASED PARTS

5. PROCESS / METHOD / PROCEDURE

5.1. SQMS Supplier Quality Management System

The Supplier Quality Management System (SQMS) of VC defines the supplier selection process, the supplier development standards and activities, as well as the specific requirements of the automotive industry.

The SQMS is fundamentally divided into 4 phases:

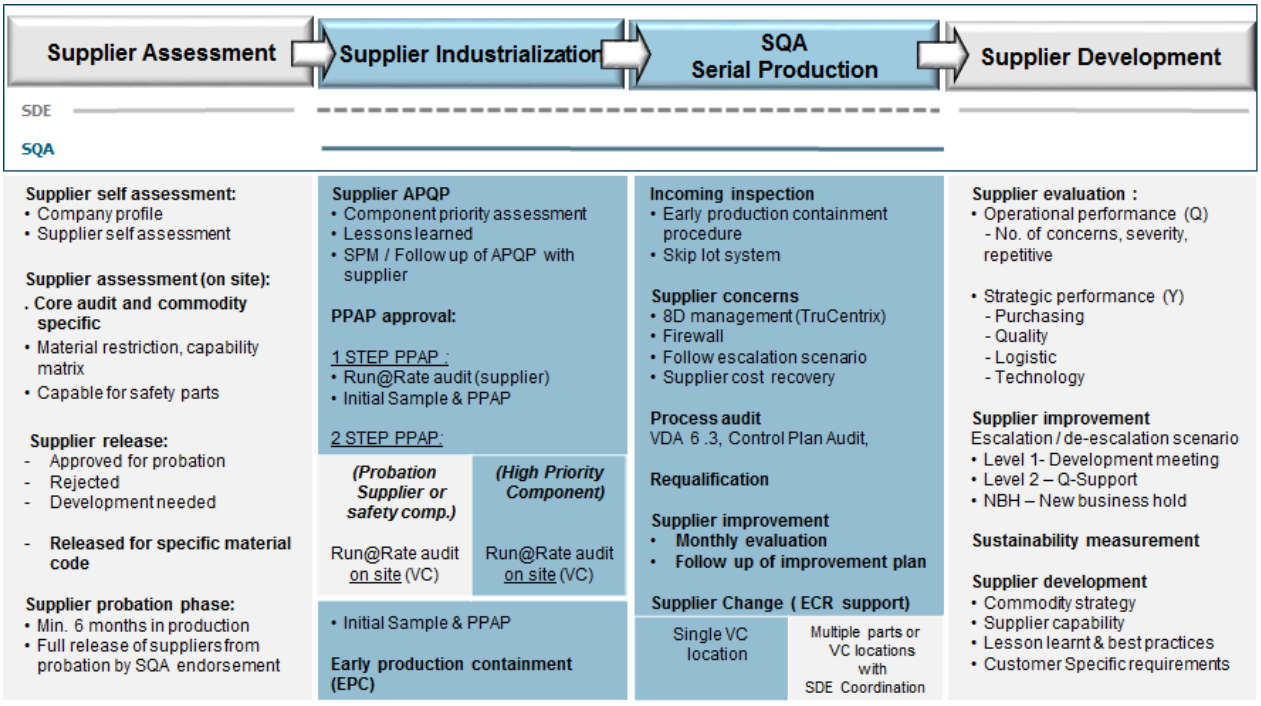
Phase 1 = Supplier assessment and approval of new suppliers

Phase 2 = Supplier Industrialization

Phase 3 = SQA Series production

Phase 4 = Supplier Development

The procedure exclusively defines the APQP requirements to suppliers for purchased and serial production.



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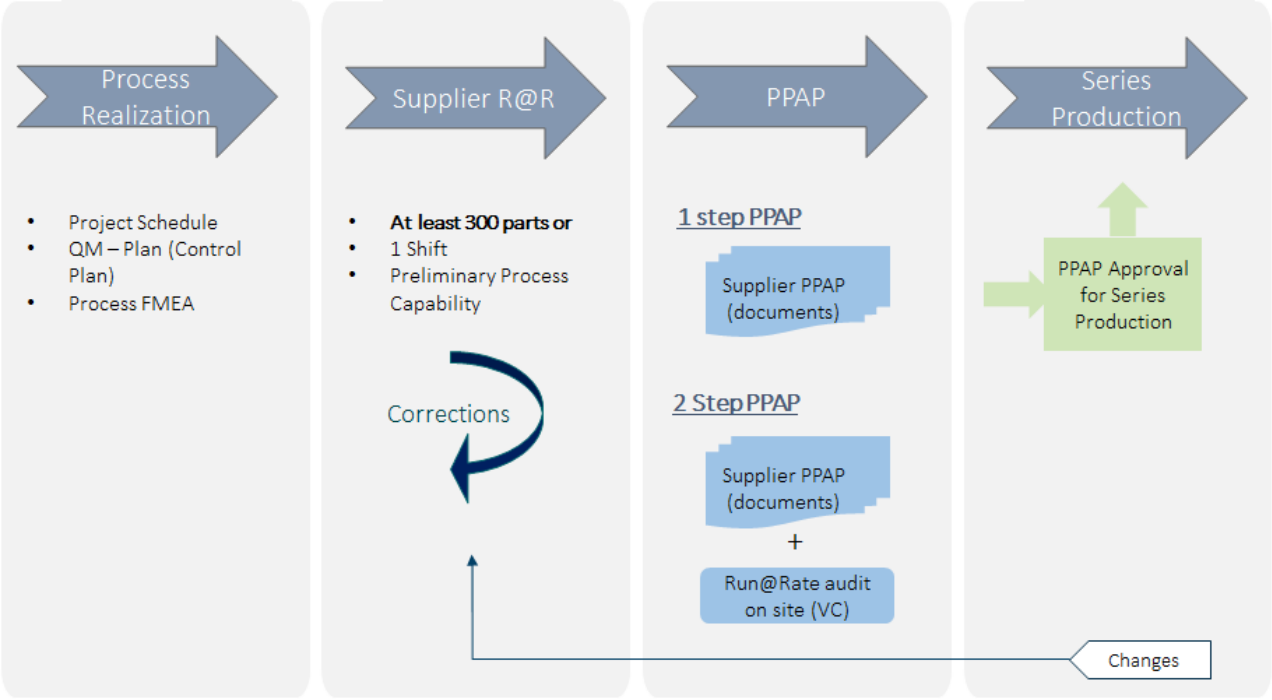
Supplier Industrialization



5.2. QM-system

VC requests suppliers of productive parts and services to implement their QMS certified to ISO 9001. Suppliers have to develop their QMS towards IATF16949 with ultimate objective of certification by 03/2019.

Suppliers who do not reach certification to IATF16949 will be audited by VC (or external) in order to confirm compliance to Minimum automotive Quality Management System Requirements for Sub-Tier Suppliers (MAQMSR). The audits will be performed on supplier cost.

The requirements for error proofing and inspection of production parts must be fully implemented for all VC products. The supplier should also incorporate any relevant VC / Customer Specific Requirements (may be provided by VC upon request) into its QMS system that refer to the specific product or service.

5.2.1. Product Safety Representative

To have a fast and effective response in case of a critical situation (e.g. Safety risk, .) Supplier has to nominate a Product Safety Representative

5.3. Contract Review

The supplier is required, at the quotation stage as well as in the order phase, to check documents placed at its disposal for completeness, correctness, freedom from contradiction, ability to meet the required quality and production capability (ability to manufacture, adherence to target dates etc.). The supplier indicates to VC in writing where documents and facts are unclear or which appear incorrect. This also applies to measuring procedures and methods.

When referring to other documents, the supplier must provide those and ensure that processing is done according to current versions.

1. Generally accessible guidelines/ standards (e.g. DIN, ISO, EN and ASTM-Norms) must be provided to confirm positions.
2. Guidelines/standards and documents of VC or its customers will be forwarded upon request to the relevant purchasing area.
3. Customer specific requirements (CSR)

5.4. Control of Documents

The supplier must produce, check and deliver to the current valid version. Documents from VC and its customers must be treated as confidential. The forwarding to a third party is permissible only after consent in writing from the relevant purchasing department of VC. Archiving periods are per OEM´s customer specific requirements (CSR). For CSR´s refer to (5.5)

5.5. Customer Specific Requirements (CSR)

For CSR´s refer to:

www.iatfglobaloversight.org

www.vda-qmc.de

For components with threads, refer to LI_01_7.4_0082_Minimum requirements_M04 components with threads.

The supplier is responsible to maintain and revise their system to the latest customer standards.

5.6. Control of materials and packaging provided by VC

The supplier must conduct a receiving inspection on materials and packaging delivered for quantity, identification and visible damage. The consumption of delivered articles must be recorded on the delivery documents and the responsible purchasing/logistic department notified.

5.7. Environmental Protection

The supplier must ensure that all materials used in production meet the valid, legal requirements for restricted, poisonous and hazardous materials. In addition regulations for environmental protection must take into account the country of manufacture and the customer. Customer Specific Standards and Requirements must be considered for the specific process and product.

5.8. Audits

The supplier must audit its QM-System at regular intervals for effectiveness and compliance to the requirements described in this procedure. VC is entitled to carry out – if necessary with the customers - audits at the supplier and at its sub-contractors – after appointments were made. The supplier must support VC in carrying out the audit into the required procedures, data and records for analysis of the Quality Management System, VC will maintain the supplier's confidentiality.

5.9. Staff

The supplier must demonstrate that all employees who work in the areas of planning, production and inspection are qualified.

5.10. Test equipment

The supplier must ensure that suitable test equipment for carrying out inspections defined in drawings and its referenced documents is available and that the equipment is maintained in proper condition. The suitability of inspection equipment, which is used for testing important characteristics, is to be verified and records retained (AIAG MSA Manual or VDA Manual 5).

5.11. Qualification of sub-contractors

VC may provide approved sub-contractors. The supplier is responsible for selecting suitable sub-contractors when VC does not assign sub-contractors. Regardless, the supplier must evaluate the quality efficiency of his sub-contractors and adequately integrate them into the APQP process. The Production Parts Approval Process (PPAP) must be fully applied at sub-contractors. The supplier must ensure that sub-contractors refer to 5.2 requirements of this procedure. In any case, the supplier is responsible for

the entire quality performance of the sub-contractor.

5.12. Safety data sheets/ Processing instructions

Where applicable and without being solicited, the supplier must provide complete and up-to-date safety data sheets and process instructions before supplying product.

5.13. Advanced Product Quality Planning (APQP)

The supplier must utilize measures and procedures which ensure that the details of the contract, without any deviations in respect to quality, target dates or work volume, are met.

It is recommended is to use the AIAG/VDA procedure.

A project time schedule must be created with consideration for the following items:

1. Individual measures such as:
   - production equipment and production tool planning
   - procurement of purchased ancillary items
   - Development of the Process-FMEA
   - Development of a control plan for prototype, pre-series, series
   - Production Trial Run
   - Supplier Run@Rate
   - manufacturing of initial parts
   - Production Parts Approval Process (PPAP)
2. Milestones such as:
   - progress of tooling and production equipment
   - production part release of sub-contractor ancillary parts
   - approval of control plan by VC
   - completion of design validation testing DV (prototypes)
   - completion of process verification tests PV (Series)
   - date first off-tool-parts
   - completion of supplier Run@Rate (proof of max. available capacity after SOP)
   - Production parts approval by VC

3. Responsibilities

Responsible persons must be listed by name and contact data (phone, mobile, email)

4. Start and end date of individual activities

Project schedules should be structured in suitable format (e.g. MS-Project, etc.).

5.13.1 Control plan

In cooperation with the SQA of the production plant all required tests, test equipment, testing intervals, test volume, form of the records and reaction plan are defined for pre-series and series production.

The Control plan must reflect the entire process chain of contracted part-number, including outsourced processes. The Control plan of the subcontractors must be provided upon request by VC.

All Control Plans have a yearly re-qualification requirement and the supplier must have the information available for VC upon request.

Control plan pre-series:

Suppliers should utilize an Early Production Containment Plan (EPC) (see Appendix 2)

Control plan - series:

The series control plan contains all tests and process controls from receiving inspection of parts from sub-contractors to supply VC as well as the scale of requalification tests.

Revision of the control plan:

The production control plan, which is approved by VC within the EMPB/PPAP procedure, is binding for the entire life time of the product. Changes, which are relevant for method and scale of inspections, must be approved by VC prior to implementation. In case of a loss of quality or product risks and process risks not defined by the approval time, VC reserves the right to amend the QM schedule corresponding to needs.

Form and content of control plan:

Content of control plans must be adopted according to the regulations of IATF 16949 latest revision, or AIAG.

5.13.2 Process Flow Chart

A process flow chart must be compiled for the whole manufacturing process. The process flow chart must be sent to VC as part of PPAP package. The process flow chart must reflect entire process chain of contracted part-number, including outsourced processes.

Process flow chart must be submitted with every supplier final offer to VC. Draft may be

accepted at this time.

Remark: The process number sequence must be the same through all documents (Flow, Control plan, FMEA)

5.13.3 Process-FMEA

The Failure Mode and Effects Analysis must be carried out before series production as a method of proofing. To minimize potential cost and conduct appropriate corrective actions if needed, the FMEA should be developed at the earliest possible time in the APQP process.

PFMEA must reflect entire process chain of contracted part number, including outsourced processes. Method and formal structure must correspond to VDA 4, Part 2. OEM specific FMEA- requirements (i.e. AIAG FMEA manual, Ford – FMEA ranking system) must be assured by supplier.

A prerequisite for a production parts release (initial samples approval) is the supplier's confirmation that the required Process-FMEA has been carried out on the first sample test report. On request the FMEA must be provided for review or presented at VC site.

5.14. Supplier Run@Rate

A supplier Run@Rate should consist of at least 300 parts or one shift uninterrupted production. However VC may change the length depending on several factors: product complexity, cost, production day length, previous history of similar product, processes, application or supplier history. The supplier Run@Rate run is to manufacture under series production conditions (staff, material, machine, tools etc.).

Before series production the capability of important features must be proved during supplier Run@Rate. The VC approved methods, processes and materials mentioned bellow have to be used for this evaluation.

Supplier Run@Rate is performed in following ways:

- Self-Run@Rate process audit according to 'FO_01_7.0_0103_Run@Rate Suppliers-full audit' questionnaire
- VC or external auditor will perform the Run@Rate audit at the supplier. (upon VC request.), according to´FO_01_7.0_0103_Run@Rate Suppliers-full audit' questionnaire

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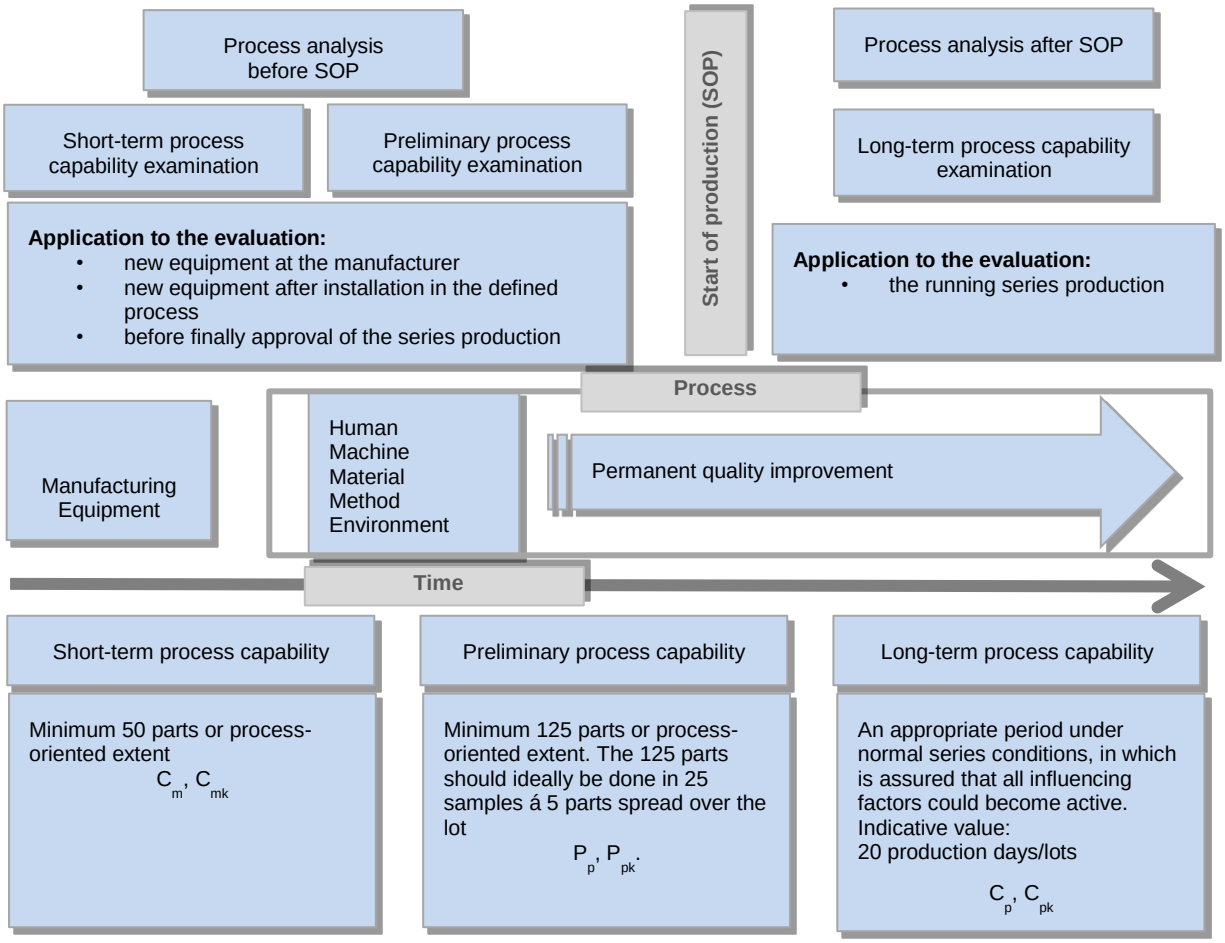
Method for capability evaluation:

´Zero defects strategy is only possible with controlled quality –efficient processes´



Preliminary Process Capability for PPAP:

Sample size:

At least 125 parts must be sampled over the entire pre-series production lot and tested. If the tools have more than one cavity, an equal distribution of all cavities must be assured.

125 samples = 25 subgroup of 5 parts. We recommend the following rule for sampling as preliminary study

Collect 5 parts, skip 5 parts, collect 5 parts, skip 5 parts, etc.... In cases of multiple cavities, we accept 125 samples for 1 feature if samples from all cavities are randomly selected. If capability is not OK, supplier demonstration of capability per cavity is acceptable. All distributions must be normal (and process data is statistically in control and stable).

Samples Records:

Individual values must be recorded and may be viewed by VC upon request. Sample "Test records".

Preliminary process capability (Ppk)

In order to fulfill the demand for a "Zero Defect Objective", a preliminary process capability of Ppk >1,67 for significant characteristics is required (or higher as per specific Customer Requirement).

Example for P_{pk} requirement >1,67:

P_p and P_{pk} > 1,67	Process meets requirements in pre-series. Process probably meets requirements for series production.
P_{pk} < 1,67	Process does not meet requirements **Measures:** Characteristics must be 100% inspected Optimize process to P_{pk} > 1,67

Ppk = smaller of the values Ppku and Ppkl

Capability Records:

The preliminary process capability study is part of the production parts inspection procedure as per AIAG – PPAP and VDA 2, and must be submitted to VC as part of PPAP package.

Long-term process capability (Cpk)

Preliminary process capability is only determined on one lot (pre-series/production trials), systematic influences between the individual lots (human, material, etc.) are not taken into consideration.

Preliminary process capability provides an initial assessment therefore process capability must be constantly monitored and documented in running production.

Some customers might request higher preliminary and long term process capabilities. Information about deviating capability requirements to the above mentioned standard requirements will be communicated during the project.

If process capability cannot be reached a reaction plan must be agreed upon by VC Supplier Quality.

5.15. Production Part Approval Process (PPAP)

Through the Production Parts Approval Process (PPAP) it should be proved whether or not the product can be reliably manufactured within the defined properties. The approval process can be carried out in different ways depending on product and project risk. Depending on the Risk Assessment results, Vibracoustic determines the supplier deliverables for the supplier PPAP approval:

1. **1 Step** PPAP requires the Standard PPAP elements as mentioned into 5.14.1. The supplier produces the defined PPAP documents and delivers them to VC together with the PPAP samples. The series release (PPAP Approval) is given after receiving correct and complete PPAP reports and approving the dimensional and functional characteristics.
2. **2 Step** PPAP requires a supplier run@rate audit on site performed by VC staff or an external agent. The series release (PPAP approval) is given after the supplier receives the approval of successful FO_01_7.0_0103 Run@Rate Suppliers on site and after receiving correct and complete PPAP reports and approving the dimensional and functional characteristics

Supplier is notified if 1Step or 2Step PPAP is required including necessary documents prior or with the PPAP purchasing order.

For critical or safety critical purchased parts (cc = critical characteristics) the 2 step PPAP is mandatory.

The Production Parts Approval Process (PPAP) must be carried out by the supplier in the following cases:

- new project / sampling (repeated sampling)
- amendments to product design / material
- changes in production process
- transfers to other production locations
- transfer of lines in the same production site
- use of new tools and cavities
- use of different machine
- use of new suppliers
- interruption in production for longer than 12 months

VC must be informed, in each and any of the given instances. The change shall be started only after obtaining written agreement from VC.

The scope of the Production Parts Approval Process must agree with the responsible SQA. Should it be necessary to repeat an inspection due to a supplier failure, VC reserves the right to charge appropriate cost to that supplier.

5.15.1 Requirements for Series production Release

The submission or evidencing of the following measures and results are required for release of production parts. There might be less requirements defined by SQA/SDE:

Submission	Provision	
Part submission Warrant (PSW/VDA EMPB) (All fields completed, reasoned and signed by supplier)	Supplier	
Conditional Approval / Permission for deviations		VC
Process Flow Chart	Supplier	
Process FMEA (confirmation)	Supplier	
Control Plan	Supplier	
Early Production Containment Plan (EPC)	Supplier	
Approval of Sub-suppliers (PSW/EMPB)	Supplier	
Design records (Ballooned 2D drawing – latest level) Dimensional Results (Supplier evaluation and VC evaluation)	Supplier	VC
IMDS Submission	Supplier	
Material certificates	Supplier	
Measurement system Analysis MSA (Gauge R&R)	Supplier	
Process Capability Studies for CC ,SC and EC characteristics (P_p/P_{pk} or C_p/C_{pk})	Supplier	
Product samples (1 per cavity number, marked, with single measurements results, minimum 6 samples)	Supplier	
Product functional test results (Corrosion, durability, compression, x-ray) as defined in drawing.	Supplier	
Run at Rate (Assessment sheet and capacity analysis sheet (FO_017.0_0103)	Supplier	

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Packaging instruction	Supplier	
Part History	Supplier	
Photographs of gages and assembly equipment	Supplier	
Successful Production Trial Run, assembly of product at VC		VC
Appearance Approval Report	Supplier	
If part is designed by supplier a. DVP test matrix (incl. status of all test) b. Design FMEA (sign-off)	Supplier	
Others (e.g. Archiving plan for safety parts, etc.)	Supplier	
Part Specific Emergency Plan	Supplier	

Notes:

Re: Part submission Warrant. In cases where the customer requires his own forms for supplier PPAP, the required forms have to be used.

Re: Dimensional Results. Measurement results must be assigned to the individual parts

PPAP documentation must be sent to VC as a complete file in duplicate and together with the first samples. In case of VC's electronic submission through VC web portal, the delivery of PPAP samples must be delivered separately! The delivery must be clearly labeled as PPAP samples, separated from the series delivery.

ATTENTION: PPAP SAMPLES!

Please, pass on to Supplier Quality Assurance!

PPAP samples may not be packed together with series parts at any time.

5.15.2 Production Parts Approval

No series parts may be supplied to VC before approval. Permission regarding deviations (appendix 7) will be granted should series deliveries be needed for reasons of timing (see Item 5.16.11).

5.15.3 Tooling Information

A tooling data sheet with detailed tool lists and related information such as tool type, number of cavities, tooling concept, dimensions, tool life, capacity, machine data etc., along with photographs of the tool tag the entire tool in open position – visible cavities / form; must be provided by the suppliers to VC in the format requested by VC. Points to note here are:

1. Vibracoustic (or Customer) paid for tooling must be identified per Vibracoustic or customer specific instructions.

a. Detailed instructions for individual customers are available upon request (contact assigned SQA)

b. Check customer specific submission requirements before submitting photos.

c. Any photos that do not follow customer specific requirements or are not clear/legible will not be accepted.

2. Details described in point 1 must be submitted for each single tool or fixture.

5.16. Series Production

The supplier has to keep latest PPAP approval condition such as described in 5.15.

Any proposed changes must be notified to VC in writing min. 3 month in advance. The changes must be approved by VC before start or implementation of the change. The responsible Supplier Quality Manager (SQA of receiving plant) will determine the necessary requirements and documentation to be provided for approval.

Any cost impact related to the changes (testing, PPAP to customer …) may be charged back to the supplier.

5.16.1 Test records

The supplier must maintain production records as described in the control plan. These test records have to be assigned to individual production batches. Test records must be archived for at least 5 years min. (or according to CSRs). Test records of safety parts (A-Parts) must be kept for a period of 15 years after run off of the article. Test records must be available for review at any time by VC.

5.16.2 Early Production Containment (EPC)

Suppliers must install the Early Production Containment Plan for all pre-production deliveries and for the production ship quantity or duration specified by EPC guideline. Default: 10 x daily production volumes or until the production control plan is validated, whichever occurs later. The specified production quantity or duration is to reflect the customer´s acceleration plan to full production rate. Suppliers must follow VC EPC guidelines (OPI-01-7.4-0015).

5.16.3 Requalification Test

An annual requalification is required. The requalification includes functional testing required on the drawing, a full dimensional layout, capability analysis and material certification consistent with records submitted at PPAP. Recent test / capability data and layout results are acceptable.

As per 5.13.1, yearly requalification must be mentioned into the control plan.

5.16.4 Zero Defect – continuous improvement process

In order to minimize quality risk and to avoid waste (scrap, rework, test expenditure, etc.), the supplier evaluates process and product on a regular basis and introduces measures for continual improvement.

VC conducts supplier performance evaluation on regular basis. Results from the evaluation will be used as a basis for escalation or development activities.

5.16.5 Traceability

Suitable identification systems must be applied. The test results of a part must be traceable. The batch no. and production date must be noted on the delivery note. Supplier must be able to trace back the following information for the produced parts:

- VC Part number
- Drawing index
- Production Date / Production Batch
- Production Line / Machine
- Material Batch

During production the following must be secured:

- FIFO (First-in First-out)
- Identification of part status (Checked, not checked; OK, NOK)

5.16.6 Identification of containers, delivery notes, labeling and transport orders

The supplier's packaging must be clearly identified with the correct and legible material tag.

Detailed requirements for Delivery notes and transport orders are also described in VC General Procedure (GP_01_7.4_0009)

5.16.7 Packaging

Packaging of products must be agreed by VC and documented as part of the PPAP records. This should comply with the overall Logistics requirement for suppliers.

5.16.8 Receiving inspection by VC

VC does not conduct receiving inspection of characteristics that the supplier is contracted for, only product identification, shipping documents, and transport damage is reviewed. In any cases, Supplier liability of defective goods remains according to VC general Term and condition of purchase.

5.16.9 Non-Conforming parts

Should faulty parts be found at delivery and/or in production process, it may result in the return of the entire delivery. As soon as the supplier is notified, the supplier is obligated to ensure no further defective parts are delivered, by establishing containment activities. Stocks of finished parts must be inspected or replaced with certified material and corrective actions initiated.

The supplier is required to inform VC immediately when faulty products have been released for delivery. VC reserves the right, in case of a line stop to directly arrange inspection and rework, and to charge any expenses incurred by VC to the supplier if the supplier fails to respond to VC within 1 hour. For each complaint the supplier will receive a notification. The 8D methodology is required utilizing VC's web-based system for documenting the corrective actions. A Problem Solving Process sheet (FO_01_8.5_0160_PSP_Supplier available on VC Web Portal) may be required to be attached and submitted to VC when specified by VC for specific claims (eg. claim of VC customer..)

The containment action must be submitted to VC within 24 hours. The permanent corrective action must be completed within 10 working days after the initial notice. Extra time is possible when a defect sample part is necessary for carrying out the root cause analysis but is not available.

The risk analysis (FMEA), must be reviewed as part of the corrective action. Additional analysis and documentation may be requested by VC based on the severity of the non-conformity.

5.16.10 Settlement of cost

VC reserves the right to charge back verifiable complaint related cost from the supplier. Refer to LI_01_7.4_0016.

5.16.11 Permission for deviations

VC may grant deviation to certain process / product requirements when the deviation does not violate VC's customer requirements, affect durability, nor any governmental / regulatory requirements. Supplier request the deviation using the form mentioned in appendix no.7. Any deviation will be limited in scope, duration and/or quantity and the appropriate deviation form shall been fully signed and approved. Product shipped under a deviation must be keep separate and clearly identified in delivery.

5.16.12 Quality performance/escalation process

The quality performance of a supplier will be evaluated in two steps.

1. Ongoing, based on
   - number of supplier concerns (complaint notifications)
   - ppm (rolling over a defined number of months)

$$ppm = \frac{\text{reported defective parts}}{\text{reported supplied parts}} \times 1.000.000$$

2. Long term, based on
   - Severity of fault
   - Repeated fault
   - PPAP performance

- Result of Process Audit
- Customer focus in case of complaint
- Professional, in time failure analysis and implementation of sustainable measures

Quality Escalation Process

In case of ongoing poor quality or lack of support, Vibracoustic will initiate supplier improvement activities like following:

- Level 1: Supplier Quality Development Meeting (including strategic action plan)
- Level 2: Q-Support (VC/external support required to solve issues. All costs charged to supplier)
- New Business Hold (NBH)

The supplier shall submit the action plan three business working days in advance so that all participants can be prepared for the meeting. The action plan shall consists of at least three following areas:

Part specific Improvements	**Systematic Improvements**	**General Improvements**
- Review closed 8D's - Review open 8D's - Review firewalls & effectiveness - Global actions?	(Based on VC Complaints in the last 12 months) - Failure types - Root causes - Actions to address main failure types and root causes for all parts / materials.	- Management - Systems - KPI's - Personnel & training - Lesson learned - Logistic - Miscellaneous

The supplier is responsible to follow the progress of activities and send regular updates of status to VC. The VC team will monitor and follow-up the progress of the improvements until actions have been closed or the team agrees to stop any further activities.

5.16.13 Subcontractor

For series deliveries it is only allowed to consider subcontractors, whose parts have been used for PPAP to VC. The Subcontractor must submit a PPAP to the supplier and the supplier has to evaluate and release it before submitting the whole PPAP to VC. A change is only allowed after submission of new sample parts to VC (see 5.14. PPAP). For the new sampling it is only allowed to use approved subcontractors.

For a subcontractor change during serial production VC has to be informed in advance (see 5.14.

PPAP). The order to the subcontractor is only allowed after written agreement by VC. A delivery to VC is only allowed after full approval of PPAP by VC. In the case of a supplier change for safety critical purchased parts an intensified PPAP is mandatory.

5.16.14 Safety Critical Characteristic

Safety critical characteristics comprise in case of deviations a risk for life and limb.
Safety critical characteristics have to be 100% insurable. Sampling inspections are not sufficient. For the safety critical characteristics which can be tested via destruction only, (e.g. the compression test for metal parts) one adequate sample control per load is sufficient. However test method and sample rate have to secure 100% conformity of critical characteristic. It must be ensured, that the purchase parts will be delivered via traceable batches without exceptions.

The quantity and frequency of testing defined in the control plan must be agreed with VC in separate process before PPAP submission. A member of the engineering as well as quality department of the supplier should participate this agreement.

The supplier has to assure customer specific requirements related to Safety Critical features are followed.

The fulfilment of the safety critical parts features have to be documented completely (e.g. by a supplier certificate for each batch sent with the delivery). In case of no special agreement, the supplier must be able to send the documentation by request on the same day.

QUALITY ASSURANCE MEASURES FOR PROCUREMENT OF PURCHASED PARTS

6. RESPONSIBILITIES

Task / Function	SQA Head	QM-BU	QM-Site	Project Purchasing	Project Management	Development	SDE	SQA	Supplier	Production	GCM
Contractual agreement of the VC Global Procedure				R			C	C	C		A
Individual agreements deviating to the VC-Global Procedure	R	C		C	C	I	C	C	C		A
Control of project status report				A/R	C	C	I	I	C		I
Supplier APQP			C	I	I		C	R/A	C		
Supplier Run@Rate			C	I	C	C	C	R/A	C		
PPAP approval			A	I	I	I	C	R	C		
Approval of changes ECR			R	I	C		C	A	I	I	C
Approval of deviation requests			R		C	C	C	A	I	C	

Responsible: Process owner, responsible to carry out the business process (implementation, execution)

Accountable: Approver, responsible for the result of the business process (objectives, design, monitoring)

Consulted: Experts; two-way communication

Informed: Persons that need to be kept up-to-date; one-way communication

QUALITY ASSURANCE MEASURES FOR PROCUREMENT OF PURCHASED PARTS

7. APPENDIX / ENCLOSURES (available on VC Web portal)

No.	Type of Document	Title / Description	Enclosure
1	List	Definition of Special Characteristics	LI-01-7.3-0049
2	Operational Process Instructions	Early Production Containment	OPI-01-7.4-0015
3	List	Minimum requirements_M04 components with threads	LI_01_7.4_0082
4	List	Supplier Quality Cost Recovery Table	LI_01_7.4_0016
5	Form	Problem Solving Process Supplier	FO_01_8.5_0160
6	Form	Run@Rate suppliers (full audit)	FO_01_7.0_0103
7	Form	Permission_for_Deviation	FO_01_8.3_0002

8. VALID SUPPORTING / REFERENCE DOCUMENTS

8.1. Valid Supporting Documents

- General purchasing conditions of VC.
- Valid Scheduling Agreement with VC.
- GP_01_7.4_0009 "Logistics Requirements for Suppliers"
- General framework agreement

8.2. Valid Supporting Documents for Compound supplier only

- GP_01_7.4_0050 "Quality Manual Compound" (on Request)

8.3. Additional Information

- AIAG Manuals (latest version), PPAP, MSA, APQP, FMEA, SPC of the Big Three (GM, Ford, Chrysler).
- VDA-Manual 4.1: Assurance of Quality for Series Use
- VDA-Manual 4.2: System-FMEA

- VDA-Manual 1: Guidance on Records
- VDA-Manual 2: Assurance of quality for deliveries in the automotive industry.
- IATF 16949: Quality management systems. Special requirements in the application of ISO 9001:2000 for series and spare part production in the automotive industry
- LI_01_7.4_0082_Minimum requirements_M04 components with threads

9. DOCUMENTATION

VC will keep this procedure on file. In case of a revision the latest edition will be kept for at least 3 years after revision.