VOLKSWAGEN
AKTIENGESELLSCHAFT

Formel Q
Capability

The Formel Q Capability contains contractually agreed requirements for the companies of the Volkswagen Group to assure the quality of processes and also the components in the procurement and supply chain.

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Editions:

1st Edition – 1991
2nd Edition – January 1994
3rd Edition, completely revised edition – January 1997
4th Edition, completely revised edition – April 2000
5th Edition, completely revised edition – January 2005
6th Edition, completely revised edition – August 2009
7th Edition, completely revised edition – January 2012
8th Edition, completely revised edition – June 2015
9th Edition, completely revised edition – December 2022

The German-language edition of Formel Q Capability is binding. The companies affiliated with Volkswagen AG pursuant to §§ 15 et seq. of the German Stock Corporation Act (AktG) may define a different language version as binding for their contracts with the respective suppliers.

Published by: Volkswagen AG
Group Supply Chain
P.O. Box 1610/0
38440 Wolfsburg
Germany

Foreword

Ladies and gentlemen,

Increasing demands, global competition and cost pressure require mature products for series start-up and robust production processes. We must face up to this task together in order to be successful on the market with our products.

With this document you hold in your hands the revised version of **Formel Q Capability**, which contains the quality requirements of the companies of the Volkswagen Group, which we place on you as a supplier of products.

The Formel Q Capability is the contractually binding guidance for the assessment of the Quality Capability of the suppliers of the Volkswagen Group (1st tier suppliers) and their supply chain. The Formel Q Capability for direct suppliers and their sub-suppliers of components and materials that remain in the vehicle, shall be binding. Here, the performance of customer satisfaction in the entire supply chain is in particular focus. You as a supplier must comply with the valid Volkswagen Group demands and must also ensure implementation in your supply chain. It applies across all brands of the Volkswagen Group, as well as the worldwide subsidiaries. The Formel Q Capability is part of the inquiry and quotation procedure.

For successful cooperation, it is imperative to comply with the requirements within the supply chain prescribed in these relevant documents by means of transparent communication as well as cost and deadline discipline.

You can access the currently valid Formel Q Capability and other multilingual information and Volkswagen Group documents on the Internet: ONE. Group Business Platform (ONE.KBP) under www.vwgroupsupply.com.

Wolfsburg, December 2022

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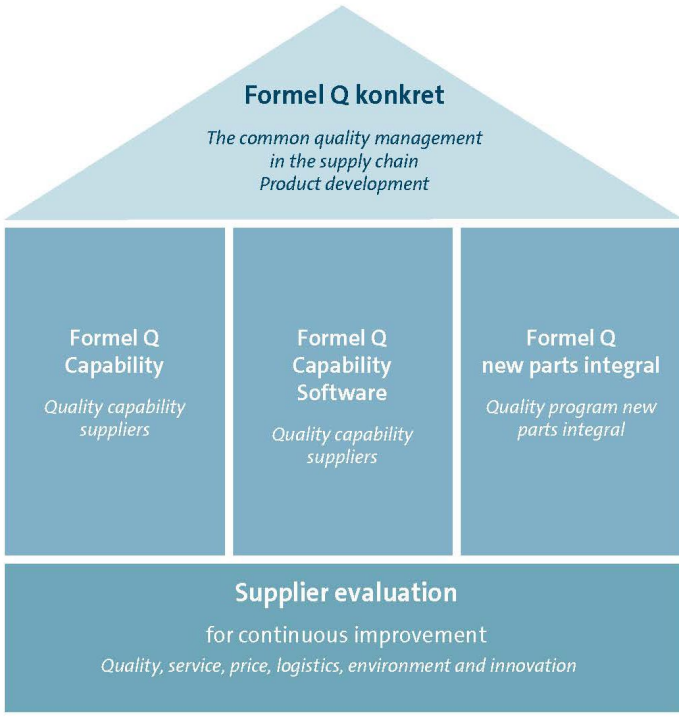
0 General Regulations

For simplification in the following sections, the contract partner respectively the receiving-, assembly plant or the responsible department of the companies of the Volkswagen Group is referred to as a "customer".



The Formel Q publication series is a valid document on the contracts that the suppliers conclude with the Volkswagen Group and its companies.

It consists of the Formel Q konkret as a cross-sectional agreement as well as the supplementary volumes Formel Q Capability Software, Formel Q New Parts Integral and the present volume of the **Formel Q Capability** including the “Formel Q Capability Appendix”. The supplementary publications in each case are in keeping with the evaluation and support of suppliers in order to obtain and maintain a high-quality and sustained delivery capability.

The basis of the present version of Formel Q Capability is the edition of the quality management agreement between the companies of the Volkswagen Group and its suppliers "Formel Q konkret". All of the following statements in this document deepen the relevant areas of this Agreement.

These documents are available at ONE. KBP is stored in the directory "Information\Business Areas\Quality Assurance\Formel Q\Formel Q Capability".

In addition, all documentations and regulations specifically listed in Formel Q are considered to be part of the contract, as well

- VDA Volume 6.3 Process Audit,
- VDA Volume 6.5 Product Audit.

In addition, the customer's technical delivery regulations and standards applicable to the respective product shall apply. Any agreed customer-specific requirements are valid in addition to the above-mentioned documents.

Information may be passed on to other Volkswagen Group companies that arise in the course of business relationships.
The disclosure of confidential information to external third parties may only take place with the written consent of the customer. The external third parties are obliged to maintain secrecy.

1 Introduction

1.1 Purpose

The evaluation system for the Quality Capability of Customer Suppliers is based on a Quality Standard for the Automotive Industry that was developed by the VDA expert group.

As required in Formel Q konkret, the QM system according to IATF 16949 is the basis for suppliers of production material. The intention is to ensure quality in the supply chain and to ensure that the ability to deliver is maintained. The fulfilment of the Requirements must be proven to the Customer by an IATF recognized certificate (third party). Alternatively certification according to VDA 6.1 is accepted.

In addition to the Quality Management System certificate, a Process / Product Audit that is comparable to VDA 6.3 / 6.5 based on Product Groups are used to assess the Quality Capability of Suppliers. Apart from the basic requirements of a QM System, it also considers the Special Product-related requirements of Volkswagen Group Purchased parts, the Production Process, and Special Technical Inspection Requirements.

Process Audits, Sub-Supplier Audits and Potential Analysis relevant for the Evaluation of Quality Capability will be exclusively conducted by trained and approved Auditors of the Volkswagen Group or its affiliated companies at the Production Location. In addition, a Supplier Technical Review, Problem Analysis or an Application Review can be conducted by the customer's employees released for this purpose.

The Evaluation conducted by VW Group Auditors provides the Assessment and Selection of Applicants / Suppliers prior to sourcing decisions. Further evaluation will be conducted during the phases of Product and Process Development as well as during the Series Production Process.

1.2 Requirements for Potential Analysis and Quality Capability Assessments

The Quality Capability of selected Suppliers and their Sub-Suppliers, must always be proven before a Purchase Order for a New Part (Forward Sourcing) or a Series Part (Global Sourcing) is placed or a relocation is agreed.

The proof can be submitted by Supplier Self Assessment (LSA) and/or Supplier Self Audit (SL) plus Supplementary Audits carried out by the customer, using the Process Audit / Potential Analysis.

Only locations with production and value-added production (e.g. surface finishing, machining, assembly, etc.) can be evaluated by a Potential Analysis or by a Process Audit. Evaluations are site-specific and do not extend to other locations (e.g. company headquarters, sales offices, out-

sourced process steps, remote locations, remote production site, workbenches, production partners, job shop, authorized third parties at the production site). This means that even corporate offices or distribution sites cannot use the results from other locations.

To assess the capability for companies that operate as full service providers, a process audit is required. The customer reserves the right to evaluate the corresponding producers/sub-suppliers.

Each manufacturing, value-added or new location of the supplier or the customer candidate must own a valid DUNS number and is registered in the LDB (supplier database). The DUNS number is site-specific and may not be transferred to other locations. A new DUNS number or changes in the DUNS Number data must be communicated in a timely manner to the customer. The data must be updated in the LDB and the responsible Audit Department must be informed of the changes.

Prior to sourcing, a positive rating (“A” or “B“) from the Customer related to the Quality Capability of the suppliers Location and the Products Groups must be available. It is required that the supplier should be qualified to quality capability classification "A" before SOP, so that confirmation by a process audit by the customer is possible at any time.

A supplier with “C”-Rating (not Quality Capable) will not be considered for nomination.

New proof of the Quality Capability is also required, if a New Product according to the Product Group Catalogue should be delivered, if previously no audit of the Quality Capability has been performed by the Customer (e.g. new Project or Location).

According to Formel Q konkret the supplier is responsible to inform any changes within the process chain well in advance of their implementation and may not implement them without confirmation by the customer.

1.3 Responsibilities for QM-System and Audit Results

The supplier is responsible for providing to the customer all results from Certification and Auditing related to the customer's products when requested. Also to be presented are documents from implemented Improvement Programs.

If IATF 16949 Certification is not awarded to the supplier, a confirmed planned Certification date is to be advised. Further progress is to be coordinated in detail with the responsible Audit department of the customer.

The coordination and communication for required follow-up actions, e.g. pursuing Improvement Programs, takes place via the responsible Audit Department of the customer.

1.4 Assessment of Quality Capability

The Total Assessment of the Quality Capability comes from individual results of each Product Group for:

- Potential Analysis,
- Process Audit with Product Audit and, if necessary, Application Review.

Other methods may influence the assessment of Quality Capability:

- Supplier Self Audit,
- Sub-Supplier Audit,
  (Evaluation of the Supply Chain,e.g. for outsourced Process Steps),
- Problem Analysis,
- Supplier Technical Review.

The procedure for the determination and assessment of the Quality Capability is outlined in the following chapters.

1.5 Target agreement for Quality Capability

The generic target of the customer is, to work with fully capable suppliers (A-Rating of Quality capability).

If the Quality Capability of the supplier's production site is classified by the customer as 'conditionally Quality Capable' at the time of the nomination, the supplier is obliged to qualify the production facility affected at the latest by the start of series production (SOP). The supplier must prove that all requirements and an A-Rating are achieved, by submitting a self-audit (SL).

In case of a supplier production site Q-Capability "B" or "C" rating issued by the customer any time during SOP delivery (series production and Aftersales), the supplier is obliged (unless otherwise agreed) to achieve an A-Rating within a period of six months after the audit. It is the supplier's sole responsibility to prove the effectiveness of the implemented measures. The supplier's self-qualification process must be restarted or continued if effectiveness cannot be proven.

The customer reserves the right to re-assess the qualification by his Group Auditors. If the review by the customer does not confirm the A-Rating of the self-audit, the customer reserves the right to start an escalation process and to hold the supplier responsible for recourse (see chapter 2.2).

Customers' requirements, which were not implemented during the first qualification loop, but were communicated to the supplier as a result of the cross-check of his self-audit, must be realized by the supplier within three months of notification. The supplier must provide proof of the Quality Capability through a new self-audit to the customer.

If the supplier does not achieve an A-Rating after three qualification loops, specific actions must be agreed. In this case, the customer reserves the right to re-assess the supply relationship.

1.6 Classification of Results and Follow-up Activities

Based on audit results the supplier is responsible for analyzing discrepancies with suitable quality management methods, to define suitable corrective actions and to schedule the implementation with stated responsibilities. It is expected that the supplier will initiate the required activities rapidly, effectively and sustainably, and as well implementing the action plan (according to the **Q**ualification **T**iming **P**lan (QTP)) rapidly and verifies the effectiveness and sustainability of such actions.

1.7 Remote-/Hybrid Audit Regulations

The assessment methods used by suppliers in the supply chain to assess the Quality Capability of their supply chain (n-tier supplier), as well as the annual self-audit (SL) of the supplier must be carried out as an on-site assessment. A justified deviation from this regulation must be notified to the customer in advance and a written consent of the responsible Audit Department of the customer must be obtained.

1.8 Methods of Formel Q – Capability in the Product Life Cycle

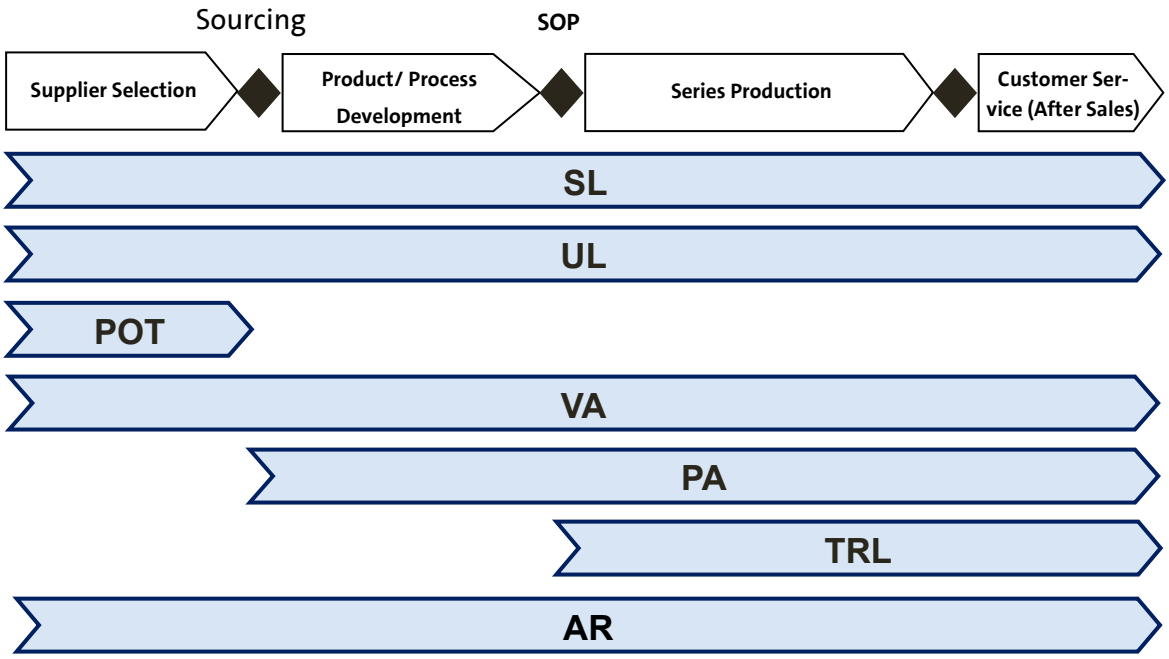


Figure 1: Methods of Formel Q Capability in the Product Life Cycle

For Explanation of the abbreviations (see Appendix A)

2 Customer Expectations

2.1 Customer Expectations

The evaluation of the Volkswagen Group Customer Satisfaction and the active introduction and follow-up of Improvement Measures are required as an elementary part of regular management reviews.

Should these Measures and Improvement Programs required by the Customer not be adequately implemented in time and repeated defects occur at the Customer, the escalation procedures ("Critical Supplier" Program) in accordance with Formel Q konkret (Cap. 4.11) will apply.

To assess the Quality Capability of the supplier, the customer reserves the right to carry out a supplier visit at any time, e.g. TRL, process and product audit.

2.2 Cost Reclaiming

If the customer incurs additional expenses (e.g. for travel expenses, daily expenses) caused by the supplier in connection with the provisions of Formel Q konkret and Formel Q Capability, these will be charged to the supplier (recourse). The costs incurred are determined according to the originator.

Especially in the following situations a Cost Reclaiming Process for additional incurred expenses has been put in place by the customer:

- If the supplier does not comply with customer's agreements and therefore a suitable measure according to Formel Q Capability must be applied by the customer on site
- If the supplier has delivery or quality problems, the customer must take appropriate measures according to Formel Q Capability (e.g. problem analysis, sub-supplier audit).
- If the classification result in the self-audit (SL) cannot be confirmed by the customer process audit (VA).
- If the supplier fulfills its obligation from the target agreement according to Chapter 1.5. does not meet the agreed scope and time frame.
- If due to the supplier, already assigned or existing production volumes are relocated to a production site other than that specified in the contract and a reassessment of the new production site becomes necessary as a result. This also applies to relocations to EOP for After Sales.
- If the customer has to determine immediate measures on site in connection with the regulations of the Formel Q Capability.
- If, due to significant changes in the supplier's processes, its supply chain or its outsourced process steps, a new assessment of the quality capability must be carried out by the

customer on site, unless this has already been agreed in the customer's procurement process. This applies up to and including End-of Service (EOS).

- If a TRL is not assessed with an overall classification of “Green”.

3 Supplier Self Audit (SL)

3.1 General

The Self-Audit is according to the Formel Q Capability, based on VDA 6.3 and including the Supplementary Requirements of the **„Formel Q Capability Appendix“**, requires that the supplier verifies proof of compliance to all requirements (legal, regulatory, customer and product-specific, at the respective production site for each product group).

The self-audit must fully cover the production area, testing areas and facilities planned and used for the Volkswagen Group.

For the overall evaluation, the Customer Specific Requirement rules to the process audit (VA) must be taken into account, see "Formel Q Capability Appendix". For the self-audit documentation the “Formsheet for Self Audit (SL)” is available on the ONE.KBP.

The conducting or sending of the latest Supplier Self Audit (SL) (including action plan if applicable) can be demanded by the Customer at any time.

3.2 Qualification of auditors for Supplier Self Audit

The Self-Audit must be conducted by certified VDA 6.3 auditors. This requirement is met with a qualification "Certified Process Auditor VDA 6.3".

Alternatively trained as a Quality Auditor, for example, according to EOQ guidelines or IATF 16949 tested and certified by appropriately accredited Certification Bodies, is accepted as a base. These basic qualifications are only recognized with additional evidence of VDA 6.3 training.

The above-mentioned certificates are only valid for a limited period of time. In order to maintain qualification, these certificates must be renewed regularly.

3.3 Conducting

The customer requires suppliers to conduct at least once a year (the valid time period is a maximum 12 months) a Self Audit for all Process Steps for the Product Groups relevant to Customer products

Self-audit serves as continuous self-monitoring of the supplier's Q capability rating. The self-audits and the self-assessment of Quality Capability must comply with the requirements of ISO 19011 and VDA 6.3. In addition to the auditors carrying out the audit, a person responsible for the production plant commissioned by top management must confirm the audit result, the individual findings and any measures planned for improvement.

The Self Audit is to be conducted according to Process Audit in Chapter 6 and in parallel with a Product Audit in Chapter 4. The outsourced processes must be also considered as well. For the overall assessment of the Quality Capability the guidelines according to the document Process Audit in Chapter 6 apply.

The evaluation is carried out by taking full account of the questionnaire P5-P7. If an "A" or "B" is determined as a result of a product group evaluation, this has no influence on the current audit rating of the customer. A self-audit with the result "C" for at least one product group must be reported to the customer immediately.

4 Product Audit

4.1 General

Process variations and low Process Capabilities tend to have negative effect on the Product Quality and consequently compliance with the customer requirements. In a Product Audit, it is possible to determine deviations from the Customer Requirements and to directly draw conclusions with regard to the affected process. Taking the detected deviations into account, it is possible to investigate and analyze the influencing processes in a prioritized manner and to implement Corrective actions.

If requested by the customer, the contents of the product audit must be agreed during the project phase. In the case of changes or complaints, the product audit must be adapted accordingly.

4.2 Conduction

The supplier is required to carry out the Product Audit according to VDA 6.5. For each product produced in series, a product audit must be carried out at least once every 12 months. For simplification, product groups/product families can be formed from the overall portfolio of manufactured products (according to VDA 6.5). The assignment of the individual product numbers to the respective product families or groups must be clearly regulated with a controlled document. The product audit must be defined on the Production Control plan. If the customer requests specific product audits (e.g. cable harnesses, body outer skin parts), the product audit must be carried out by the supplier in accordance with these regulations.

In the case of Self-Audits and Process Audits conducted by the Audit department of the Customer and their Brands, the Product Audit will be take place in parallel to series production. The results are taken into account in the evaluation of Quality Capability.

4.3 Fault Classification, Decisions, Actions

Deviations detected in the Product Audit, even non-product-related, shall be classified according to Table 1. The supplier is obliged to immediately introduce suitable measures to ensure the requirements and to check their sustainability and effectiveness within a reasonable period of time, e.g. by means of a follow-up audit. In order to document the overall result, the form "Overview of Product Audit Results" of the "Form for Self-Audit (SL)" must be completed by ONE. KBP if the supplier has not integrated the procedure of the form "Results overview Product Audit" into his internal product audit documents.

Fault-Category	Fault description/ effect	Immediate actions	Follow-up action
A	Fault will certainly result in customer complaints. • Safety risk, violation of legal regulations, breakdown. • Product cannot be sold/ function not fulfilled • Extreme surface appearance complaints.	• Risk assessment required by supplier PSCR • Quarantining/ Sorting of available stocked parts • Information to receiving plants and risk assessment • Corrective actions on the manufacturing / inspection process & if necessary 100% inspection • Intensified inspection on processes and on finished products • if necessary, full inspection before shipment. Application for permit request from engineering • Further measures to be Agreed with the Customer receiving plant (see Formel Q konkret)	• Continued analysis of process / inspection activities • Development & implementation of corrective measures • Proving of Process Capability and Zero defects • Effectiveness verification of implemented measures • If necessary, change of Specification.
B	Severe nuisance, deficiency, significantly outside predetermined standards. Objectional, annoying, customer complaints are expected, specification deviation, disturbance of the customer operation is possible.		
C	Noticeable concern, will be criticized by the customer. Customer concern and functional issues in operation are to be expected with higher frequency.	• Information to receiving plants for coordination of actions	

Table 1: Fault classification, decisions, actions

4.4 Reporting Requirement, Self-Declaration

For any A and B-faults as well as systematic* C-faults caused by the supplier, the supplier shall immediately inform the Supplier Quality department of the customer by reporting the issue. The implementation of further necessary actions is to be coordinated.

*) = If these deviations from the product characteristics are recurring or occur with all products

5 Potential Analysis (POT)

5.1 Objectives and Purpose of a Potential Analysis

The potential analysis (POT) is carried out by Volkswagen Group auditors in accordance with the procedure of VDA 6.3. It is used for the evaluation of new, unknown suppliers (applicants), unknown locations. It provides information for the Sourcing decision based on comparable manufacturing Processes and Products. The Potential Analysis refers to specially listed Parts and/or Product Groups as well as their relevant Processes.

A nomination does not necessary take place following a positively evaluated Potential Analysis, however, a negatively evaluated Potential Analysis excludes the chance for nomination.

5.2 Preparation of a Potential Analysis

In order to gain information about a supplier, a Supplier Self Assessment (LSA) and if required, QTR (Technical plausibility of Suppliers Tendered offers) will be requested from the applicant by the Procurement function of Volkswagen Group. The Supplier Self Assessment will be part of the Potential Analysis (Attachment to the report). The applicant ensures that at the time of the Potential Analysis, all relevant Processes, Systems and Documents are accessible to the audit team.

5.3 Process for a Potential Analysis

5.3.1 Requirements Catalogue

For the systematic and reproducible Analysis the catalogue of requirements for the Potential Analysis P1 will be used. Primarily the catalogue of requirements consists of selected questions from Process Elements P2 – P7 of VDA 6.3. Further Process related requirements based on the requirements of the Customer from the sourcing files can be called upon. Additionally there are further requirements listed in the Appendix document **“Additional Requirements of Formel Q Capability exceeding VDA 6.3 Requirements”** (see ONE.KBP).

5.3.2 Evaluation

The assessment is carried out using the traffic light system described in VDA 6.3. A Potential Analysis with green or yellow rating is equivalent to a "B" rating in the Quality Capability respectively "red rating" is a "C" rating in Quality Capability.

5.3.3 Report and Improvement Program

After the potential analysis has been carried out, a report is prepared on site. In order to eliminate the weaknesses identified in the context of the potential analysis, the supplier is obliged to submit a binding program (action plan) with implementation dates and follow-up activities to the responsible audit team on the planned award date.

In the case of sourcing being placed, the Improvement Program of the nominated supplier must be implemented within the agreed deadlines. The effectiveness of the measures shall be demonstrated by the supplier, with a Self Audit (SL) to the agreed deadlines before SOP, and the results shall be submitted to the responsible audit department within Volkswagen Group without being prompted.

After evaluation of the submitted self-audit, a date for the outstanding process audit according to Chapter 6 will be agreed.

6 Process Audit (VA)

6.1 General

The Process Audit is designed to assess the Quality Capability of Suppliers. It is tailored to the requirements of the Customer for Products or Product Groups and related Manufacturing Processes. This also applies to Purchased parts and outsourced Processes.

The supplier shall ensure that, at the time of the process audit, all relevant processes, systems and documents are freely accessible to the audit team and can be evaluated on the basis of Volkswagen Group products.

6.2 Process Audit during Series Production

The Process Audit in Series Production presumes a completed Product Creation Process (Product / Process Development) and includes increased focus on Customer Satisfaction and Supporting Processes.

The completion / implementation of defined actions once the Product Creation Process is finished is a Mandatory Requirement and will be verified during the Audit.

The Audit in Series Production without Process Development can be conducted with the launch of Series Production (SOP) or during the overall Manufacturing Period until End-of Service (EOS).

6.3 Process for a Process Audit

6.3.1 Questionnaire

The Process Audit is conducted according to VDA 6.3 and uses the questions of the Process Elements:

- P5: Supplier Management
- P6: Process Analysis / Production
- P7: Customer Care, Customer Satisfaction, Service

Additionally there are further requirements listed in the section **“Additional Formel Q Capability Requirements that exceed VDA 6.3 Requirements”** to be found in the Appendix document (see ONE.KBP).

6.3.2 Evaluation of Process Audit Result

The evaluation procedure is described in **"Formel Q Capability Appendix**". Additional results from the Product Audit conducted in parallel will be considered. For determining the overall result for Formel Q Capability Process Audit, the Grading guidelines of "**Formel Q Capability Process Audit Appendix”** must be applied.

A "C-classification" leads to a "new business on hold" (see Formel Q konkret). In addition, an existing certification of the QM system can be questioned.

6.3.3 Up-Grading Criteria

The criteria for an upgrade are described in the "**Formel Q Capability Appendix**". In particular, the rules from "C" to "B" must be observed.

7 Supplier Technical Review (TRL)

7.1 General

Customer reasons for a Supplier Technical Review include

- Assuring the conformity of Products and Components to legal and specified requirements.
- Verification of the Production Manufacture for the location and all securing activities on site.
- Effectiveness check of Corrective Actions.
- Randomly verification of agreed Quality Management Standards.

The Supplier Technical Review is not a substitute for Process or Product Audits, but a quality instrument to ensure the quality of purchased parts. Additionally the TRL checks the Quality organization of the supplier. The customer can at any time and at all suppliers conduct a review at short notice.

7.2 Triggers for a Supplier Technical Review

1. Preventive actions without direct trigger or reason.
2. Event orientated occasions e.g.:
   - Obligation to inform the Customer in case a detected specification deviation or changes (reliability / long term testing) has not been done.
   - Process changes and relocations of production at the site or to other sites were not displayed.
   - Necessary approvals were not obtained (e.g. BMG/ PPF-Process).
   - Product Characteristics during Series Testing have not been sufficiently verified.
   - Poor quality performance by unstable internal / external Production Processes.
   - Verification of measures (e.g. from the “Critical Suppliers” program (PKL)).

7.3 Process Supplier Technical Review

7.3.1 Notification

The Supplier Technical Review will be announced on the working day prior to execution. The announcement is made in writing to the management or quality management of the respective supplier.

7.3.2 Conducting

The TRL is focuses on a Product Group and/or a Part Number. The evaluation at the site is focusing on the actual supply contents for a Product Number or Product Family. It will be performed by qualified Associates of the customer.

7.3.3 Evaluation

The questionnaire for the Supplier Technical Review (see ONE.KBP) at the supplier are detailed in the TRL Catalogue of Requirements. For the individual criteria, the fulfillment of the requirement is evaluated and, if necessary, deviations and potential for improvement are documented.

Further information on reporting, assessment methods, evaluation criteria's, action tracking and escalation procedures contains Chapter 11.

8 Sub-Suppliers / Sub-Supplier Audit (UL)

8.1 General

The 1st tier supplier is responsible within their Supply Chain for Purchased Products and Outsourced Processes. This includes that the 1st tier supplier informed its sub-suppliers throughout the supply chain about the Volkswagen Group requirements and ensures that the requirements are known, understood and implemented

The 1st tier supplier must ensure that all risks within his Supply and Process Chain are clearly identified and also evaluated, and systematic measures will be implemented to reduce any risks.

For the evaluation of the **Supply Chain**, all requirements and evaluations according to Formel Q Capability must be fulfilled. Upon request and in the Self-Audit the supply chain is to be present. This basically includes the requirement of project specific evaluations according to IATF 16949, Risk Analysis (critical paths similar to VDA for the maturation grade assurance) and Evaluation of Quality Capability of the overall Supply Chain.

The **Process Chain** (Sub-Suppliers) includes all planned and realized value added activities and services that may have an impact on the required process and Product Quality.

Sub-suppliers can be evaluated using the methods of the FQF. The Sub-Supplier Audit (UL) is preferably used.

8.2 Sub-Supplier Audit (UL)

8.2.1 Aim and purpose of Sub-Supplier Audit

The Sub-Supplier Audit during the Sourcing Process and during Series Production must ensure the proper identification and assurance of Potential Risks within the Supplier Chain.

8.2.3 Process of a Sub-Supplier Audit

8.2.3.1 Conducting

The on-site assessment of the supply chain / outsourced process steps is carried out together with the 1st tier supplier. The 1st tier supplier must ensure that the customer has access to the relevant areas, documents and systems at the sub-supplier.

8.2.2.2 Evaluation

The sub-supplier is evaluated using the current UL questionnaire (see ONE.KBP). For the individual criteria, the fulfillment of the requirement is evaluated and, if necessary, deviations and potential for improvement are documented.

Further information on reporting, evaluation methods, evaluation criteria, action tracking and escalation procedures contains Chapter 11.

9 Problem Analysis (PA)

9.1 Aim and purpose of problem analysis

The Problem Analysis aids the Improvement of the product quality and the Quality Performance as well as the elimination of actual Quality or Field Problems.

9.2 Triggers for a problem analysis

Generally the reason for conducting a Problem Analysis is an accumulation of Customer Concerns at the individual receiving Customer plants. The Problem Analysis is always Product specific. The root cause(s) of the failures will be determined and eliminated by specially targeted analysis and solutions for the identified weaknesses in the Production Process.

9.3 Process of a Problem Analysis

9.3.1 Registration

Notice of the Problem Analysis can be communicated to the Business Management or Quality Management of the affected company one day before its planned date in written form.

9.3.2 Conducting

All processes, which could be responsible for the Quality Defects will be intensively analyzed at the supplier location or together with the supplier at the location of Outsourced Process Steps of the Supply Chain that are within the supplier's responsibility. During the Process the failure Root Causes will be systematically analyzed and Corrective and Containment Actions initiated. Responsibilities and dates for the implementation of the Corrective Actions will be defined.

The supplier has to prove the timely and effective implementation of such actions. The costumer reserves the right to verify the implementation.

Further information on reporting, action tracking and escalation procedures contains Chapter 11.

10 Application Review (AP)

10.1 General

The Application Review (AP) refers to suppliers who paint or chrome-plate customer-relevant surfaces of plastic substrates. The Application Review for the chrome plating of metal surfaces is also used. A customer-relevant surface has direct contact (vision, haptics) with the end customer.

At every point in the supply chain, the manufacturer / coater of these customer-relevant surfaces must be approved by an Application Review. For 1st tier suppliers, the Application Review is part of the process audit.

10.2 Approval Process

Process-specific catalogs of questions are available on the ONE.KBP for the supplier self-assessment. The process, system and technology descriptions are also part of the self-assessment on the Application Review. The self-assessment on the Application Review must be carried out upon request.

The Application Review of Manufacturing Processes is performed by authorized specialists of the Customer.

10.3 Process of an Application Review

10.3.1 Notification

The Application Review will be notified in writing (e.g. e-mail) to the management or quality management of the coater.

10.3.2 Conducting

An Application Review at a supplier (1st tier suppliers) is carried out as part of a Process Audit or Potential Analysis. The coating processes are evaluated using a specific questionnaire. The deviations are evaluated both in the Application Review and in the parallel Process Audit or Potential Analysis. The result of the Application Review can influence the overall result of the Quality Capability of the Process Audit or the Potential Analysis. (see grading criteria of the „Formel Q Capability Appendix“).

The report is created together with the report of the Process Audit or the Potential Analysis. The action tracking of the Application Review takes place via the action plan of the Process Audit or the Potential Analysis.

If an Application Review occurs in the supply chain, it is evaluated using the specific AP questionnaire. Any necessary cause analysis, implementation of measures and evaluation of effectiveness are planned with the AP action plan and their implementation is verified. Unless otherwise

agreed with the customer, the AP action plan must be submitted to the customer no later than 2 weeks after the Application Review has been carried out.

The individual questions of the Application Review are evaluated according to the traffic light system and form the basis for the evaluation of the overall classification.

Further information on reporting, assessment methods, evaluation criteria's, action tracking and escalation procedures contains Chapter 11.

11 Documents, Records and Evaluation Criteria of Supplier Visits

11.1 Evaluation Criteria of the Traffic Light System for UL, TRL and AP

The questionnaires for the Supplier Technical Review, Sub-Supplier Audit and Application Review are stored on the ONE.KBP. The fulfillment of the requirements is evaluated for the individual criteria of the questions and, if necessary, potential for improvement, weak points and necessary measures are pointed out. The evaluation of the individual questions as well as the overall classification are based on a traffic light system (see Table 2). The overall classification consists of the sum of the individual ratings according to Table 3.

If the overall classification is RED, immediate measures must be taken and an escalation (e.g. "Critical Suppliers" program) can be triggered. If the red overall classification occurred as part of a Sub-Supplier Audit, Problem Analysis or an Application Review in the Supply Chain, this can trigger an escalation of the 1st tier supplier. The escalation procedure and further explanations are described in Formel Q konkret.

EVALUATION OF EACH QUESTION	MEANING	NOTE
Green	The requirement of the question is met.	A note for improvement can be stated.
Yellow	The requirement of the question is only partially met (unless a product risk exists).	Deviations and improvement measures are described in the action plan.
RED	The requirement of the question is not met (product risk exists).	Deviations, weak points and emergency measures are described in the action plan.
n.b.	The requirement for the question is not assessable.	A question cannot be evaluated. In each of these questions a justification by the performer is required.

Tabel 2: Evaluation Criteria-Each Question

OVERALL CLASSIFICATION	Evaluation according to Questionnaire					
	UL 1)		TRL 2)		AP 3)	
	Yellow	RED	Yellow	RED	Yellow	RED
Green	max. 4	none	max. 2	none	max. 3	none
Yellow	max. 9	none	max. 6	none	max. 6	none
RED	more than 9	from a question	more than 6	from a question	more than 6	from a question

Tabel 3: Evaluation Criteria-Overall classification

[1] A maximum of three questions be assessed as "n.b".
[2] A maximum of one question be assessed as "n.b.".
[3] No questions can be assessed as “n.b.”.

Note: with each of the above-mentioned max. permissible "n.b." ratings(1)-(3), the limit values of the RED/YELLOW/GREEN overall classification are reduced by 1.

11.2 Report and Action Plan

The findings from the customer assessment are summarized in a report. The report is signed by a responsible employee of the supplier and by the customer's employee who carried out the overall assessment. In agreement with the customer, this can also be done digitally.

For the deviations or weak points identified during a supplier visit, the supplier must create an action plan and ensure its implementation. The action plan must be created including a qualified root cause analysis using a recognized quality management method (e.g. 5 Why, Ishikawa). The definition of the individual measures includes responsibilities, planned deadlines, processing status and proof of the effectiveness and sustainability of the implemented measures (e.g. internal audits, FMEA). Unless otherwise agreed, the action plan provided by the customer is to be used.

If deviations are identified in the supply chain (e.g. in the Sub-Supplier Audit, Application Review), the action plan is agreed with the 1st tier supplier and the n-tier supplier (e.g. painter/plater). The 1st tier supplier is responsible for tracking the measures and sending the action plan to the customer on time.

If the Application Review is part of a Process Audit (VA) at the 1st tier supplier, the measures are processed via the action plan of the Process Audit (VA).

If deadlines are missed when implementing the action plan, the customer must be proactively informed and their approval obtained.

All supplier visit information content is classified as confidential.

11.3 Escalation Procedure

In the event of deviations from the contractually agreed requirements, or insufficient target fulfillment (measures, deadlines, evidence, etc.), the customer can initiate an escalation of the supplier in the "Critical Suppliers" program" (see Formel Q konkret Chapter 4.11).

Appendix A – Abbreviations

Abkürzung	Erklärung, Definition
AP	Application Review
BMG	Engineering approval
CCC	Chinese Compulsory Certification
D/TLD	Mandatory Documentation / Technical Guidelines Documentation
DUNS No.	Data Universal Numbering System
ECE	Economic Commission for Europe
EP	Degree of fulfilment
E_{PN}	Total performance level for each product group for the series production
EOS	End of Service. From then on, spare parts will no longer be made available
FMEA	Failure Mode and Effects Analysis
FQF	Formel Q Capability
IATF	International Automotive Task Force
LDB/SDB	Supplier Database
LSA/SSA	Supplier Self Assessment (Supplier Self Information)
ONE.KBP	ONE.Konzern Business Plattform (e-commerce platform on the internet Communication between suppliers and the Volkswagen Group www.vwgroupsupply.com)
PA	Problem Analysis
POT	Potential Analysis
PPF	Production and Process Release
PSCR	Product Safety & Conformity Representative
PV	Testing Standards of Volkswagen Group
Q- Performance	Quality Performance
QM	Quality Management
QS/QA	Quality Assurance
QTP	Qualification Timing Plan
QTR	Quality Technical Requirement: Technical plausibility of the offer of a supplier to submit a tender
SL	Supplier Self Audit

SOP	Start Of Production
TL	Technical Delivery Conditions of Volkswagen Group
TLD	Technical Guideline Documentation
TRL	Supplier Technical Review
UL	Sub-Supplier Audit
VA	Process Audit (includes product audit)
VDA	Association of German Automobile Industry
Volkswagen AG	Volkswagen Aktiengesellschaft

Tabel 4: Abbreviation

Appendix B – Terminology / Definitions

Audit Department

Customer's responsible supplier audit team.

Full Service Provider

Full Service Providers are dealers without their own added value, who also have their own suitable equipment and expertise to be able to process production process and product approvals, analysis, complaints, etc. independently.

Supplier

In Formel Q, the term supplier is synonymous with 1st Tier-suppliers (direct suppliers). It describes the organization that has received an order from companies in the Volkswagen Group and is therefore a contractual partner.

Obligatory Characteristics

Include not only those determined by the Customer D / TLD characteristics, but possibly even those features which the supplier considers as security-related and has defined internally as obligatory.

New business on hold

A Supplier Manufacturing site is blocked for further orders at a “C” classification.

Production site

The production site is the site where the products/components are produced. The customer reserves the right to audit this location using a suitable assessment method.

In the event that production is spread over several locations, the customer reserves the right to decide which methods are to be used to evaluate these locations in the supply chain.

Sub-Supplier (2nd – n-tier supplier)

The Sub-Supplier is a Contract Partner in the ‘’Supply Chain” of the 1st tier supplier.

The 2nd – n-tier supplier is therefore the customer's sub-supplier and provides part of the added value.

Volkswagen Group

Volkswagen Group, comprises all Brands and Regions as well as Offshore enterprises.

Volkswagen Group Auditor

Approved FQF Supplier Auditor of the Volkswagen Group