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.

This part of the contract will only be available to Suppliers in the current version electronically through the Group Business Platform (KBP) under www.vwgroupsupply.com.

The German-language edition of the Formel Q Capability is binding.

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Foreword

Increasing customer requirements, global competition and cost pressures require mature products for serial production and robust production processes along the supply chain with a preventive orientation to avoid errors. This challenge we must face together with our suppliers in order to be successful with our products in the market and successfully secure our common future.

Here, the performance of customer satisfaction in the entire supply chain is in particular focus.

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 (n tier suppliers).

This edition provides a substantial revision and further development.

The Formel Q Capability for direct suppliers and their sub-suppliers of components and materials that remain in the vehicle, shall be binding. 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.

To improve communication, refer to multilingual information and documents on Volkswagen Group Volkswagen Group Business Platform under www.vwgroupsupply.com.

This edition applies in principle to new awards from the date of publication.

Wolfsburg, June 2015

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Quality Management Agreements for Purchased Parts (new reduced)

The customer specific Quality Requirements for the Volkswagen Group are specified in the Formel-Q documents as shown below.

**Modules:**

![Quality Management Agreements for Purchased Parts Diagram](image)

**Formel Q**

**Formel Q Konkret**
Quality Management Agreement between the companies of Volkswagen Group and its suppliers

**Formel Q Capability**
Supplier Quality Capability

**Formel Q Software**
Supplier Quality Capability

**Formel Q New Parts Integral**
Qualification Programme New parts Integral

**Supplier Assessment**
for Continuous Improvement
Quality, Service, Price, Logistics, Environment and Innovation

“Philosophy“

Higher Level Agreement as Part of the Contract

Evaluation Systems and supporting Processes as Part of the Contract

Sustainability as a principle

Figure 1: Quality Management Agreements Purchased Parts
0 General Regulations

For simplification in the following sections, the receiving-, assembly plant or the responsible department of the groups within the Volkswagen Group will be named Customer.

0.1 Additional Applicable Binding Documents

The documents of this latest edition have been uploaded on the Group Business Platform (KBP) under www.vwgroupsupply.com in "Information \ Divisions".

In addition:

• The Technical Specifications and Standards applicable to a particular product
• The Legislation and Regulations,
• The VDA volumes "Quality Management in the Automotive Industry" and "The joint Quality Management in the Supply Chain" (Series of the Association of the Automotive Industry (under www.vda-qmc.de) in its currently valid version,
• ISO / TS 16949, (alternatively VDA 6.1).

There is disclosure of information to other companies of the Volkswagen Group in the context of the business relationship.
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.

Then the QM-System according to ISO/TS 16949, alternatively VDA 6.1, is the basis for Suppliers of Production Material, and the fulfilment of the Requirements must be proven to the Customer by an IATF recognised 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 are used for Special Product Groups 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.

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.

For further information for Supplier Evaluation see Formel Q Konkret.

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 Self-certification and Audit of the Suppliers plus Supplementary Audits carried out by the responsible departments of 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, outsourced 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 can not use the results from other locations.
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. The new DUNS number or changes in the DUNS Number data must be communicated in a timely manner to the customer and updated in the LDB.

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.

Volkswagen Group Purchasing must ensure that the intended supplier has already been informed of all Customer criteria and Customer requirements and has access to the Group Business Platform (www.vwgroupsupply.com), they are to be referred to by the supplier for calculation of the quotes. With the release of the access to the Group Business Platform, the Supplier must complete and maintain the Supplier database for each DUNS-number.

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. A Supplier with “C”-Rating (not Quality Capable) will not be considered for nomination. The Supplier is obliged to reach “A” Quality Capability Rating before SOP.

According to Formel-Q Konkret the supplier is responsible to inform any changes within the process chain well in advance of their implementation.

1.3 Responsibilities for QM-System and Audit Results

The Supplier is responsible for providing to the customer all results from Certification/Auditing as well as Self Audits when requested. Also to be presented are documents from implemented Improvement Programmes.

If ISO/TS 16949 or alternatively VDA 6.1 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 Volkswagen Group Quality Assurance Audit Management.

The coordination and communication for required follow-up actions, e.g. pursuing Improvement Programmes, takes place via Volkswagen Group Supplier Quality or the individual Brands/ affiliated Companies Audit Departments.
1.4 Assessment of Quality Capability

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

- Self Audit
- Process Audit with Product Audit
- Evaluation of the Supply Chain, e.g. for outsourced Process Steps
- Project related determination of Q Capability through Product Specific and Project Specific risk estimations.

The procedure for the Determination and Assessment of the Quality Capability is outlined in the following chapters.

1.5 Target agreement for Quality Capability

To ensure the quality of the Components / Modules to which the companies of the Volkswagen Group's are entitled, the Supplied Components / Modules should be produced in a Production Facility with an “A” rating.

If the Quality Capability of the Production / Development location of the supplier is not rated “A” at the time of the award or at a later date, the supplier must qualify the affected Production / Development facility so that an “A” rating is achieved.

Cost reclaiming (see section 2.2) according to "target agreement for quality capability" plus the travel expenses will be made in the following cases:

- The failure to achieve the “A”-rating with a Self-Audit (SL).
- Not sending a requested Self-Audit (SL) on time.
- The refusal to send a requested Self-Audit (SL)
- The failure to achieve the ‘A rating’ during the Audit (VA)

1.6 Classification of Results and Follow-up Activities

Based on Audit results the Supplier is responsible for Analysing discrepancies, 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 Improvement Programme rapidly and verifies the Effectiveness and Sustainability of such Actions.

After implementation of the Improvement Programme, a Self Audit of the Supplier is required to verify the sustainable efficiency of the Programme.

A new Evaluation and rating can be conducted by a Group Auditor when the Quality Performance is not acceptable or as a preventive measure.
1.7 Scope of Formel Q Capability in the Product Life Cycle

Figure 2: The Product Life Cycle of Formel Q Capability

For Explanation of the abbreviations (see Annex A)
2 Customer Expectations / Cost Reclaiming

2.1 Customer Expectations

The Customer requires its suppliers to achieve an “A” Rating according to the Formel-Q Capability as their target. The implementation of a Continuous Improvement Process (KVP) and the follow-up of the Zero-Defect Strategy are the basic elements for such a Process.

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 Programmes required by the Customer not be adequately implemented in time and repeated defects occur at the Customer, the Escalation Principle (Programme “Critical Suppliers”) in accordance with Formel Q Konkret will apply.

The Customer reserves the right at any time to carry out a Process and Product Audit, for example with Critical Projects or unacceptable response time of the Supplier.

2.2 Cost Reclaiming

A Cost Reclaiming Process will be initiated if a Supplier causes additional expenses in the form of travel costs and daily expenses for the Customer Auditors, where the results of the Audit do not confirm the results of the Supplier (target not met). The “Cost Reclaiming Process” will be applied depending on the daily expenses incurred (number of man days of the Volkswagen Group Auditors at the Supplier) and will include the travel costs as a fixed amount for domestic travelling and for travelling abroad.

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

- If due to the agreed to Non-compliance of a Supplier, a Customer Process Audit or a Problem Analysis is required.
- If unscheduled Customer activity or Problem Analysis caused by Delivery or Quality Problems of Suppliers is initiated.
- If a Self Evaluation of the Supplier by Self Audit cannot be confirmed in the Customer Process Audit.
- If the “A” Rating will not be achieved within the agreed time frame, and therefore an additional Customers Process Audit is required (see “target agreement for quality capability”).
- If a Supplier relocates already sourced or existing supply contents to another Manufacturing site, different from the one declared on the “Nomination
“Agreement” (Contract), and therefore a new Assessment of the new Manufacturing site will be required.

- If significant / important Process changes and also change of the Supply Chain or outsourced Process Steps occur, which require a new Sampling Process and/or assessment of the Quality Capability.
- If in the implementation of an action from the Formel Q Capability (such as at a TRL) immediate measures are defined, or the TRL is not rated as "green", the costs incurred can be charged to the Supplier.
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 (see "Formel Q Capability System"), requires that the Supplier verifies proof of compliance to all requirements (legal, regulatory, customer and product-specific, its own requirements and specifications of the certification ISO / TS 16949 alternatively VDA 6.1) at the respective production site for each product group).

Concerning this, the rules for the evaluation of Process Audit should be considered (see section 1.3 in the "Formel Q Capability system"). Forms for Self-Audit review are stored on the KBP. The full questionnaire is to be considered during the evaluation.

The Supplier Self Audit is part of the Continuous Improvement Process and has the purpose to achieve the “A” Rating. After achieving a Self Audit with an “A”-rating, the Customer reserves the right to conduct a Process and Product Audit to confirm the evaluation at the supplier to verify the “A”-rating status of the supplier. The valid rating is the Customer evaluation.

The target is that the Supplier’s manufacturing site will, after the 2nd Self Audit, achieve the “A” Rating. Should an “A” Rating not be achieved by the Self Audit in a timely way, the Customer reserves the right to conduct an Audit at the Supplier. If the requirement of the “A” Rating is not met by the Self Audit of the Supplier for reasons which are the responsibility of the Supplier, the costs for the Customer Audit will be charged to the Supplier. For further cost reclaiming details – see Chapter 2 Customer Expectations / Cost Reclaiming.

The conducting and sending of a Self Audit including Improvement Programme can be demanded by the Customer at any time.

3.2 Conducting

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 ISO / TS 16949 tested and certified by appropriately accredited Certification Bodies, is accepted as a base. These certificates are limited in time and may be extended only in cases of proven audit experience. These basic qualifications are only recognized with additional evidence of VDA 6.3 training.
As part of the Self Audit, the Supplier is responsible to internally verify the effectiveness of the Improvement Programme. The Customer expects the Supplier Self Audit to cover more than just identified areas of concern from the Improvement Programme; otherwise it will not be valid. 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 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.
4 Product Audit

4.1 General

Process variations and low Process Capabilities tend to have a 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 analyse the influencing processes in a prioritised manner and to implement Corrective Actions.

4.2 Conducting and Actions

The Supplier is obliged to conduct Product Audits according to VDA 6.5. The Product Audit shall take place at least every 12 months for each Product manufactured as a Series Production part. For simplification, in the overall portfolio of Manufactured Products Categories / Product families can be formed (analog VDA 6.5). The detailed procedure is bound to guidelines from the Engineering Specifications and supporting Standards requirements (e.g. “Group Guideline for Product Audit Wire Harness”) that are included in the contract. The Product Audit must be defined on the Product Control plan. The Customer conducts problem orientated Product Audits in parallel to the Process Audits at a Supplier with the focus to assess relevant Product Characteristics from a Customer point of view and to identify Critical Processes.

During Self Audits and Process Audits conducted by the Audit department of the Customer and their Brands, the Product Audit will take place in parallel to the Series Production. The results of the Product Audit will be considered when evaluating Quality Capability.
4.3 Fault Classification, Decisions, Actions

The Supplier is responsible for implementing suitable measures and verify their effectiveness and sustainability for any discrepancies identified during the Product Audit, within a reasonable time period, e.g. by re-audits (see table 1).

<table>
<thead>
<tr>
<th>Fault Category</th>
<th>Fault description/ effect</th>
<th>Immediate action</th>
<th>Follow-up action</th>
</tr>
</thead>
</table>
| 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 | - 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 100% inspection before shipment;  
- Permit requested 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. | - Information to receiving plants for coordination of actions | |
| C              | Noticeable concern, will be critised 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.
5 Potential Analysis (POT)

5.1 Objective and Purpose of a Potential Analysis

The Potential Analysis (POT) will be conducted according to VDA 6.3 procedures by Volkswagen Group Auditors. 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 for a Potential Analysis

In order to gain information about a Supplier, a 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 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 Group Business Platform)

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.
5.3.3 Report and Improvement Programme

The Supplier is obliged to submit to the responsible Quality Assurance Department the Improvement Programme with timing plan and follow up activities. In the case of sourcing being placed, the Improvement Programme of the nominated Supplier must be implemented within the agreed deadlines (e.g. Nomination Agreement). The effectiveness of the measures shall be demonstrated by the Supplier, with a Self Audit to the agreed deadlines before SOP, and the results shall be submitted to the responsible audit department within Volkswagen Group without being prompted.
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.

Insufficient compliance could put an existing certification of the QM-System into question and could lead to a Customer Rating “new business on hold” status. (See Formel Q Konkret).

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.

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 Group Business Platform).

6.3 Evaluation of Process Audit Result

The evaluation procedure is described in Appendix "Formel Q Capability Process Audit". 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 must be applied.
6.4 Up-Grading Criteria

An up-grading can only take place through a Customer Audit at the Production site of the Supplier after the successful and sustainable implementation of the Improvement Measures.

An upgrading from C to B will only be established once a “robust B” rating during a Customer Audit is reached. (i.e. degree of fulfilment greater than or equal 85% (see VDA 6.3)
7 Quality Verification Audit for D/TLD-Parts (D/TLD)

7.1 General

Vehicle Manufacturers are subject to certain conditions resulting from legislation which must be fulfilled as a minimum requirement for all Series vehicles. This means that all Suppliers have to maintain verification documentation, which despite the Product Liability (liability irrespective of responsibility), should protect the Suppliers and the Vehicle Manufacturers against any subsequent damage, for instance a prohibition to sell their Products and penalties for non-performance. (See Product Liability laws of the countries where the Customer vehicles are distributed).

In order to sufficiently comply with the Manufacturer’s liability, the Customer has gone beyond the normal legislation, also there is the obligation to verify the so-called Function Important Parts (FWT).

In addition to the general requirements of the Quality Management System, Suppliers must maintain verification for individual D/TLD parts. This data must be kept for a minimum of 15 years after last production (see VDA Volume 1). This also includes the following documents that are identified with “D” or “TLD”, these can be Drawings, Tables, Production Release Documentation, Technical Delivery Specifications, Test Specifications, Sample Reports, and other Quality Records, which can be demanded as proof and which can relieve the party of liability.

Verification Documentation also includes information regarding Planning Type activities, the selection and qualification of Personnel, suitability of Test Equipment, as well as Process Capability investigations and correspondence.

If there is a claim and/or if the Customer so requests, the Supplier must be prove that he has done everything in his responsibility, as the supplying company, to eliminate any faults and defects in their particular product.

Suppliers are required to apply a systematic verification process for all D/TLD parts.

As proof of effective implementation of the specific requirements the Supplier is required, using the Questionnaire for D/TLD (see supporting documents on the Group Business Platform), to conduct every 12 months a Self Audit which has a valid period of max. 12 months. This shall be conducted self reliantly for each manufacturing location by a Self Audit and must be documented. The Supplier is responsible to apply the process in the same way within his Supply Chain, for Bought-in Parts and Outsourced Process Steps. The date of the latest successfully passed D/TLD Self Audit must be documented on the BeOn system at the time of the Initial Sampling Process.

If shortcomings are identified during the Audit, it is expected that the Supplier will implement required improvements immediately of his own accord.
The implementation of Improvement Measures and their effectiveness are to be verified by the Supplier by conducting a new D/TLD Audit, this is within their own responsibility. Required documentation is to be traceable.

Results of the Self Audit are to be kept for at least 15 years and to be made accessible for any verification by the Volkswagen Group at any time. The evidence of activities by the Supplier to secure and comply with Quality Requirements is to be guaranteed at all times.

For the verification process all defined Standards according to VDA Volume 1 and Volume 6 Part 1, ISO/TS 16949 as well as Customer Specific requirements (amongst others the Formel Q Konkret) are to be considered.

The Customer reserves the right, to verify the compliance with the requirements at the Supplier by Process Audits, Technical Reviews, D/TLD audits or other supplier checks.

Upon request the results for the D/TLD Self Audit are to be accessible to the Customer.

7.2 Definition of Product Groups / Parts Selection

The Supplier must ensure, that all D/TLD parts and all specified characteristics which must be verified, are being taken into consideration. During the Audit for each individual D/TLD characteristic, the respective Products must be selected accordingly to verify the requirements during a Process and Product Audit. The selection of such reference parts will be taken from a supply list for "D/TLD Parts for the Customer" at the Supplier, which must be kept up to date. The appropriate sample size for the Product Audit must be defined according to the Part and the features, i.e. the products will be picked from a supply list on which all the D/TLD characteristics are listed. Additionally the Supplier as the nominated specialist for the Product and the Manufacturing Process is required to identify any relevant characteristics additional to the Customer specified ones, as they may be relevant for function and safety of the product.
7.3 Evaluation of Individual Questions / Audit Results

Every applicable Question is evaluated in terms of consistent compliance, even when the process is secured.

<table>
<thead>
<tr>
<th>Situation</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requirements completely fulfilled</td>
<td>yes</td>
</tr>
<tr>
<td>Requirements are not or not adequately fulfilled.</td>
<td>no</td>
</tr>
</tbody>
</table>

Table 2: Evaluation

All of the applicable Questions must be complied with; the Supplier must resolve all of the deviations by implementing an Improvement Programme. If the Supplier identifies deviations, which could directly influence the Product Quality (e.g. missing test device), Immediate Actions must be defined by the Supplier, which immediately secures the Product Quality.

If the Supplier is still not in a position to fulfil the requirements, he must immediately inform contacts in Procurement at the receiving factory / plant of the Volkswagen Group and the affiliated companies.

7.4 Audit Report / Improvement Programme

The report includes the following Documents and Verification:

- Cover sheet “Quality Audit, Verification for D/TLD parts”, specifies the part selection, the D/TLD characteristics, results from the Product Audit (within a valid period of max. 12 months) and the fulfilment of characteristics for which verification is compulsory. Defining Immediate Actions is required in the event that Customer Requirements are not complied with. The deadlines for an Improvement Programme that might be required are set (completion date of the entire action to be implemented).
- Catalogue of requirements, Verification Audit for D/TLD parts with evaluation.(see Group Business Platform)
- If deviations to the questions in the list of requirements are found (the weak points / measures must be specified, together with the date that they will be resolved and the responsible personnel).
- For components during the Pre-Series phase, the Supplier must ensure that all questions by 0-series (deadline for Note 1 with Sampling) will be answered with a “Yes”.
- For components in Series Production, the supplier must define where discrepancies are found, take immediately emergency measures and inform the Quality Assurance of the Receiving Plant.
- For non-compliance with the above points, the rating of the Quality Capability will be downgraded to a "C" rating (New Business on hold), if necessary Supplier will be placed in the Program "Critical Suppliers".
- The identified weaknesses must be completed by the date specified.
• Overview of the results of the Product Audit with the test results, including all D/TLD characteristics which need to be identified.

A systematic and consistent approach is applied during Verification which is examined randomly and evaluated through the D/TLD Self-Audit by the Supplier and by the Customer through Process Audits.

7.5 Identification of the Technical Documents

The Customer has two identification codes that have the same degree of importance (the old “D” and the new “TLD”).

If the supplier uses identification other than the above-mentioned marking for its documents and records, there has to be correlation table for the above identification requirements (i.e. Overview Matrix with the markings for all customer and internal labeling) as a controlled standards documentated guide.
8 Supplier Technical Review (TRL)

8.1 General

As part of the Volkswagen Group’s Quality Strategy, Customer reasons for a 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 and Verification of agreed Quality Management Standards.

The Technical Revision Supplier is not a substitute for Process or Product Audits. Additionally the TRL checks the Quality organisation of the supplier. The Customer can at anytime and at all Suppliers conduct a review at short notice.

8.2 Reasons for Conducting a TRL

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.
   - Manufacturing site or location change has not been reported, BMG / PPF approvals e.g. EMPB were not obtained.
   - Product Characteristics during Series Testing have not been sufficiently verified.
   - Poor quality performance by unstable internal / external Production Processes.

8.3 Notification

The Technical Review will be notified in writing to the Management of the affected Supplier on the day before the audit will take place by Fax or via another communication method.

8.4 Conducting a TRL

The TRL focuses on a Product Group and/or a Part Number. It will be performed by qualified Associates of QS-Purchasing Customer Organisation or Volkswagen Group Auditors.
8.5 Evaluating a TRL

The Questionnaire for the Supplier Technical Review (see supporting documents on the Group Business Platform) at the Supplier are detailed in the TRL Catalogue of Requirements. The evaluation at the site is focusing on the actual supply contents for a Product Number or Product Family. The individual criteria for compliance to the requirements will be assessed and if required, the demonstrated necessary actions for improvement be stated. The assessment of the individual questions will follow the traffic signal system shown in Table 4 in Appendix C. Adding together the rating of each question results in the overall classification, this is also follows the traffic signal system (see Table 5 in Appendix C).

A red Traffic Light initiates an Escalation (e.g. Critical Supplier Programme). The Escalation Principle and further explanations are described in Formel Q. Konkret.

8.6 Report and Improvement Programme

After the TRL has been completed, a Report will be issued at the site. To resolve the identified discrepancies, an Improvement Programme will be agreed with the Supplier Management. Implementation dates for the TRL must be reported in writing by the due dates to the responsible contacts at the Customer.
9 Sub-Suppliers (UL)

9.1 Objective

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.

9.2 General

The Supplier is responsible within their Supply Chain for Purchased Products and Outsourced Processes. This includes that the Direct 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 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 ISO/TS 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 realised value added activities / services that may have an impact on the required process and Product Quality.

The Customer reserves the right, to review such documentation and to verify the Evaluation of the Supplier, e.g. by mutual on-site Assessments with the direct supplier (1st tier supplier) within the Supply Chain or for Outsourced Process Steps. Basically the evaluations of the Supplier Chain can be taken into consideration for the overall Quality Capability. The evaluation will be conducted according to the actual Sub-Supplier Management questionnaire or with the Process Audit Process as explained above (see Group Business Platform). With a negative evaluation the Customer reserves the right to take this into account for rating the Direct Supplier. The evaluation is based on the traffic signal system for the individual assessment of each question, as well as in the overall classification. The criteria of the traffic light system are described in Appendix "C".
10 Problem Analysis (PA)

10.1 General

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 eliminated by specially targeted analysis and solutions for the identified weaknesses in the Production Process.

The Problem Analysis is conducted by experts from the Quality department of a Customer receiving plant who are, if needed, accompanied by experts from different departments.

Also the Problem Analysis aids the Improvement of the Purchased Parts Quality Performance as well as the actual Quality or Field Problems.

10.2 Conducting / Process

All Processes, which could be responsible for the Quality Defects will be intensively analysed 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 analysed and Corrective 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. Volkswagen Group Quality Assurance reserves the right to verify the implementation.

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 by fax or via another communication method.

10.3 Escalation Principle

If there is no effective correction of the Problems guaranteed, an Escalation Process as described in the Formel-Q Konkret, will be an optional measure
11 Applications Review (AP)

11.1 General

The Applications Review (AP) is related to the Suppliers, who treat customer relevant surfaces of Plastic substrates with coatings or refine such surfaces. A customer-relevant surface has direct contact (vision, haptics) to the end customer. Manufacturer of customer-relevant surfaces are measured using a brand-specific method and released for procurement decisions. At any point in the Supply Chain the manufacturers of these customer-relevant surfaces must be released by an Applications Review. For Direct Suppliers the Applications Review is part of the Process Audit.

11.2 Approval Process

The Supplier Self-Audit is available on the Group Business Platform, Process-Specific questionnaires are available (see vwgroupsupply.com) part of the Self-Audit is also a Process, Plant and Technology description. The Self-Audit should be carried out upon request.

The Applications Review of Manufacturing Processes is performed by authorized specialists of the Customer. The classification is based on the traffic signal system in the individual evaluation of each question, as well as for the overall classification. The criteria of the traffic light system are described in Appendix C.
12 Documents and Records of Supplier Visits

After completion of the Potential Analysis, the Process / Product Audits, the Quality Audits for D/TLD-parts, the Problem Analysis and/or a Technical Revision at Suppliers, the required Actions will be discussed with the Supplier and Dates for the Improvement Programme and its implementation defined. The findings from the Customer assessment are presented in summary in a report according to the facilities.

Note: The Customer forms can be found on the Group Business Platform (www.vwgroupsupply.com) under Quality Documents online. The report must be signed by a responsible Manager of the Supplier and the responsible associate of the Customer.

The information about the Supplier visit, the Assessment Results and the Reports will be communicated within the Volkswagen Group. All Supplier visit information content is classified as confidential.

The Supplier is responsible for preparing the Improvement Programme, also adding other Improvement Information and to submit the updates to the responsible department of the Customer within the agreed Due Dates. The Improvement Programme must be updated with detailed information and with planned Corrective Actions, the individual implementation dates with a status as well as naming the responsible individuals. Should any Due Dates be exceeded, it is at the discretion of the responsible representative at the Customer to decide whether the situation is to be Escalated (see also Formel Q Konkret “Critical Supplier Programme”).
### Appendix A – Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2TP</td>
<td>2 Day Production, see Formel Q New Parts (QPN)</td>
</tr>
<tr>
<td>ABG</td>
<td>General Type Approval</td>
</tr>
<tr>
<td>AP</td>
<td>Applications Review</td>
</tr>
<tr>
<td>BeOn</td>
<td>Sampling Online</td>
</tr>
<tr>
<td>BMG</td>
<td>Engineering approval</td>
</tr>
<tr>
<td>CCC</td>
<td>Chinese Compulsory Certification</td>
</tr>
<tr>
<td>DFU</td>
<td>Data Telecommunication</td>
</tr>
<tr>
<td>DOT</td>
<td>Department of Transport</td>
</tr>
<tr>
<td>D/TLD</td>
<td>Mandatory Documentation / Technical Guidelines Documentation</td>
</tr>
<tr>
<td>DUNS-Nr</td>
<td>Data Universal Numbering System - Number</td>
</tr>
<tr>
<td>ECE</td>
<td>Economic Commission for Europe</td>
</tr>
<tr>
<td>EDI</td>
<td>Electronic Data Interchange</td>
</tr>
<tr>
<td>EMPB</td>
<td>Initial Sample Report</td>
</tr>
<tr>
<td>EP</td>
<td>Degree of fulfilment</td>
</tr>
<tr>
<td>EPN</td>
<td>Total performance level for each product group for the series production</td>
</tr>
<tr>
<td>FAQs</td>
<td>Frequently Asked Questions</td>
</tr>
<tr>
<td>FiFo</td>
<td>First In First Out</td>
</tr>
<tr>
<td>FQF</td>
<td>Formel Q Capability</td>
</tr>
<tr>
<td>FWT</td>
<td>Function Important Parts</td>
</tr>
<tr>
<td>IATF</td>
<td>International Automotive Task Force</td>
</tr>
<tr>
<td>IMS</td>
<td>International Material Data System</td>
</tr>
<tr>
<td>IO</td>
<td>OK</td>
</tr>
<tr>
<td>KBP</td>
<td>Group Business Platform (e-commerce platform on the internet Communication between suppliers and the Volkswagen Group. <a href="http://www.vwgroupsupply.com">www.vwgroupsupply.com</a>)</td>
</tr>
<tr>
<td>KRIAS Nr.</td>
<td>Creditor information and billing system number (Volkswagen Internal supplier number)</td>
</tr>
<tr>
<td>KVP</td>
<td>Continuous Improvement Process</td>
</tr>
<tr>
<td>LDB</td>
<td>Supplier Database</td>
</tr>
<tr>
<td>LSA</td>
<td>Supplier Self Information</td>
</tr>
<tr>
<td>PA</td>
<td>Problem Analysis</td>
</tr>
<tr>
<td>POT</td>
<td>Potential Analysis</td>
</tr>
<tr>
<td>PPF</td>
<td>Production and Process Release</td>
</tr>
<tr>
<td>PSB</td>
<td>Product Safety Manager</td>
</tr>
<tr>
<td>PV</td>
<td>Testing Standards of Volkswagen Group</td>
</tr>
<tr>
<td>QM</td>
<td>Quality Management</td>
</tr>
<tr>
<td>QS</td>
<td>Quality Assurance</td>
</tr>
<tr>
<td>QTR</td>
<td>Quality Technical Requirement: Technical plausibility of the offer of a supplier to submit a tender.</td>
</tr>
<tr>
<td>QPN</td>
<td>Qualification Programme New Parts</td>
</tr>
<tr>
<td>SB</td>
<td>Self Assessment</td>
</tr>
<tr>
<td>SI</td>
<td>Sanctioned Interpretation</td>
</tr>
<tr>
<td>SL</td>
<td>Self Audit</td>
</tr>
<tr>
<td>SOP</td>
<td>Start of Production</td>
</tr>
<tr>
<td>TL</td>
<td>Technical Delivery Conditions of Volkswagen Group</td>
</tr>
<tr>
<td>TLD</td>
<td>Technical Guideline Documentation</td>
</tr>
<tr>
<td>TRL</td>
<td>Supplier Technical Review</td>
</tr>
<tr>
<td>UL</td>
<td>Sub-Supplier Audit</td>
</tr>
<tr>
<td>VA</td>
<td>Process Audit (includes product audit)</td>
</tr>
<tr>
<td>VDA</td>
<td>Association of German Automobile Industry</td>
</tr>
<tr>
<td>Volkswagen AG</td>
<td>Volkswagen AG</td>
</tr>
<tr>
<td>Zsb.</td>
<td>Assembly</td>
</tr>
</tbody>
</table>

Table 3: Abbreviation
Appendix B – Terminology / Definitions

Direct Supplier (1st Tier Supplier)
Direct Supplier is the contract partner of the Customer and the one who received the Order for the delivery to the receiving plant (customer plant) of the Customer.

Supplier
The term Supplier is equivalent with the term Direct Supplier (1st Tier Supplier) in the Formel Q. It describes the organization that has been awarded a contract by the Volkswagen Group companies and thus contractors.

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.

Directed Parts
A Manufacturing Organisation of assemblies has to use parts where the Customer dictates from which Suppliers they can be obtained, it is called Directed Parts (according to VDA Volume 2).

Sub-Supplier (2nd – n Tier Supplier)
The Sub-Supplier is a Contract Partner in the “Supply Chain” of the Direct Supplier (1st Tier Supplier). The 2nd – n Tier Supplier therefore is the Sub-Supplier of the Volkswagen Group. In ISO/TS 16949 he is defined as “Supplier”, earlier it was called “Sub-Contractor”.

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
Appendix C – Evaluation Criteria of the Traffic Light System (UL, TRL and AP)

<table>
<thead>
<tr>
<th>EVALUATION OF EACH QUESTION</th>
<th>MEANING</th>
<th>NOTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>GREEN</td>
<td>The requirement of the question is met.</td>
<td>A note for improvement can be stated.</td>
</tr>
<tr>
<td>YELLOW</td>
<td>The requirement of the question is only partially met (unless a product risk exists)</td>
<td>Deviations and improvement measures are described in the improvement programme.</td>
</tr>
<tr>
<td>RED</td>
<td>The requirement of the question is not met (product risk exists)</td>
<td>Deviations, weak points and emergency measures are described in the improvement programme.</td>
</tr>
<tr>
<td>n.b.</td>
<td>The requirement for the question is not assessable.</td>
<td>A question cannot be evaluated. In each of these questions a justification by the auditor is required.</td>
</tr>
</tbody>
</table>

Table 4: Evaluation Criteria-Each Question

<table>
<thead>
<tr>
<th>OVERALL CLASSIFICATION</th>
<th>Evaluation according to Questionnaire</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>UL 1)</td>
</tr>
<tr>
<td></td>
<td>YELLOW</td>
</tr>
<tr>
<td>GREEN</td>
<td>max. 4</td>
</tr>
<tr>
<td>YELLOW</td>
<td>max. 9</td>
</tr>
<tr>
<td>RED</td>
<td>more than 9</td>
</tr>
</tbody>
</table>

Table 5: Evaluation Criteria-Overall classification

1) A maximum of three questions be assessed as "NB".
2) A maximum of one question be assessed as "NB".
3) No questions can be assessed as "NB".