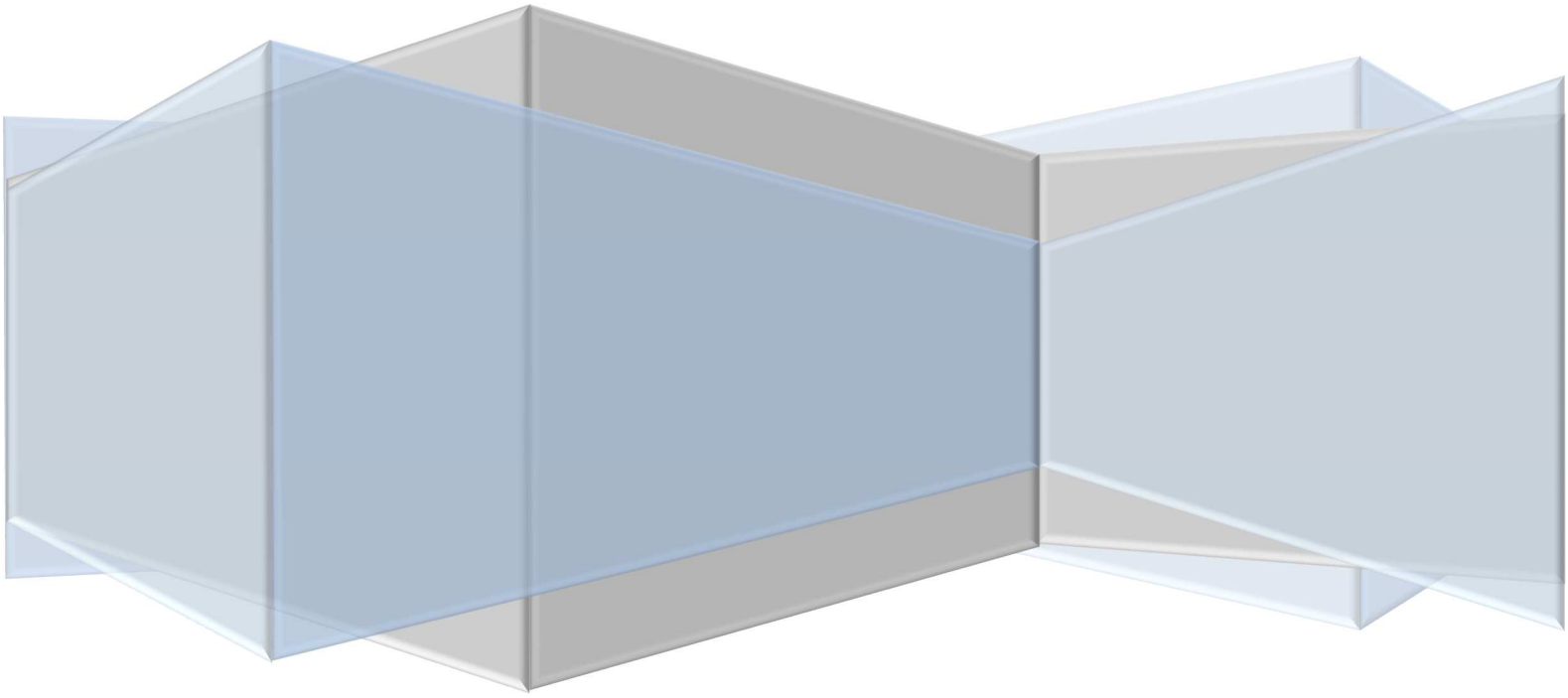
Diehl Controls

SQM-Supplier Quality Manual

Global Supplier Quality Team



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1. Introduction

1.1 Purpose

Quality and reliability are both essential criteria for the position of Diehl Controls in the national and international competition. Since a major part of products within Diehl Controls is assembled using purchased parts, it is necessary to procure the products and services in collaboration with competent, reliable, and quality-oriented partners. Therefore, Diehl Controls has developed a quality strategy, which forms the basis for a comprehensive state-of-the-art purchasing strategy.

Commitment to this strategy is a prerequisite for a long-term business relationship between Diehl Controls and its suppliers with mutual benefits enabling smooth processes and interfaces between the supplier and Diehl Controls as well as look-ahead strategies enabling early error reduction and prevention. When applied proactively, errors are avoided instead of only detected and a "zero defect strategy" is implemented.

Both Diehl Controls and the supplier commit to the principle of continuous improvement of quality and productivity ensuring efficiency, maintenance, and improvement of market positions.

The Supplier Quality Manual (hereinafter "SQM") is structured in three main chapters comprising:

-general requirements

-detailed requirements before start of production

-detailed requirements after start of production

1.2 Definitions

This SQM describes the essential and indispensable requirements and expectations of Diehl Controls with respect to quality assurance by its suppliers.

Diehl Controls is one of the world’s leading specialists in developing and producing electronic modules and system components for the domestic appliance and related industries.

This SQM is valid for all affiliated companies within Diehl Controls:

Diehl AKO Stiftung & Co. KG, Wangen (Headquarter in Germany)

Diehl Controls Polska Sp. z o.o.

Diehl Controls North America, Inc.

Diehl Controls (Nanjing) Co., Ltd.

1.3 Scope

This SQM defines the Quality requirements of Diehl Controls to all contractual relationships between companies of Diehl Controls and its suppliers.

It does not affect individual written agreements with the supplier.

The SQM defines requirements and methods for enabling quality assurance. The fundamental responsibility of all purchased parts is on the supplier's side. The SQM aims at the complete range of deliveries, including the existence of Quality Assurance Management Systems as well as monitoring of quality relevant data of all subcontracted suppliers and service providers. The supplier commits to deliver corresponding proof at any time upon request of Diehl Controls. Therefore, the SQM is also a requirement for all business relationships with any subcontracted partners.

Diehl Controls expects the supplier to consistently and responsibly implement all methods and procedures required by this SQM. Within the process audits conducted by Diehl Controls, conformity to the SQM is periodically reviewed to ensure compliance.

1.4 Language

The language to be used for all correspondence between Diehl Controls and the supplier within the scope of this SQM shall be English in principle. Translations of the SQM are, however, available for convenience purposes.

2. General Requirements

2.1 Quality Management System

The supplier agrees to introduce and maintain a quality management system based on the International Standards ISO 9000 ff.

Diehl Controls expects at least an ISO 9001 certification of all suppliers. The supplier shall provide evidence of certification at any time, deliver renewal of certifications without special request, and

inform Diehl Controls at least three months in advance if a certification will expire without a planned re-audit. For suppliers that are not certified, a declaration reinforcing the supplier's disposition to aim for ISO 9001 certification is mandatory.

2.2 Environmental Protection, Health, and Safety

Supplier will comply in every respect and for each of the products with the requirements and obligations of the REACH and RoHS-Directive of EU in its last applicable version as well as the Conflict Minerals in accordance with Sec. 1502 of the Dodd-Frank Act. On request of Diehl Controls the supplier shall confirm in writing that the single products comply with the above mentioned rules. Such confirmation of the supplier shall likewise be applicable, effective and usable vis-à-vis to the customers of Diehl Controls.

2.3 Zero-Defect Strategy

The supplier has to implement a strategy leading to a “zero defect” ratio for all parts, assemblies, and modules along the complete supply chain.

In order to monitor, measure, and evaluate the achieved quality, the supplier also has to define internal and external quality targets in a joint effort with Diehl Controls. Regarding these quality targets, the minimum requirements requested by Diehl Controls are; monitoring of both internal and external return rate, preferably based on parts per million (ppm), as well as monitoring of internal and external defect cost.

2.4 Process Audit (Supplier)

Diehl Controls reserves the right to verify products and/or processes by performing audits at suppliers premises. The objective of the audits is to assess the capability and effectiveness of quality assurance actions at the supplier.

Upon request a Diehl Controls audit may be conducted on any sub-suppliers.

Reasons for audits could be, but are not limited to:

- new supplier release
- new process / technology
- customer demand
- production relocation
- quality issues
- Supplier Quality Improvement Program (SQIP)

Supplier must grant the representatives of Diehl Controls and our customers and/or their representatives to access their premises, installations and documentation as far as it is necessary to check effectiveness of quality assurance elements.

During an audit all process steps will be checked based on the process flow (supplier management – control of deliveries – storage of components – production – product release – product storage and shipment) including the supporting departments (e.g. Maintenance, Research and Development, Purchasing, Sales, Human Resources, etc.).

In cases where process elements are involving special risks in terms of product and process deviations from requirements are classified more severe (such points are marked in questionnaire with star "*").

The total performance rate of the supplier audit leads to a special rating which is independent from the "Evaluation of Suppliers" described in point 2.5.

Rating of audit findings:

Classification	Overall level of achievement	Achievement results
A	≥90%	Quality capable
B	80% ≤ E < 90%	Conditionally quality capable
C	< 80%	Non quality capable

Classification can be down-graded depending on results for points with star or achievement in sub-elements.

Audit findings and reasons for downgrading will be recorded on a Diehl Controls format. Supplier must define, agree with Diehl Controls and implement corrective actions within the defined period.

2.5 Evaluation of Suppliers

2.5.1 Ongoing Quality Performance Evaluation

Diehl Controls evaluates its suppliers on an ongoing basis, by the "Supplier Quality Evaluation System" which is based on CAQ system data out of the incoming inspection and complaint process. The final evaluation result is a sum of the following scores: "Failure Score", "PPM Score", "Complaint Score" and "Response of 8D" score.
All these scores are calculated with defined formulas and the final ranking result is used to set the classification of the suppliers in the system.
In case of poor quality results Diehl Controls may implement a Supplier Quality Improvement Program (SQIP).

2.5.2 Annual Overall Performance Evaluation

In addition to the ongoing quality evaluation our key suppliers are evaluated annually on their overall yearly performance in the areas of commercial, technology, quality and logistics.
As a result Diehl Controls divides the suppliers into 3 categories:
· A-suppliers
· B-suppliers
· C-suppliers
The minimum acceptable rating is B- supplier. However, A-suppliers are preferred for future business. C-suppliers will receive a warning letter and need to participate in the “Quarterly Supplier Evaluation” to define and track the necessary corrective actions.

2.6 Quality Assurance of Sub-Suppliers

It is expected that the supplier ensures compliance with the same diligence and regulations under which they operate for Diehl Controls from all its sub-suppliers. Specifically, the supplier must ensure that:

Quality information such as, critical/significant characteristics, drawings and specifications shall be formally communicated to sub-suppliers,

All sub-suppliers shall maintain quality assurance systems which at minimum conform with the quality assurance systems described in this SQM,

All sub-suppliers shall comply with the quality norms defined by the Diehl Controls,

All sub-suppliers shall continuously improve their manufactured products and their quality management system.

Any change of sub-suppliers has to be reported to Diehl Controls purchasing department in advance. In any case, the supplier remains solely responsible for the delivered product, irrespective of the extent of parts or services subcontracted to sub-suppliers.

2.7 Warranty

The supplier shall provide a warranty for all items and parts supplied by him.

Details of warranty shall be agreed in the mandatory Quality Assurance Agreement.

3. Requirements before start of production

3.1 Definition of Responsibilities and Contact Persons

Diehl Controls requires a dedicated contact person to represent the supplier for each project. In the same way, Diehl Controls will also provides a dedicated contact person.
Definition of responsibilities and contact persons aim at an efficiently and effectively processed project. As a minimal requirement, the corresponding information on both sides must include name, function, contact details (phone, email, mobile etc) and deputy arrangement.

3.2 Product Introduction Process (PIP)

In order to comply with ongoing market requirements for faster development times for new products, it is necessary to apply a standard procedure along specified milestones.
Supplier scheduling should be orientated to the applicable project milestones. Thereby, in the interest of a simultaneous engineering process, it is also expected by the supplier to constructively support the continuous improvement of those milestones.
If applicable, suppliers will be involved in advanced development of the specification before its final definition. In this case, it is expected by each supplier to provide an individual project plan which is continuously coordinated with Diehl Controls representative and adapted if necessary.

The Diehl Controls PIP consists of the following phases with potential corresponding involvement of our suppliers:

- Quotation and Plan Phase (for Diehl Controls customer projects)
  - Early involvement of suppliers within Requests for Quotation (RfQ) to achieve reliable and competitive prices for our customer quotes
  - Proof of concepts
- Design Phase
  - Reliable scheduling of release and start of series deliveries of supplied components
  - Complete technical specification with final verification and finished proof of concept (Component review)
  - Potential input from Design FMEA's
- Prototype Phase
  - Defined components in defined conditions are available
  - All Design FMEA's are closed and topics with suppliers clarified
- Pre-Series Phase
  - Full series material and components are available
- Ramp-Up Phase
  - Full ramp up material and components are available

3.3 Management of Customer Requirements

All customer requirements need to be identified and implemented.

3.3.1 Feasibility Study and Component Review

In the context of component review, technical documents (e.g., drawings, specifications, DC plant norms) created by Diehl Controls need to be analysed and confirmed by the supplier.
The analysis, which is considered as a tool for Simultaneous Engineering, contains both a feasibility study of the planned product development project (only applicable to product development suppliers) and an investigation of the economic and actionable production ability (processes, materials, tolerances, parts, and characteristics with special procedure of furnishing proof etc.). The goal of the analysis is to give the supplier an opportunity to share his experiences and suggestions for the purpose of mutual benefits. Tools for the feasibility study include simulation, FEM, case studies, Design of Experiments etc.

3.3.2 Product and Process Failure Modes and Effects Analysis (FMEA)

The Failure Modes and Effects Analysis (FMEA) is to be used for the investigation and assessment of possible risks regarding severity rating, occurrence rating, and detection rating. Potential risks are to be minimized through urgent measures. Therefore, the FMEA is an important error prevention tool and needs to consider in all phases of the product lifecycle such as development, construction, production, assembly, packaging, transportation, as well as recycling/disposal. The FMEA needs to be conducted or else revised on the following occasions:

- New parts development/production
- New manufacturing processes introduction
- Changing production location
- Drawings changes
- Process changes
- Occurrence of non-conformance

For the implementation of any measures taken, a schedule needs to be provided, a responsible person to be named, and ensured that all measures are processed before beginning of series production. Diehl Controls shall be informed immediately about necessary construction changes.

Design-FMEA
A Design-FMEA is to be conducted for all parts which are being constructed under the responsibility of the supplier.

Process-FMEA

A Process-FMEA is to be conducted for all production stages of a part. In the course of this, the results of the Design-FMEA and the “special characteristics” named by Diehl Controls need to be specifically considered.

Implementation of Measures
Potential risks which are identified by the FMEAs needs to be minimized by appropriate measures/actions.

3.3.3 Process Flowcharts

Process flowcharts describe the production flow along the entire value chain including the arrival of goods (together with transport), all manufacturing steps, warehousing, and shipment of goods. Process flowcharts reveal influencing variables and, therefore, are important facilitators for quality planning. Furthermore, they are the basis for the FMEAs and test plans. Elements of the process flowchart are:

- Short description of each process step
- Definition of production/machinery type and/or equipment
- Short description of controls
- Specific methods (including statistical ones) which are used for process control

3.3.4 Definition of Special characteristics

Generally speaking, all product and process characteristics are important and must be complied with.

Diehl Controls distinguishes the following product and process special characteristics (SC’s):

- **Critical Characteristics** (CC)- Product or Process Characteristics which have consequences if are not achieved or maintained, and that may affect:
    - safety/ security of product or operator (incl. compliance with legal requirements) e.g. caused failure or deficiency may be an immediate danger to life or health.

- **Significant Characteristic** (SC)- Product or Process Characteristics which have consequences if are not achieved or maintained, and that may affect:
    - form, fit or function of the product
    - the production (assembly) process

At a minimum, supplier shall implement process controls for special characteristics as designated in Diehl Controls specifications or drawings. Additional characteristics which relate to process stability should also be identified in the supplier’s Control Plan. These relate to product safety, legal requirements, product performance, and the ability to assemble product or customer satisfaction features. These are identified by various symbols, requiring specific levels of special controls and process capability.
The inspection requirements for Diehl design components such as mechanical/ plastic parts, PCB’s packaging are as following:

#	Term	Drawing symbol	Requirements (explanation of the drawing symbol meaning)
1	**Inspection dimension**	dimension	The dimension have to be included in the Supplier Control Plan. If the Preliminary Process Capability (Cp,Cpk) have to be performed for particular dimension - this should be written in the drawing or SDR.
2	**Significant characteristic** *(Fit/Function)*	dimension | sc	• The dimension have to be included in the Supplier Control Plan, • Preliminary Process Capability (Cp,Cpk) is required, • SPC is required, • MSA is required, • Process Performance (Pp,Ppk) study is required or 100% inspection implementation
3	**Critical characteristic** *(Safety)*	dimension | cc	• The dimension have to be included in the Supplier Control Plan, • Preliminary Process Capability (Cp,Cpk) is required, • SPC is required, • MSA is required, • Process Performance (Pp,Ppk) study is required or 100% inspection implementation

Acceptance Criteria

Inspection dimension (1)	Significant characteristic	Critical characteristic	Interpretation
Cpk ≥ 1,33	Cpk ≥ 1,67 Ppk ≥ 1,33	Cpk ≥ 2,0 Ppk ≥ 1,67	PASS: the process currently meets acceptance criteria
----	1,33 ≤ Cpk <1,67	1,67 ≤ Cpk < 2,00	PASS with ACTION (conditionally accepted): the process will require action to meet PASS level
Cpk < 1,33	Cpk < 1,33 Ppk < 1,33	Cpk < 1,67 Ppk < 1,67	FAIL: the process doesn't currently meet acceptance criteria

(1) only for particularly specified or identified inspection dimensions

Supplier must also define their own special characteristics as early as possible based on the result of the risk analysis conducted by the supplier, e.g., the production and/or process FMEA. All special characteristics must be identified on the Supplier's Part Approval documentation.

The supplier commits to install a dedicated system for providing proof of compliance for all special characteristics.
The procedure of supplying proof needs to be laid out in such way that, in the event of nonconformity, it can be demonstrated.

3.3.5 Control Plan

The control plan is a planning tool for preventive process control. It must be created by teamwork through systematic analysis of manufacturing, assembly, and control processes. This team should be interdisciplinary and consist of staff members from planning, manufacturing, quality, as well as other relevant departments. For the creation of control plans, the results from FMEA, experiences from similar processes and products, as well as application of improvement methods should be considered. Important product or process control characteristics shall also be documented in the control plans.
Furthermore, the control plan needs to be created for all production steps.

If required by Diehl Controls, the supplier should submit a pre-launch control plan

3.3.6 Test Measurement Equipment Planning

For all measurement equipment, a measurement system analysis shall be performed. Hereby, resolution, tolerance, and the entire measuring process of the to-be-measured-characteristic must be considered. This is also valid for laboratory measurement equipment if the supplier conducts validating tests for Diehl Controls. The measurement system analysis is outlined within the DIN EN 9001, DIN EN ISO 10012, QS9000, as well as in VDA Volume 5, defined by the German Association of the Automotive Industry.

Control Equipment
The procurement or creation of control equipment needs to be completed prior to the start of the pilot series.

3.3.7 Operating Material Planning

Planning of facility and operating supplies includes planning, procurement, or creation of all required operating supplies that are needed to manufacture the designated part. The suitability or ability of operating supplies must be proved. In case of several differential operating equipment applications, individual proof has to be supplied for each single use. The supplier is required to ensure that sufficient operating supplies in terms of capacity and quality are available before start of the pilot series. The ability of those operating supplies has to be proven by the supplier, when required by the customer (Cmk).

3.3.8 Planning of Preventive Maintenance

Suppliers are obligated to develop a system of preventive maintenance of operating supplies. This means
a) That preventive maintenance schedules need to be dated and

b) That a contingency plan needs to be created for all processes that would result in an inability to supply in the case of a disruption.
Proof of systematic and continuous performance of all preventive maintenance actions must be provided. The basis of this preventive maintenance plan could, for example, comprise recommendations outlined by the equipment producer, experience, or SPC analyses.
The maintenance scope also has to be defined (maintenance manual). Maintenance staff also have to be trained and capable in advance for new equipment and systems.

The application of the Total Productive Maintenance method is recommended.

3.3.9 Packaging Planning

Based on the initiative of the supplier the requirements regarding packaging, transportation mode, and warehousing are to be defined and jointly agreed upon between Diehl Controls and the supplier. Subsequently these requirements will be defined in the specification of the product. Essential criteria to be considered include but are not limited to:

- Economic viability
- Protection of dirt contamination and damage
- ESD and humidity protection
- Simple and ergonomic beneficial handling (transportation, discharge)
- Content protection and machine-readable labelling on the outside
- Reusability (multi-way containers are to be preferred)
- Avoidance of packaging waste
- Availability, replenishment
- Stability and stackability
- Warehousing requirements

Each packaging unit shall have at least following marking at a minimum:

- Delivering company
- Name of component
- Diehl reference number
- Quantity
- Date of manufacture (Batch Number)

The supplier is responsible for damage-free delivery. Any deviations shall be clarified and agreed with Diehl Controls in writing. Definition of packaging shall be completed before beginning of the pilot series. Nevertheless, the supplier also shall adhere to all local legal provisions regarding packaging matters. The actual valid regulations are defined in the Diehl Controls Packaging Guideline.

3.3.10 Staff

Capacity
The capacity of qualified staff must be planned and carried out to ensure that sufficient human resources are available prior to the start of the pilot series.

Qualification
Every staff member shall be trained along with the creation of a new workstation or translocation to a different workstation as per new conditions. Proof of training needs to be recorded. For the creation of quantitative and qualitative staff training requirements planning, pre-existing staff qualifications (experiences, proved skills etc.) need to be recorded beforehand.

3.3.11 Process Capability Study

The suppliers must demonstrate process capability at least for all processes with special characteristics. Process capability must be documented and evaluated.

The Supplier shall submit an initial process capability study, as defined in “Sample Documentation Requirements (SDR)” in chapter 3.3.13.2
In addition, if required the supplier should submit a periodical process performance study reports for all SCs as specified in the control plan. Any exceptions require a signed agreement with Diehl Controls.

3.3.12 Supplier Selection and Release Process

Suppliers of Diehl Controls must be selected, qualified and released according to a defined procedure in parallel to the qualification of the components to be delivered by them.

This process includes the following steps:

- Market research (Long list) with RfQ’s (Request for Quotation) and available data in the market.
- Supplier pre-selection (short list) based on available quotes, results of supplier quick scans, further detailed data, etc.
- If applicable a component review will be performed with the potential supplier to validate the received quote in terms of technology, quality, logistic and commercial topics.
- Final decision about the supplier in the sourcing committee considering technology, quality, (based on supplier qualification data), logistic and commercial criteria.
- If applicable a potential new supplier will participate in a supplier development project or activity to improve findings from the performed quick scan or to develop themself to meet the Diehl Controls requirements.
- Every new supplier must be released by a Quality Audit performed by Diehl Controls Quality.
- In parallel and mandatory for a final release all required contracts and terms and conditions must be negotiated and fully signed (e.g. QAA, Supply agreement).

3.3.13 Release of Components, Initial Sample Testing

Initial sample testing must prove that agreed quality requirements, as defined in the drawings and specifications, are complied with. All quality characteristics, as defined in the applicable drawings and specifications, must be sampled with regard to measure, material, function, reliability, optic, haptic, and hallmark (e.g., manufacturer code).

Definition of initial sample

Initial samples are products which have been manufactured and inspected under series production conditions (with regard to machinery, facilities, operating supplies, measuring device, and staff).

Storage of reference samples

Reference samples from initial sampling have to be stored by the supplier in an appropriate manner for at least 10 years.

Reason for Initial sampling:

- First-time order of a product
- Product change
- Supply disruption for a period of more than two years
- Supplier switch and, respectively, sub-supplier switch by the supplier
- Change of production process
- Deployment of new or changed forming tools (e.g.: casting tools, moulding tool, punching tools)
- Change of production site or deployment of new or relocated machinery.

Initial samples will be requested by Diehl Controls with an order and requested delivery date in the cases of:

- First-time order of a product
- Product changes by Diehl Controls.

The supplier is required to inform Diehl Controls in advance and to supply initial samples (pre-samples, if applicable) after consultation with Diehl Controls in the cases of:

- Changes to materials or parts incorporated in their products,
- Supply disruption for a period of more than two years
- Supplier switch and, respectively, sub-supplier switch by the supplier
- Changes to their manufacturing processes,
- Modifications made to the methods or facilities for the testing of the products or to other quality assurance measures,
- Deployment of new or changed forming tools (e.g.: casting tools, moulding tool, punching tools)
- Change of production site or deployment of new or relocated machinery.

Initial samples must be provided together with a completed initial sample test report. During manufacturing with similar tools, for each tool and mould cavity, an individual test report must be created.

Submission Process

- In regards to quality planning, the requested documents will be coordinated between Diehl Controls and the supplier. Depending on a component specific submission process, different documents will be requested as a proof. There Diehl Controls distinguishes between two different processes:
- Release of supplier designed components (e.g. standard electronic components)
- Release of Diehl Controls designed components (e.g. mechanical parts out of tools)

Documentation

Control results and records have to be recorded within the initial sample test report and provided to Diehl Controls together with the initial samples by a set deadline.

These initial samples shall be clearly marked.

The supplier shall grant to Diehl Controls a non-exclusive, cost-free, indefinite, transferable, sub-licensable, irrevocable right to use the technical documentation delivered with the Part Approval (e.g., drawings, specifications, data sheets etc.) of the product as well as the corresponding intellectual property rights and copyrights for the purpose of manufacture (including quality assurance, data-management etc.), use and distribution of Diehl Controls products.

In the event that the documentation has been produced on behalf of Diehl Controls and has been paid for - as the case may be, by the costs of the supplied products or on the basis of a development contract – the supplier shall grant Diehl Controls exclusive and unrestricted rights of use and exploitation. This shall not affect other written agreements between the parties.

For the identification of characteristics, identical numbers shall be used within the test report and accompanying Diehl Controls approved reference drawings.

Assemblies which are manufactured according to a Diehl Controls construction, including all individual parts, must go through an initial sample test with the results to be presented to Diehl Controls. The supplier shall sample assemblies for products that are constructed by the supplier themself and present the results to Diehl Controls.

Initial samples also have to be taken for individual parts and, if applicable, to sub-assemblies as well. Diehl Controls shall be granted access to these documents on request. Sampling inspection activities falls within the supplier's responsibility. Diehl Controls, however, reserves the right to verify the supplier's sampling inspection results.

Further agreements between the supplier and Diehl Controls that either extend or restrict the aforementioned rules regarding initial sample test must be made in writing and signed by both parties. Required samples which cannot be manufactured under series production conditions due to scheduling reasons are called pre-samples.

Product and Process Approval

Approval of the initial samples is given after assessment of the sample test results or, where applicable, after successful supplier release process.

Upon assessment completion one of the following decisions will be made:

- Approved: Diehl Controls can place purchase order/s for material used in series production

- Rejected: Deviations must be remedied and new samples and inspection results to be presented to and approved in writing by Diehl Controls before series production may start.

These decisions will be documented and potential remarks will be added (e.g., requirements), if necessary.

Sample approval by Diehl Controls does not release the supplier from their sole responsibility for the quality of their product. Furthermore, sample approval shall not be construed as an order. Therefore, Diehl Controls rights and remedies are reserved with regard to deviations from specifications which have not been detected before start of the production process and/or product approval.

3.3.13.1 Release of supplier designed Components

The component qualification process starts when the need for a new component has been identified and agreed, or an Engineering Change Order has been issued. This process applies to electronic and electromechanical components, designed by the supplier. It is valid for new components or when a new manufacturer must be added to an existing material number.

- Component Engineering (CE) will define and monitor the component release test plan, considering the supplier's component qualification data.
- The defined test is performed in external and /or internal laboratories.
- After the successful qualification the component is created, maintained and released in SAP.

3.3.13.2 Release of DC designed Components

Diehl Controls designed components are components, where Diehl Controls is responsible for the specification/ drawings. These are mainly plastic/mechanical parts, packaging and PCBs.

At Diehl Controls the Sample Documentation Requirements (SDR) sheet defines the necessary submission package for the approval and release (similar like a PPAP submission package). The completed SDR will be sent to the supplier together with an electronic purchase requisition (EPR) for the tools and samples.

During a Component Review meeting the SDR will be reviewed with the supplier.

Deviations and necessary correction loops will be documented and monitored in the List of Corrective Actions (LOCA)

4. Requirements after Start of Production

After start of production, all agreed requirements must be fulfilled and will be checked and monitored by Diehl Controls, as described in Section 2.6. In case of deviation of a supplied part, Diehl Controls non-conforming products process shall be applied and – if necessary – a process audit has to be conducted.

4.1 Determination of Serial Process Capability

According to Section 3.3.11 the process capability must be provided if requested by Diehl Controls at any time, especially within a process audit. Moreover, the requirements regarding a centered production approach must be fulfilled. For the determination of the process capability, it is necessary that the process operates under statistical control - meaning that all systematic influences are known and under control. In general, process capability is determined based on control charts.

4.2 Process Audits

The supplier shall conduct and document internal process audits as requested by DIN EN ISO 9001. In case of deviations, this documentation shall be provided to Diehl Controls on request. Diehl Controls conducts process audits if one or more of the following events occur:

- Product change
- Material change
- Process change
- Production capacity change
- Significant characteristics have to be ensured
- Change of quality level based on documented deficiency
- Results of sub-supplier audits

The extent of the audit is based on the Quality Management Standard VDA 6.3, defined by the German Association of the Automotive Industry. Upon audit completion, all detected deviations shall be processed in an effective containment action program with a corresponding time schedule. The implementation of these containment actions shall be tracked, the effectiveness of the changes shall be checked, and the realization shall be documented.

4.3 Product Audit

Product audit

To ensure quality of the final product the supplier must perform regularly Product Audits on Diehl Controls parts. During an audit it is important to answer the following questions at a minimum:

- Are all dimensions correct?
- Are all specifications meet?
- Are customer requirements identified?
- Are special characteristics controlled?
- Are products parts in proper/defined packaging?
- Is the container properly labeled?
- Is all paperwork completed properly?

4.4 Measurement System for Special Characteristics & Calibration

As stipulated in section 3.3.6, an efficient measurement system shall be implemented in order to control the special characteristics (refer to section 3.3.4). Both, the monitoring of the measurement system and the calibration are integrated in the system of Total Productive Maintenance (TPM). This means that capability performance indicators have to be archived and -if requested- provided to Diehl Controls.

4.5 Reliability Checks

The completion of reliability checks is a mandatory requirement as specified in the control plan (refer to section 3.3.5). The reliability checks shall be documented in an evidence document and archived so that they can be provided to Diehl Controls upon request.

4.6 Documentation and Archiving of Quality Data

The supplier must archive all resulting quality data, including but not limited to data from control cards, inspections, audits as well as regulations on dimensional checks, calibration, and failure containment for a period of at least 10 years.

4.7 Process Change Notification (PCN) and End of Life (EOL) Processing

The supplier shall give Diehl Controls advance written notice of changes to their manufacturing process, materials or parts incorporated in their products, any changes of the design of the products, of relocation of production plants, of their sub-suppliers, of modifications made to the methods or facilities for the testing of the products, or to other quality assurance measures. The supplier must give Diehl Controls sufficient time to check whether such changes may have a detrimental effect on the Contractual Products. The supplier shall report all changes to Diehl Controls including all corresponding performed measurement. In all cases, Diehl Controls will evaluate the change(s). Any modifications of the Contractual Products require the prior written confirmation of Diehl Controls.

4.8 Traceability

The supplier shall ensure, whether by identification of the products, or, if such is impossible or impractical, by other suitable means, that, in case defects are detected in a product, he can immediately establish which other products may be affected. Diehl Controls shall not be obligated to accept products that are not adequately marked, or without an adequate identification substitute respectively, but shall be entitled to return them to the supplier at supplier's expense.

Traceability needs to be designed in such a way that a clear and gapless tracking from delivery data back to the designated workstation is ensured, also down to the sub-supplier level.

All non-conforming products, parts, semi-finished and finished parts or products shall be marked and stored clearly without ambiguity so that no confusion is generated and mixture with conforming products can be eliminated. Colour coding, bar coding, and the usage of marker tags or stamps are appropriate tools.
For parts where a possible mix-up can only be detected using measuring techniques, suitable procedural actions have to be established. If such actions are not available, an additional eye-catching labelling shall be used.
All steps have to be arranged so that defective parts can be localized within the smallest possible area, even after a longer period of time.
Supply chain and corresponding quality data for all parts containing characteristics with mandatory documentation requirement shall be traceable. This applies especially to the value chain on all levels of subcontracted partners. The traceability shall be manifested in a traceability system, so that all corresponding necessary information can be provided to Diehl Controls, upon request.
As a minimum requirement, all parts have to contain information on batch number, date of production, and other identification numbers. Machine-readable and electronically solutions are preferred and strongly recommended.

4.9 Nonconformity Management

The Supplier shall confirm receipt of the Complaint Notification and respond within 1 working day with a short-term (immediate action) to prevent exposure to production or delivery commitments.

After receiving defective samples, the Supplier must submit the completed 8D Report within 10 working days which must include specific details of the permanent actions taken, or to be taken, to prevent recurrence of the same problem, to prevent the occurrence of similar problems, and the applicable effectively dates.

The supplier shall cover all cost related to the nonconformities within his responsibility.

4.10 Sorting Activities

In case of nonconformity of delivered products in serial production, supplier is obliged to ensure continuity of DC production, by sorting/checking/reworking affected parts until new good batch/lot

delivered. This activity can perform by supplier, Diehl's staff or by external company at DC production site. In order to keep the costs of both parties as low as possible, sorting activities can start immediately when there is a risk of production stop; supplier has to cover all sorting costs until achievement of agreed quality level

End.

History of Changes ⓘ

Version	Description of change or improvement
00	2017-06-28,New
01	2017-12-01,change history added
02	2021-08-03, add 4.10 sorting activities