THE POWER BEHIND POWER.

Quality handbook suppliers

General quality requirements for suppliers

Table of Contents

1. Introduction

1.1 Introduction

As a globally active family company, we are world market leader in energy technology now: 50 % of current produced worldwide is regulated using our products. We drive our own transformation with particular emphasis to remain a forerunner in the energy sector in the future. From the world market leader in tap changers to the innovative architect of integrated intelligent solutions for the dynamic power grid. To meet the continuously increasing requirements and demands of the market and thus our clients, the quality of our products and services is of the utmost priority. Our goal is to enter a partnership with the best and most efficient suppliers, based on mutual respect and trust. This is why we also expect a high degree of quality-conscious behavior of our suppliers in the shape of:

- **ZERO DEFECT Strategy**
- **Sustainability and social responsibility**
- **highest flexibility and 100 % delivery reliability.**

1.2 Cooperation and Validity

This quality handbook gives information about the overall quality requirements of the Reinhausen Group for its suppliers and partners for the different phases of the product development to the phasing out of standards and serves as a base for good and successful cooperation.

Definition Reinhausen Group

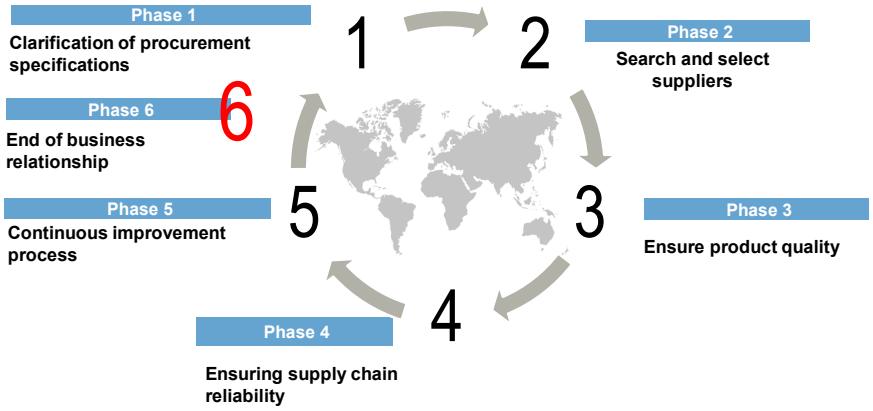
Maschinenfabrik Reinhausen
Reinhausen Power Composites
Messko GmbH
Reinhausen Manufacturing (US)
Reinhausen Italia (IT)

The supplier is responsible, according to the agreed-upon technical and non-technical/qualitative documents, for the fault-free execution of deliveries, products, and services. He must check the documents for completeness and correctness and, if relevant, request more information from the Reinhausen Group. The supplier must be aware of the requirements to the product and ask the Reinhausen Group if anything is unclear.

1.3 Reinhausen Phase Model

The Reinhausen Group works in the supplier process in accordance with the MR phase model (SEM),

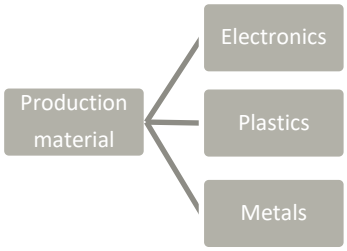
in which all relevant processes at the interface to the supplier are covered.



*Reinhausen phase model SEM (Supplier Excellence Model)

1.4 Scope of Application

The present quality handbook applies to all production materials (acquisition products) sourced by the Reinhausen Group. The group of production materials can be split into three commodity groups (commodities):



The requirements for the suppliers, as well as the product qualification may differentiate between individual commodity groups (commodities).

The procurement of infrastructure material and non-production material are excluded in this quality handbook.

2. Supplier Selection

2.1 Supplier Selection

Suppliers for product materials are selected by the departments of Quality and Purchasing of the Reinhausen Group.

2.2 Purchasing Conditions

The general purchasing conditions of the Reinhausen Group are available in the download center on our website.

2.3 Logistics Conditions

The general logistics requirements of the Reinhausen Group are available in the download center on our website.

2.4 Supplier Self-Disclosure

In the supplier self-disclosure, the supplier provides the most important information about his company for a first general assessment. Before a request can be initiated, the completely filled-in form "Supplier Self-Disclosure" must be available to the Reinhausen Group

It can be found in the Download Center on our website or in the supplier portal for suppliers of the Maschinenfabrik Reinhausen.

2.5 Requirements to the Management System of the Suppliers

The basis of the cooperation with suppliers is a management system, the functionality of which must be proved by certification according to one of the following norms and specifications.

Quality Management System (QMS):

ISO 9001 (alternatively, depending on the supplier's sector: **VDA 6.1** or **ISO/TS 16949** (Automotive industry)

Environment Management System (EMS):

ISO 14001 (alternatively an in-house environment management system or similar)

Work Protection Management System (WPMS):

DIN ISO 45001 (alternatively an in-house work protection management system or similar)

Information Security Management System (ISMS):

ISO/IEC 27001 (alternatively an in-house information security management system or similar)
In regard to the management system, the Reinhausen Group has the right to inspect all product-related and process-related documents.

Solely the supplier is responsible for the compliance of the management systems, regardless of the Reinhausen Group releasing the procured products and processes in the scope of initial sampling.

The supplier is obligated to manufacture and test the products procured by the Reinhausen Group in accordance with the rules of his management system and, upon request, provide certificates.

2.6 Ingredients and Regulations

The supplier confirms to the Reinhausen Group that he adheres to the current version of

- **RoHS Directive (2011/65/EU),**
- **REACH Regulation (Reg. EC No 1907/2006),**
- **Dodd-Frank Act**
- **IEC 62474**
- **CAL PROP 65 (US)**
- **TSCA (US)**

2.7 QAA - Quality Assurance Agreement

An individual contract of a QAA between a supplier and the Reinhausen Group has the goal to ensure that the quality demanded by the Reinhausen Group is already met at the planning and development stage of a product, that the interfaces between the suppliers and the Reinhausen Group are defined, and that an intensive and smooth cooperation is promoted.

The QAA serves for the creation of common rules that are directed towards cross-manufacturer quality assurance measures and are not intended to disadvantage a contractual partner. The supplier generally agrees to conclude a quality assurance agreement with the Reinhausen Group.

2.8 Feasibility Assessment

For the confirmation of the feasibility of a product or component, you can find the form "Feasibility Assessment" in the Download Center on our website. This form provides the minimum requirements. It must be filled in truthfully and confirmed in writing upon request of the Reinhausen Group. A positive feasibility assessment is a precondition for a supplier to be commissioned.

2.9 Potential Analysis following VDA 6.3

The potential analysis serves for the preparation of the awarding decision of contracts to potential suppliers, especially when awarding technically comprehensive or newly developed products. This way, the Reinhausen Group assesses the general quality capability of potential suppliers. This potential analysis serves the purpose of assessing the general eligibility of business and manufacturing processes.

3. Realization of Product and Process

3.1 Product Development by Suppliers

Supplier who develop products for the Reinhausen Group must create a project plan which includes all relevant technical, financial and qualitative aspects, as well as aspects regarding scheduling. The project plan contains all phases of the product and process development, as well as the assessment, verification and validation in the respective project phases.

3.2 Process Development by Suppliers

Quality and reliability of a technical product in development are determined in a coordinated and diligently planned manufacturing process. The Reinhausen Group understands this as systematic work in accordance with APQP or a similar product development process.

3.3 Quality Advance Planning

Quality advance planning aims at identifying all relevant influencing variables on the product quality already in the planning or development phase, reducing risks in both product and process, and verifiably planning appropriate test steps to ensure the required quality of the products. For this, at least the process steps mentioned below must be documented. Exceptions must be presented in writing with logical reasoning for approval to the relevant supplier manager of the Reinhausen Group.

3.3.1 Test Planning

Test planning of the supplier must also consider, besides the standard documents, such as drawings, company standards, specifications and data sheets of the Reinhausen Group, results of the risk analysis (FMEA) and previous manufacturing experiences with similar products. Measures and product details regarding function and safety are of utmost importance in this context. The result of the test planning must be attached to the sampling protocol in the shape of a control plan.

3.3.2 Measurement System Analysis

If not otherwise agreed upon with a supplier manager, the suitability of the measurement and test equipment used must be statistically proved by a respective measurement system analysis.

This measurement systems analysis must be proved, depending on the testing process, either by means of DIN V ENV 13005 GUM or MSA type-1 or additionally by MSA type-2 in case of user influence.

The parameters to be reached (c_g, c_{gk}, % R&R) are determined in Table (1), but may differ if previously agreed upon by the supplier and the relevant supplier manager of the Reinhausen Group in individual cases.

Test system suitability parameter	Target value
Cg	>1.33
Cgk	>1.33
% R&R	<10% fully capable, <20% partly capable

Table (1)

3.3.3 Test scopes

Random sample tests should follow standardized random sample plans.

- **ISO 28590:2017 Sampling procedures for inspection by attributes**
- **ISO 3951-1 Quantitative sampling procedures**

3.3.4 Test Certificates, Factory Certifications

Material test certificates or factory certifications must always be created separately for individual delivery lots and must be, as specified by the Reinhausen Group in the purchase order text, included in the delivery or sent to the following email address:

Maschinenfabrik Reinhausen GmbH: mr.atc@reinhausen.com

Reinhausen Power Composites GmbH: rpc.atc@reinhausen.com

Messko GmbH: ms.atc@reinhausen.com

Reinhausen Italia: ri.atc@reinhausen.com

Reinhausen Manufacturing: rm.atc@reinhausen.com

3.3.5 Statistical Process Controlling (SPC)

In serial production, the supplier must prove the process capability of product characteristics shown in drawings or determined in product discussions, using appropriate measures of the statistical process controlling (SPC).

The capability characteristics must at least be within the following limit values:

Capability index	Requirements for characteristics related to safety or approval	Requirements for other test characteristics
Machine capability	$C_{mk} \geq 2.00$	$C_{mk} \geq 1.66$
Process capability	$C_{pk} \geq 1.66$	$C_{pk} \geq 1.33$

3.3.6 Quality Recordings and Retention Periods

- **Types of documents:** The supplier must keep the following standard documents and quality recordings about the performance of his quality assurance measures orderly in an appropriate place and have them available (incl. reading devices):
  - Drawings and other specifications (including outdated editions);
  - FMEA (including outdated editions);
  - Documents for product and process approval (initial sample inspection report - ISIR, manufacturing process plan, control plan etc.);
  - Material analysis certificates;
  - Test reports from serial production;
  - Documentation of traceability.
- **Archiving media:** Originals in paper or on data media together with forgery-proof and tamper-proof document management systems.
- **Retention periods:** If not differently agreed upon in the contract, at least 15 years, as far as no longer periods are required by law or otherwise. Upon expiry of the retention periods, please contact Reinhausen Group to discuss the further whereabouts of above-mentioned records/documents. The necessary reading devices for this purpose require a mutual agreement.

3.4 Supplier Audit

Before serial approval of a supplier or a product, the Reinhausen Group may demand the passing of an audit. The Reinhausen Group expects from its suppliers and their sub-suppliers that they are willing to demonstrate the efficacy of their QM systems during an audit. For this purpose, the Reinhausen Group is granted access to all business premises and provided with a specially qualified employee for support. This also applies to ordering parties of the Reinhausen Group together with the Reinhausen Group.

The Reinhausen Group reserves the right to perform the following measures, as needed, within the scope of product development:

Process audits and/or process acceptance based on VDA 6.3

Factory equipment of the supplier and his sub-suppliers.

Before an audit or similar takes place, the supplier will be informed accordingly. Deviating from this general regulation, other arrangements can be made, in individual cases, in mutual agreement.

If deviations are identified during an audit, they must be verifiably remedied by the supplier. For this, the supplier creates action plans and these are released by the Reinhausen Group. The therein defined actions must be implemented on schedule and the execution must be, together with proof of efficacy, reported to the Reinhausen Group.

3.5 Production Process and Product Release (PPR or PPAP)

3.5.1 Purpose

Before parts or components may be delivered from serial production, the supplier must provide proof that the agreed-upon requirements in drawings and specifications are being met and that the release in writing by the relevant supplier manager of MR is available.

This requires proof of an actionable production by means of determined product characteristics, a capacity evaluation with sufficient reserves, the use of appropriate and capable test equipment, as well as complete sample testing of one or more parts per nest (nest designation required) of the first serial production with all attached documents. The Reinhausen Group provides relevant forms in its download portal (Initial sampling inspection report, initial sampling sticker).

The supplier is free to use his own forms, as long as they correspond to the provided templates in regard to content.

3.5.2 Sampling Standards

The Reinhausen Group accepts as sampling standards following VDA book 2 or PPAP as a replacement. Submission level 2 in accordance with VDA book 2 or submission level 3 in accordance with PPAP are the standard here. The sampling scope can be adjusted as agreed upon with the relevant supplier manager; test planning, process flow chart and stamped drawing with measurement dimension assignment are always necessary for full sample tests. In case of re-sampling or essential sampling, at least a title page with a relevant remark must be sent.
For details that require the agreement of the supplier and the Reinhausen Group, for instance the level of detail of tests required documents, test equipment capabilities and the confirmation of adhering to legal requirements, written agreements must be made with the relevant supplier manager.

3.5.3 Initial Sample Inspection

Initial sample inspection is used for new parts, technical changes to products and changes to the production processes. The Reinhausen Group comprehensively inspects received initial sampling parts following its own definition or accepts the supplier's specifications without own inspection. In the event of a suspended cross-check, the supplier details together with the Reinhausen Group's specification documents serve as the set starting point for any deviations that may be identified later.

An initial sampling test may also be required in the serial production for re-qualification tests of process and product. This may be the case, for instance, if no order is placed within 24 months.

The procedure generally applies to material products (systems, modules, parts, components) that are used in the Reinhausen Group as:

- Production parts,
- Service or spare parts,
- Semifinished products / raw materials,
- Production materials and working materials that become part of the product (e.g. lacquers, liquid sealing materials, glues, oils, brake fluid etc.)

. This does not apply to capital goods, such as production plant, as well as process materials (lubricants, auxiliary materials and working materials etc.)

If not otherwise agreed-upon between the supplier and the Reinhausen Group, the execution of PPR or PPAP of normed products (e.g. DIN parts, liquids according to DIN or SAE). A cover sheet sample with confirmation from the supplier that the products/parts meet the relevant standards is sufficient for this.

The initial sampling test must be documented in the form Initial Sample Inspection Report provided by the Reinhausen Group acc. to VDA book 2, available download center on our website.

The initial sampling also includes the documentation and the proof of suitability of the customer-specific packaging. For this, a blank form is available in the download center on our website.

Services and software can be considered within the scope of function tests in the PPR for products. Type and scope of a software qualification must be discussed with the relevant supplier manager.

A detailed guideline for the creation of processes and projects for the development and release of software-related systems can be found in the Automotive SPICE Guidelines which the Reinhausen Group accepts as proof statement.

3.5.4 Scope of Release

The production process and product release includes:

- Products according to the initial sample inspection and therelated manufacturing processes that have been documented in the initial sampling records and/or released by audits.
- Changes to the product or the manufacturing process by the supplier must, in any case, discussed with the relevant supplier manager.

3.5.5 Representative Sampling

For tool-specific part families (parts of the same kind that only differ in details), a representative sampling can be agreed upon with the supplier manager. For this, the most complex representative of this part family is thoroughly sampled, the other articles of this part family will be sampled via first page sampling procedure that must contain a reference to the representative article. This procedure reduces costs for the supplier as well as the Reinhausen Group.

3.5.6 Release Status

The inspection of initial samples can have the following results:

Results of the initial sampling of the Reinhausen Group	**Consequences**
Acceptance	The delivery of products is released according to the delivery schedule.
Exceptional acceptance	Delivered parts are accepted as an exception. The delivery of products that do not meet the complete sampling scope is only permitted for a limited time or quantity (deviation permit). The supplier is informed of the instructions and must adhere to them. A re-sampling (of the remedied deviations) is required.
Rejection	The delivery of products is not permitted. A re-sampling is required.

Details of re-samplings and new samplings must be discussed with the relevant supplier manager of the Reinhausen Group.

3.5.7 Delivery of Initial Samples

Initial samples and initial sampling inspection reports must be presented to the relevant supplier manager of the Reinhausen Group of the ordering plant of the commissioner. Initial sampling inspection reports must be sent electronically (e.g. as PDF) to the respective email address below:

Maschinenfabrik Reinhausen GmbH: mr.istr@reinhausen.com

Reinhausen Power Composites GmbH: rpc.istr@reinhausen.com

Messko GmbH: ms.istr@reinhausen.com

Reinhausen Italia: ri.istr@reinhausen.com

Reinhausen Manufacturing: rm.istr@reinhausen.com

To ensure the correct assignment, the subject line must include the following information:

Material number – designation – order number.

The signed release on the initial sampling cover sheet by the relevant supplier manger finalizes the initial sampling.

3.5.8 Packaging of Initial Samples

The packaging of the initial sample parts must be defined and released with the relevant supplier manager of the quality assurance department. Both the delivery note and the packaging of the parts must be marked with "Initial Sample".

Initial sample packages may only contain initial samples of one article number and must be packaged separately. This excludes the delivery of a bundle of serial parts. The delivery note must be attached on the outside of the package.

3.5.9 Designation of Initial Samples

Packages with initial sample parts must be designated with an initial sample sticker, containing at least the following information:

- **Supplier name**
- **Article number**
- **Index level**
- **Quantity of sample parts**
- **Recipient (relevant supplier manager of the Reinhausen Group)**

Parts that have been measured or checked must be distinctly designated as such, potentially on both sides (for large or symmetrical parts) to prevent mix-ups with parts for installation trials. In case of multiple purpose tools, each nest must be designated.

4 Ensuring delivery reliability in series production

4.1 Serial Delivery

The supplier must make sure that a production process release and product approval (PPR or PPAP) of the Reinhausen Group is available. Additionally, only defect-free products may be delivered to the Reinhausen Group by the supplier, without restrictions.

To assess the serial quality performance, the supplier must provide data, information and experiences on the continuous product improvement, as well as the manufacturing optimization.

4.2 Provided Production Resources and Test Equipment

As far as the Reinhausen Group provides production resources and test equipment and other means and appliances within the scope of deliveries, the supplier must integrate these in his management system as he would his own production resources and test equipment.

4.3 Deviation Request

4.3.1 Defective products deemed appropriate by the supplier for the intended use.

If the supplier notices that the manufactured product does not meet the requirements of the drawings/specification before delivery to the Reinhausen Group but appears to appropriate for the intended use by the Reinhausen Group after credible evaluation, a written deviation request must be sent to the relevant supplier manager of the Reinhausen Group. The Reinhausen Group checks, after the receipt of a deviation request, whether the manufacturing defect or the deviation from the nominal condition leads to decreasing quality and whether use of such a product is possible, and if this is the case according to the relevant supplier manager, the product will be released for delivery by means of written confirmation to the supplier. The supplier must mark the respectively re-worked product together with the approved deviation request during delivery. The deviation request constitutes a limited exception in both time and quantity and does not absolve the supplier from his obligation to analyze and remedy the source of the deviation. The reason for deviation must be determined and confirmed by effective actions, as well as documented in the request.

4.3.2 Defective Products That the Supplier would Like to Re-work Before Delivery

If the supplier discovers defective products during the manufacturing process or the final testing stage that can, according to his assessment, be put in an okay state, the supplier must notify the relevant supplier manager in writing of the re-working procedure, if it has not yet been considered and qualified for the serial process, with detailed description of type and scope of the re-working process, also including the use of the deviation request/special release form, as specified in 4.3.1. The affected products may only be re-worked once released by the relevant supplier manager. The supplier must mark the respectively re-worked product together with the approved deviation request (subitem in the menu for special releases) during delivery.

4.4. Change management / PCN (Product Change Notification)

4.4.1 Changes to Parts

Changes to parts can, under certain circumstances, have unexpected consequences for the supplier.

The special use case of purchased parts in the high voltage section of the Reinhausen Group requires that for laymen seemingly insignificant features (burr, chips, foreign particles etc.) may lead to electrical breakdowns with **dangers to human health and life**. This is why the change management of the Reinhausen Group is subject to due diligence.

This is why the Reinhausen Group has defined which changes to parts or processes must be reported or approved. This also applies to sub-suppliers.

Changes with no duty to report
- Personnel changes - Changes to process parameters within a defined process window in accordance with process release - Changes to machinery/equipment/production plants/test equipment of the same type, capacity etc. without influence on the product quality - Maintenance-related changes (spare parts) - Additional quality tests, e.g. process control (goods leaving inspection) - Additional visual inspections due to new errors (not yet listed errors in the error catalog)

Changes with duty to report
- Replacement of machinery with machines of a better and more powerful type, without any predictable influence on product quality - Changes to firmware / operating system / BIOS / application software

Changes requiring approval
- Changes to machinery/equipment/production plants/test equipment/manufacturing locations with potential influence on the product quality - Changes to process parameters with potential influence on the product quality - Changes of test parameters and test methods - Changes of the (raw) material - Changes of the material supplier / service provider - Process sequence changes (process flow) incl. test steps - Use of broker ware

The supplier must communicate the change request in writing, using the Product Change Notification (PCN) form in the download center on the website or for MR in the supplier portal. Only authorized changes may be implemented by the supplier.

Authorized changes to parts must be presented to the Reinhausen Group by means of a new initial sampling. Changed parts must only be delivered once they have been authorized.

4.4.2 Product Life Cycle

To be able to associate occurring problems with product changes, the supplier must keep an inventory of all product- and process-related changes with regard to the respective delivery of the parts.

4.5 Repair Orders

In the case of a defect that is in the area of responsibility of the Reinhausen Group, repair work or re-working by the supplier is considered. Before repair work or re-working by the supplier is commissioned, an offer is invited. If repair work or re-working is economically viable, the Reinhausen Group will commission a repair order. The affected parts are sent with the order to the supplier. The return shipment of repaired or re-worked purchased parts may only take place if distinctly designated and if the contracting entity / purchase has been previously informed.

4.6 Complaints due to Quality Defects

4.6.1 Complaints in Case of Quality Defects

In case of the presence of qualitative defects of delivered products / parts, the Reinhausen Group will immediately inform the supplier by means of complaint by email or via MR's supplier portal. The discovery of the defect can take place during incoming goods inspection, in the value-addition process within the Reinhausen Group or at the customer's of the Reinhausen Group. The complaint will indicate any resulting costs and potential consequential costs. Deficient parts are separated from the production process to prevent a further processing. The Reinhausen Group decides how to proceed, after considering the risk of the defect, the affected quantity as well as the expected economic consequences (e.g. production standstill, damage to the customer).

The following scenarios are possible:

- **Deficient parts are compiled and returned to the supplier.**
- **The inventory is returned to the supplier to sort out deficient parts.**
- **The supplier is requested to check the inventory of the affected location to ensure the supply with defect-free parts. This can be done by sending an employee of the supplier's or by ordering a service contractor.**
- **In case of imminent production standstill, the Reinhausen Group reserves the right to sort defective parts itself or to re-work the defect in order to prevent the production standstill. The supplier must be informed as soon as possible.**

How to proceed is discussed with the supplier. The supply of the Reinhausen Group with defect-free products / parts is of top priority in any case. Each possible reaction is diligently weighed in regard to complexity and resulting costs.

4.6.2 Returns of Defective Parts or Parts to be Reworked

- **The Reinhausen Group actively returns return shipments (parts for re-working, samples / etc.) within 2 working days. Time-sensitive parts are actively sent in individual cases after discussion.**
  The supplier receives a new order for the re-delivery; this order number must be clearly visible in the delivery note.

- **Complaint product (not okay parts for Q reporting) are not automatically returned up to a value of 50 EUR.**
  If the supplier wishes to have the parts returned for inspection purposes or error analysis, he must request this from the supplier manager. The supplier manager may also decide that a return shipment is required for analysis of the error.

4.6.3 Complaint Management by the Supplier

The Reinhausen Group expects from the customer, for sustainable problem-solving, a more thorough complaint management with documentation in the shape of an 8D report:

- **Complaint of a customer of the Reinhausen Group**
- **potentially critical effect on the function of the product**
- **Problem with new appearance**
- **systematically repeated error that cannot be justified with the limits of the underlying manufacturing technology**
- **Quality disruption variable with increased error costs (part costs plus process costs)**
- **Explicit request by a supplier manager**

The Reinhausen Group demands the processing of the standardized steps int the 8D. For the handling of an 8D report, the following deadlines apply, depending on the priority ("High" or "Standard") of the complaint, unless otherwise determined in a single contract via a QAA (quality assurance agreement):

Report	Content	Reaction time	
		Priority High	Priority Standard*
0	Confirmation of receipt	24h	2d
3D	Immediate actions	36h	3d
4D	Causal analysis	48h**	5d
6D	Proof of efficacy of the corrective actions	10d	10d
8D	Final report	14d	21d

*Reaction times in hours (h) or working days (d)

**first results must be sent by the supplier

The complaint management is evaluated in regard to content and adherence to schedules and this evaluation is part of the annual supplier assessment.

MR pursues the following targets by complaint management via 8D reporting:

- **Structured procedure** for the systematic analysis and remedy of complaints, as well as prevention of future complaints.
- **Repeated errors** must be prevented by means of sustainable use of correction and prevention measures.
- The **actual cause** must be determined and documented.

The supplier manager must be informed on the current state of the complaint management. A traceable and analyzable documentation of the error must be created and archived.

4.6.4 Product Labeling and Traceability

Product labeling serves the purpose to ensure traceability in the case of a defect, so that the quantity of potentially affected products can be limited in an as efficient as possible way. The supplier must ensure a systematic traceability of the delivered products / parts. Regarding the designation of products, the requirements of the drawings and technical delivery conditions apply, as defined.

Software and hardware containing software must have a distinct version code.

The supplier must be able to use this version code to clearly identify the software status of his software components.

In order to support the risk-minimizing measures in the case of an error, the supplier will check whether similar or other delivered products / parts may be affected and immediately communicate this to the Reinhausen Group.

The definition of a respective traceability process is recommended to the suppliers in their own interest, in order to avoid unnecessary sorting and checking costs .

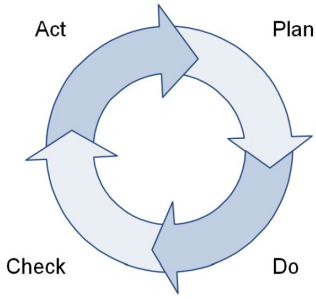
The options are carefully considered by the Reinhausen Group. The supply of the assembly lines of the Reinhausen Group is of utmost importance, in order to keep potential claims of recourse to a minimum.

4.6.7 Labeling of Checked or Re-worked Parts

If defective parts are returned to the supplier for re-working or sorting, it is important not to mix these parts with other batches. These parts must be distinctly marked as **"blocked"** and stored in a quarantine storage until re-work. The performance of the re-working must be discussed with the relevant supplier manager (date, process, testing, risk assessment, etc.). Re-worked or sorted parts must be marked after discussion with the supplier manager. The designation/marking can be done, depending on the purchased parts, using a stamp, sticker or color coding on each part, in any case on each bundle.

In case of re-delivery, re-worked parts must be kept separate from serial parts.

5 Continuous Improvement Process (CIP)



The PDCA cycle is a method for continuous improvement and is a recommended method of continuous improvement for suppliers .

5.1 Supplier Evaluation

For the evaluation of suppliers, objective parameters from the areas of logistics, procurement and quality management are determined. The respective departments will give a subjective evaluation, in which the cooperation with the respective support people will be acknowledged.

All evaluations, with different weightings, are summed up to an overall rating.

The objective evaluation of suppliers includes the following criteria, among others:

- Adherence to schedules, adherence to quantity stipulations, error costs and ppm rate[1].

5.2 Business Reviews

Once per year, an agreement discussion is held with strategic suppliers on the management level, in which the business relations and the supplier performance are reflected upon. The results of this discussion is a target agreement with action plan, schedules and responsible persons.

5.3 Target Agreement and Controlling

5.3.1 ppm Quality Targets

Notwithstanding the supplier's obligation to deliver defect-free parts, the supplier shall pursue a continuous improvement process for the systematic identification and elimination of sources of defects in order to achieve the zero-defect target. The supplier will take the required actions within the CIP to achieve a reduction of the ppm rate from one year to the next.

The ppm target values are agreed upon in writing, as necessary, between the supplier and the Reinhausen Group or the Reinhausen Group defines a blanket value per product group. The supplier can ask the relevant supplier manager for the ppm values applying to him and adjust them to the specific situation after a mutual agreement. The ppm values are meant to be challenging while still realistically achievable.

1 Error quota in the unit parts per million (ppm), i.e. 1,000,000 x (quantity of defective parts) / (quantity of parts).

5.3.2 ppm Controlling

The supplier is responsible for regular measurement of the actual quality level (ppm rate, complaint rate) compared to the target values independent from measurements of the Reinhausen Group. For this, the supplier installs an appropriate´monitoring system.

If the ppm values are not met, the supplier must define and take appropriate actions. The Reinhausen Group is authorized to examine these measures and request improvements, as necessary.

a. repeated exceedance of agreed-upon ppm target values,
b. repeated errors with resulting disruptions at the Reinhausen Group,
c. disruption variables with effects on the customers of the Reinhausen Group, immense economic relevance or safety relevance,
d. every other significant decrease in quality
especially if this has any effect on customers of the Reinhausen Group.

5.4 Quality Improvement Projects

Continuous improvement must be part of the quality strategy of every supplier. The Reinhausen Group expects the active cooperation of suppliers in the continuous improvement of procedures, processes and products with the goal of permanently improving the system as a whole. In the case of not meeting quality goals, decreasing quality, repeated errors or steep quality costs (disruption costs), the Reinhausen Group may demand a quality improvement projects (e.g. lean manufacturing project, six sigma project).

History:

Creation of Quality Handbook New / 1 December, 2024 / Head of Supplier Management

Sources:

VDA, quality reference books, norms and specifications