



# WH-QD20

Windmüller & Hölscher Quality Directive 2020



## Windmüller & Hölscher Quality Directive 2020 (WH-QD20)

### Preface:

In keeping with the motto "Passion for Innovation", we continue to expand our position worldwide as a technological and profitable market leader. Our success depends to a large extent on our suppliers' performance.

The technological demands of our products, along with the ability to react quickly and highly flexibly to our customers' requests, are criteria that also influence our supplier structure.

We regard globally efficient suppliers, together with competent and motivated employees, as the cornerstones for the strategic and international orientation of Windmüller & Hölscher (W&H) as well as our sustained success in the world market. Our goal is to work in a long-term partnership with the best suppliers.

We classify our suppliers according to their delivery performance and potential. Those who consistently perform very well are included in the W&H list of suppliers and can hold their own there. Experience has shown that both sides benefit from the more intense collaboration.

The Windmüller & Hölscher Quality Directive 2020 (WH-QD20) summarizes our quality requirements and expectations for our suppliers. It makes an important contribution to improving our supplier performance and to the competitiveness of W&H.

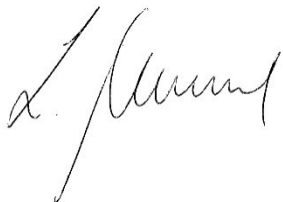
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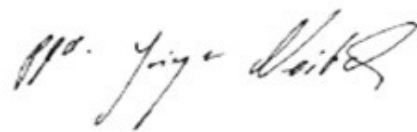
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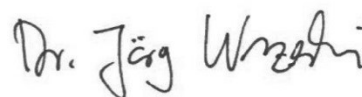
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# **1 General Requirements**

## **1.1 Scope**

This directive applies to all suppliers of Windmüller & Hölscher KG, Lengerich, and Windmüller & Hölscher Machinery k.s., Prostějov, hereinafter referred to jointly as W&H.

The WH-QD20 applies to all parts, components and systems (machines) which are delivered to W&H.

W&H requires its suppliers to pass on the requirements from WH-QD20 to their own suppliers.

## **1.2. Applicable Documents**

With each order, the suppliers acknowledge the following W&H documents:

- General Conditions of Purchase
- General Delivery Specifications
- W&H Packaging Regulations
- W&H Technical Guidelines

These four documents are available via the Pool4Tool (P4T) supplier portal or can be obtained from the W&H purchaser.

Furthermore, deliveries shall be made in accordance with the following standards and guidelines:

- DIN EN ISO 9001:2015
- DIN ISO 14001
- 2006/42/EC (Machinery Directive)
- 2011/65/EU (RoHS)
- 2012/19/EU (WEEE)
- 2014/29/EU (Pressure Vessel Directive)
- 2014/34/EU (Explosion Protection Directive)
- 2014/35/EU (Low Voltage Directive)
- 2014/68/EU (Pressure Equipment Directive)
- (EC) No. 1907/2006 (REACH)
- (EC) No. 1272/2008 (CLP)
- GHS (Globally Harmonized System of Classification and Labeling of Chemicals)
- IEC DIN EN 61508
- EN ISO 13849
- SA8000 Social Accountability

The current versions of the standards shall apply.

Any amendments and additions shall be made in writing.

Suppliers shall be required to request the applicable documents throughout the entire supply chain.

### **1.3 Business Language**

The business language is English unless another language is explicitly specified in individual cases.

### **1.4 Quality Management System**

The suppliers are committed to the zero defect target and shall constantly optimize their products and processes with this aim.

We expect our suppliers to work according to the requirements of DIN EN ISO 9001:2015. If they are not certified, the areas of action shall be identified and the deviations addressed within a reasonable period of time. Deviations require the written approval of W&H Quality Management.

The effectiveness of the QM system at our suppliers is reflected by:

- Continuous and verifiable improvement of processes, procedures and products
- Compliance with delivery quality
- Compliance with delivery dates
- Rapid and effective implementation of corrective actions
- Early and clear communication on all levels
- Completion of new projects and change projects correctly and on schedule

### **1.5 Audits**

W&H reserves the right to carry out audits and assessments of quality management systems, processes and products after prior notice.

The suppliers shall be informed of the results of the audit. Any corrective measures shall be agreed between W&H and the suppliers.

W&H may demand documented proof from the suppliers that the suppliers have verified the effectiveness of their sub-suppliers' quality management system. Furthermore, W&H may also demand that the suppliers provide written testing and other quality certifications from their sub-suppliers.

Upon request, the suppliers shall also grant access to the production and testing documentation and to other documents and materials related to the production of the object of delivery. This also applies for tools, equipment and testing equipment.

### **1.6 Quality Objectives**

Suppliers shall ensure that quality objectives for the relevant functions, procedures and levels of the entire organization are defined, established, maintained and reviewed to meet W&H customer requirements.

In the course of the quality planning, suppliers shall be expected to develop a "Zero Defect Strategy" and take all necessary actions to achieve the zero defect target.

If the quality performance impairs the safety, quality or supply of products, the suppliers shall immediately inform all W&H recipient plants that may be affected, along with any other parties in the W&H supply chain.

## **1.7 Regulatory Compliance, Corporate Social Responsibility & Sustainability**

W&H requires its suppliers and sub-suppliers to adopt and fulfill our minimum expectations regarding working conditions, human rights and environmental protection in accordance with the SA8000 international standard from Social Accountability International.

## **1.8 Environment**

Effective environmental management, which ensures compliance with the applicable environmental regulations and which also continuously and efficiently improves the suppliers' environmental conditions, represents a major contribution to supply reliability. W&H is committed to sustainability with the Greenovation label. Therefore, we expect our suppliers to make a corresponding voluntary commitment and recommend certification to DIN EN ISO 14001.

Upon request, suppliers shall present suitable recycling and disposal concepts for their products. When the life cycle of W&H products is evaluated, additional data (e.g. energy consumption and emissions) may be requested.

## **1.9 Product Requirements**

W&H describes the products requirements by means of technical drawings, technical specifications, standards, technical guidelines, specifications, testing and packaging regulations and individual contractual provisions, all of which shall be complied with.

Suppliers shall receive from W&H the latest updates to the technical documentation. They shall implement suitable internal measures to ensure that production is only carried out according to the valid version. The same shall apply to their sub-suppliers. These documents are binding contractual elements. Change requests from suppliers shall require the written approval of W&H, see chapter 1.11.

Deviations from the characteristics can impair product safety, reliability, ease of assembly, function and quality and may also violate official or legal regulations.

Inspection characteristics are stipulated by W&H and shall be documented, recorded and supplied on the drawings and/or specifications. In addition, the checklists (work instructions) provided by W&H shall apply.

## **1.10 Sub-Supplier Management**

Sub-suppliers are the suppliers of W&H's suppliers. They have a significant influence on the quality of the end product. Therefore, they shall also maintain a documented supplier management system.



Suppliers shall be responsible for the development of their sub-contractors. They must have the necessary procedures, expertise and capacity to manage their sub-contractors and monitor their performance.

Any intended change of a sub-supplier for important product features requires the prior approval of W&H.

### **1.11 Changes to Product or Process**

Suppliers shall possess a documented process for managing and implementing changes that affect the product and production.

Suppliers shall inform W&H of any changes that could affect the characteristics and usability of their products or processes for W&H. This applies to effects on:

- the safety
- the function
- the service life
- the efficiency
- the general ease of assembly or manufacturing capability
- the maintenance tasks
- the repair tasks
- the conduct regarding environmental conditions
- the conduct regarding operating conditions
- the manufacturing and assembly processes

This shall also apply to changes made by sub-suppliers. The information about the change shall be submitted to W&H via the [WH-ECR](#) (Engineering Change Request) form. This document need to be sent to the e-mail address [ECR-WHL@wuh-group.com](mailto:ECR-WHL@wuh-group.com) for the location Lengerich, respectively to [ECR-WHM@wuh-group.com](mailto:ECR-WHM@wuh-group.com) for the location Prostejov.

The impact of a change, including changes initiated by sub-suppliers, shall be assessed, verified and validated to ensure compliance with the W&H requirements prior to implementation.

A change to the product or process usually results in an initial sampling of the corresponding characteristics.

### **1.12 Product Safety**

Product safety and product liability have a particularly high priority.

Suppliers shall be responsible (liable) for their parts and processes which W&H procures to manufacture the end products. This responsibility shall also include the parts and processes of the suppliers' sub-suppliers. To avoid risks arising from product liability, suppliers shall be responsible for taking every organizationally and technically feasible action to ensure product safety.

Suppliers shall have documented processes for the management of product safety-relevant products and production processes.



W&H requires its suppliers to appoint a product safety officer.

### **1.13 Business Processes based on Electronic Data Exchange**

The processes described in this directive are increasingly handled via W&H's electronic communication platforms such as Pool4Tool and EDI.

W&H expects its suppliers to take all necessary actions to support the electronic data exchange with W&H via the communication platforms. With regard to drawing and production parts, W&H expects suppliers to be able to process digital manufacturing information (PMI) within a reasonable period of time.

All suppliers are expected to regularly access the W&H communication platform (P4T) to remain up-to-date.

### **1.14 Communication with W&H customers**

W&H requires suppliers to be available to provide technical support for meetings with customers either in-house or at W&H, if required.

Any communication between suppliers and W&H customers with regard to W&H products may only take place in consultation with W&H.

### **1.15 Safeguarding Delivery**

Suppliers shall ensure the supply of W&H.

W&H shall be informed immediately in the event of any incidents (e.g. interruption of externally supplied products or services, natural disasters, fires, imminent bankruptcy, etc.). In this case, suppliers shall grant W&H access to W&H's own tools or their replacement.

### **1.16 Disposition of Non-conforming Products**

Suppliers shall implement a documented process for handling non-conforming products, regardless of whether they have to or can be reworked or repaired. W&H shall be notified via the [WH-NCR](#) (Non Conformity Request) form. With the WH-NCR the completely filled out [WH-A4](#) form must be sent. Both documents need to be sent to the e-mail address [NCR-WHL@wuh-group.com](mailto:NCR-WHL@wuh-group.com) for the location Lengerich, respectively to [NCR-WHM@wuh-group.com](mailto:NCR-WHM@wuh-group.com) for the location Prostejov.

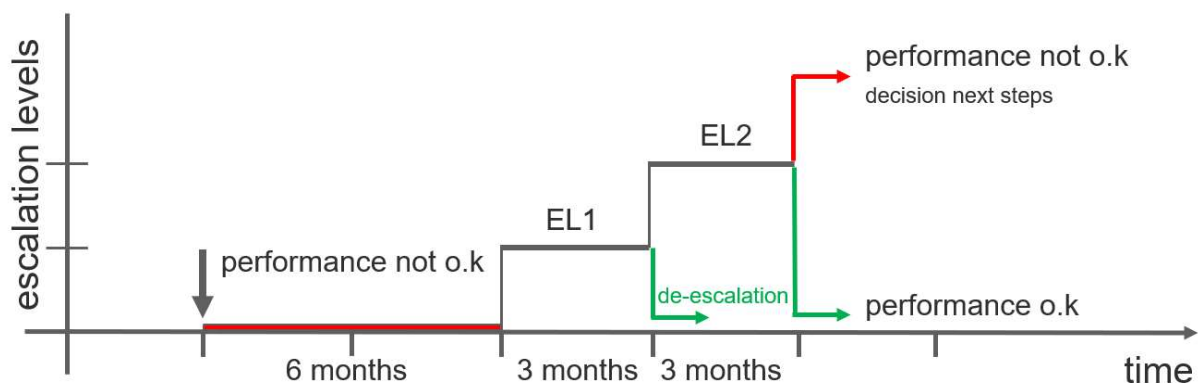
Written approval shall be obtained from W&H before implementing and delivering of revised products.

### **1.17 Escalation Model**

Suppliers of products and services that fail to comply with the upper limits regarding quality or punctual delivery over a continuous period of more than 6 months will be upgraded to level of escalation 1 (EL1) to ensure that improvement measures can be implemented more rapidly and effectively.

To this end, suppliers receive a written request from W&H to draft an action plan. In addition, clear and measurable criteria for de-escalation are defined and shall be fulfilled within 3 months. During the EL1 phase, escalation meetings shall be held weekly with the supplier's management.

A supplier is upgraded to level of escalation 2 if the key performance indicators in EL1 have not stabilized over a period of more than 3 months, the de-escalation criteria are not fulfilled or there is no identifiable willingness to improve. After these 3 months in EL2, W&H will decide whether further cooperation with the corresponding suppliers is feasible.



### 1.18 Retention Periods

Retention periods for documents, records and reference samples shall be defined and observed by the suppliers. Furthermore, the legal requirements of the respective country apply.

### 1.19 Marking of Customer's Property

All tools, production or testing equipment that are the property of W&H or its customers shall be permanently marked to clearly show that they are the property of W&H or one of its customers. Unless otherwise approved in writing, these tools may only be used for W&H products.

### 1.20 Customer-Specific Requirements

The W&H documents (drawings etc.) take into account the requirements of W&H customers. The suppliers shall manufacture the products in accordance with these documents.

## **2 Quality Planning**

The suppliers shall carry out all of the steps listed below for the corresponding part or project, as a minimum.

Project-specific requirements that exceed the scope of this quality directive will be agreed separately in writing between W&H and the suppliers.

### **2.1 Supplier Enablement Process**

The early identification and prevention of quality risks is a decisive success factor to ensure a problem-free launch and stable series production. W&H reserves the right to specify components with increased risk or special priority and to initiate a “Supplier Readiness Program” for these components. The program shall be carried out by the suppliers in cooperation with W&H.

### **2.2 Quality Objectives**

Suppliers shall define internal project/product-related quality objectives to measure and evaluate the quality achieved. Suppliers shall monitor the relevant key performance indicators (KPI) at all times to achieve the quality objectives set by W&H. The KPIs defined by W&H can be found in the supplier portal.

### **2.3 Lessons Learned/Knowledge Transfer**

Before processing the feasibility study (see below), suppliers shall consider all relevant experience and knowledge gained from previous or similar projects (“lessons learned”). This excludes proprietary know-how such as knowledge obtained that is covered by a non-disclosure agreement.

### **2.4 Feasibility Study**

The suppliers shall take into account all technical documents (drawings, specifications and requirement specifications), the applicable documents (see 1.2) and this quality directive when carrying out the feasibility study.

The requirements serve to identify and confirm:

- the feasibility of the design (for development service providers),
- the suitability for production (manufacturing)

In the case of design activities on the part of suppliers, potential improvements for processes and costs shall be identified and implemented.

### **2.5 Timely Involvement of Suppliers**

W&H strives to involve its suppliers in development and product update projects at an early stage.

## **2.6 Project Plan**

The suppliers draw up a project plan based on the project milestones specified by W&H and submit this available to W&H. This plan also specifies binding deadlines.

## **2.7 Capacities**

Before carrying out the initial sampling, the suppliers shall, upon request, confirm that they are capable of providing the necessary capacities for series production.

## **2.8 Product and Process FMEA**

A Failure Mode and Effect Analysis (FMEA) shall be carried out to investigate any possible risks and evaluate these with regard to their severity, probability of occurrence and possibility of detection where necessary. These risks shall be minimized by taking appropriate actions.

Therefore, the FMEA serves as an important means of preventing errors.

The following points shall always be taken into consideration:

### **1. Material mix-up:**

The entire production process chain, including the suppliers' processes, shall be examined to identify any potential risk of material mix-ups. All necessary measures shall be taken to eliminate the risk of incorrect materials being used (e.g. by introducing efficient security systems).

### **2. Bypassing/skipping processes:**

A system shall be developed and implemented to ensure that each process step can only start when the previous one has been completed successfully.

### **2.8.1 Product FMEA for Suppliers Involved in Development**

The product FMEA assesses the design risks. W&H shall be informed immediately of any necessary design changes.

The product FMEA shall be submitted to W&H on request.

## **2.8. Process FMEA**

A process FMEA shall be carried out for the critical processes of a component.

### **2.8.3 Implementation of FMEA Measures**

Risks that are identified with the help of an FMEA shall be minimized through suitable measures. When implementing the measures, deadlines and responsibilities shall be assigned to ensure that the measures can be carried out before the start of production. The measures carried out shall be assessed to determine their effectiveness.

## **2.9 Routing Plan**

An operation plan shall be created for all individual parts and assemblies. This shall contain all of the information about the process steps and quality checks. All neces-

sary drawings, e.g. for production steps, blanks as well as process descriptions shall be created.

## **2.10 Control Plan**

The control plan (CP) provides a planning tool for preventive process assurance. This plan is drafted by the suppliers in a team through a systematic analysis of the manufacturing, assembly and testing processes. This team shall consist of employees from planning, production and quality assurance as well as the suppliers' other relevant departments.

When preparing the control plan, the results of the product FMEA, process FMEA, experience from similar processes and products as well as the use of improvement methods shall be taken into account. A control plan shall be created in an appropriate form. VDA Volume 4 provides guidelines regarding the creation of the CP.

## **2.11 Inspection Planning**

Suppliers shall create an inspection plan based on the control plan (CP) that specifies all characteristics to be inspected, along with the corresponding test equipment for each work process. Furthermore, the inspection frequency and the type of documentation of the results shall be specified in the test plan.

## **2.12 Production Control Planning**

All product and process characteristics are important and shall be complied with. Suppliers shall take appropriate steps to ensure this.

The suppliers ensure that the products procured from their sub-suppliers also fulfill the agreed quality requirements. The requirements specified in this directive shall also be applied to their sub-suppliers.

Special requirements require proof of process capability. Accordingly, suppliers shall monitor these characteristics using suitable methods such as quality control charts (SPC).

If the process capability cannot be implemented, a 100% test shall be carried out. The suppliers commit to carry out the machine and process capability inspection.

Special requirements that cannot be measured or require destructive testing shall be monitored and documented using suitable methods. Inspection intervals and sample sizes shall be determined as required.

## **2.13 Traceability**

Suppliers shall ensure the traceability of their products. See the W&H General Delivery Specifications in chapter 1.2 for information regarding the labeling with material number and supplier identification.

## **2.14 Cleanliness**

As per the specific requirements, all types of contamination and their sources shall be avoided throughout the entire process chain. Sub-suppliers, machine manufacturers and service providers shall also be involved in this process.

The product, the packaging and all associated processes (storage, transport, material movements) shall be planned in such a way that the occurrence, accumulation and spread of dirt and contaminants (e.g. filings, blasting sand, coolant lubricant, galvanizing liquid) are prevented.

## **2.15 Logistics and Packaging**

The W&H General Delivery Instructions and W&H Packaging Regulations apply. In addition, supplementary or deviating agreements may be made.

## **2.16 Sub-supplier Planning**

If the suppliers place orders with sub-suppliers, these shall also fulfill the requirements of this quality directive.

The use of qualified sub-suppliers shall be guaranteed. Should they fail to fulfill the requirements, improvement plans shall be defined.

A list of all sub-suppliers used shall be made available to W&H on request.

## **2.17 Planning and Procurement of Plant, Tools and Equipment**

All equipment, plants, tools and operating materials required for production shall be planned and procured in such a way that the order volume is adequately fulfilled. They shall be available by the initial sample date at the latest. All other devices as well as internal and external means of transport shall be taken into consideration. Deviations from these requirements are only permissible with the written approval of W&H.

## **2.18 Planning of Preventive and Predictive Maintenance**

Preventive and predictive maintenance of production equipment and tools shall be carried out to ensure the supply capability.

## **2.19 Audit Planning**

The suppliers are regularly audited by W&H. The audits shall be prepared and prioritized by the suppliers. The results of the audits flow are included in the supplier evaluations and selection process.

### 3 Sampling Process

Before starting the initial sample approval process, it shall be ensured that all process and quality planning activities have been completed.

#### 3.1 Initial Sample

Initial samples are products that have been manufactured and tested under series conditions (series location, machines, systems, operating and test equipment, processing conditions).

The test results of all characteristics shall be documented in the corresponding initial sample test report for each initial sample ordered.

Initial samples shall be clearly labeled with the [WH-ISIR-notification](#) form prescribed for this purpose.

To identify the characteristics, identical numbers shall be used in the initial sample test report ([WH-ISIR](#)) and in the current drawing to be supplied.

Sub-assemblies manufactured according to a W&H design, including their individual parts, shall undergo initial sample testing and shall be submitted to W&H if the relevant drawings have been made available.

For products based on the supplier's own designs, suppliers shall sample the assemblies and submit these to W&H.

Initial sampling shall also be carried out for individual parts and, if applicable, sub-assemblies. W&H shall be granted access to this documentation as required.

W&H is entitled to complain about deviations from W&H specifications, which were not found during the sampling process, at a later date.

#### 3.2 Reasons for Initial Samples

Generally, the supplier shall carry out internal sampling in the cases listed below. If an order for initial sampling has been placed by W&H, the documents described below shall be included with the order. The sampling process is required if one of the following changes occurs among suppliers or sub-suppliers, unless otherwise agreed with W&H Quality Management:

- When a product is ordered for the first time
- After a product change (drawing change) to all characteristics affected
- After a delivery or production interruption of more than 2 years
- After a change of material
- After changing the sub-supplier
- In the event of changes to the production process or process parameters which influence the function, reliability or further processing
- In the event of changes to the manufacturing process
- In the event of changes to production equipment, including shaping equipment (e.g. casting, stamping, rolling, forging and pressing tools; with different molds or multiple molds separately for each nest)



- After relocation of production facilities
- In the event of design changes which affect the appearance of the products even if there are no separate specifications regarding the appearance (e.g. haptics, surface, color, odor, etc.)

Exceptions to the procedure and scope are only permissible in consultation with the W&H Quality Management in the following cases:

- Delivery or production interruption of more than 2 years
- Small production batches
- Standard and catalog parts
- Spare parts
- Wide parts if a working width has been successfully sampled

### **3.3 Initial Sample Inspection Report (ISIR)**

The initial sample documentation including the initial sample test report cover page shall be delivered at the same time as the initial samples and additionally as an e-mail to [ISIR-WHL@wuh-group.com](mailto:ISIR-WHL@wuh-group.com) for the production in Lengerich, or [ISIR-WHM@wuh-group.com](mailto:ISIR-WHM@wuh-group.com) for the production in Prostějov.

Missing, incorrect, incomplete or delayed initial sample documentation is regarded as a problem with the delivery performance and results in a complaint on the part of W&H.

### **3.4 Deviation in Initial Sample**

The initial sample parts may only be submitted with the initial sample test report if all specifications have been fulfilled. In the event of a deviation, the corresponding supplier shall obtain the prior written consent of W&H. The [WH-NCR](#) document shall be used for this purpose. In addition, the written approval WH-NCR must be attached to the initial sample delivery documents as well as to the component via the form WH-NCR-notification.

With the WH-NCR the completely filled out [WH-A4](#) form has to be sent. A delivery with deviation, for which no approved WH-NCR is available, leads to a complaint.

### **3.5 Material Data Reporting**

Where statutory reporting obligations (e.g. REACH) exist, all products delivered to W&H shall include with material data.

### 3. Series Production Requirements

Once the initial sampling process has been successfully validated, the series production phase begins.

At this stage, there are numerous requirements, which the suppliers and their sub-suppliers shall be fully aware of and shall fulfill. The most important issues in this phase are described in the following.

#### 4.1 Information Obligations

As soon as suppliers identify any possible problems related to safety, quality or supply, they shall inform W&H and any third parties involved in the supply chain immediately.

#### 4.2 Complaint Classification

Quality complaints are complaints about issues which do not comply with the specifications, the packaging requirements or the agreed scope of documentation. At W&H, complaints are classified according to their effect as follows.

- QA (major issue): Significant complaint
  - Quality complaint affects W&H production (standstill). Components cannot be used.
  - Quality complaints affect the W&H customer (e.g. delivery date or quantity to the customer or customer complaint before production starts).
  - Warranty claims, complaints caused by the supplier in the field, the customer has complained to W&H.
- QB (minor issue): Minor complaint
  - Quality complaints do not affect W&H production.
  - Components can be used after sorting or reworking.
  - Components are not urgently required or are used with component deviation.

#### 4.3 Complaint Processing

Preferably, complaints are reported and processed via the supplier portal, alternatively via e-mail.

From the time of discovery, suppliers shall ensure that no unchecked material is delivered to W&H. Other necessary immediate measures may include:

- 100% inspection at the suppliers prior to delivery
- Sorting at suppliers or at W&H by suppliers or third parties commissioned by W&H
- Reworking or immediate replacement (by the supplier or authorized third parties)

The status of the immediate measures shall be reported to W&H within two working days at the latest. The [WH-A4](#) problem solution form shall be completed and made

available to W&H within 10 working days at the latest. If necessary, deviating deadlines may be agreed between the supplier and W&H Supplier Quality. In justified cases, W&H may request the creation of a [WH-8D](#) report.

In urgent cases or if a supplier is in default with the fulfillment of its obligations, W&H is entitled to remedy the defects itself or have them remedied by third parties or to procure a replacement at the supplier's expense. The supplier will be informed accordingly.

In the case of justified complaints, W&H reserves the right to charge the supplier, as the party responsible for these costs, for the additional costs incurred for processing, sorting, dismantling, installation, reworking and freight.

Conversely, suppliers may reserve the right to charge W&H for their additional expenses if it is proven and confirmed by W&H that W&H is responsible for the corresponding complaint.

#### **4.4 Measurement and Improvement of Supplier Quality Performance**

W&H requires its suppliers to achieve and maintain zero defects and 100 percent delivery reliability.

W&H continuously monitors the performance of the supply chain using key performance indicators (KPI). W&H evaluates these KPIs to:

- enable comparisons between the performance of different suppliers, also as a criterion for future supplier selection
- derive the strategies and initiatives necessary for supplier development
- to continuously improve the supply quality

The suppliers' performance data is updated by W&H in the supplier portal on a monthly basis and can be accessed by the suppliers.

The performance status of suppliers will be taken into account in future procurement decisions. It also serves to reveal potential for continuous improvement. If the key performance indicators remain in an unacceptable range over a longer period of time without any noticeable improvement, the corresponding supplier may be phased out as a result, see chapter 1.17.

#### **4.5 Series Part Deviations**

As per chapter 3.4, approval shall always be obtained prior to delivery in the event of specification deviations. The required [WH-NCR](#) form shall be used for this purpose. The written WH-NCR approval shall be included with the delivery documents and also with the component as the [WH-NCR-notification](#) form.

A delivery with a deviation without an approved WH-NCR results in a complaint. The [WH-A4](#) form shall be completed and included with the WH-NCR. A delivery with deviation, for which no approved WH-NCR is available, leads to a complaint. Deviating material may only be supplied with the prior written approval of W&H.

## **5 Specific Additional Requirements for Electronic Components**

### **5.1 Notification of Changes**

Suppliers which develop, manufacture, assemble or test electronic components shall inform W&H of any changes that could affect the characteristics and usability of their products or processes for W&H. The information about the change shall be submitted to W&H using the required [WH-ECR](#) form. Software changes that are not functionally or backwards compatible with the previous version shall be reported (information obligation).

### **5.2 Functional Software Safety**

If safety-relevant electronics or software are included in the scope of delivery, the development process shall comply with the current state of the art and fulfill the requirements of IEC DIN EN 61508 and EN ISO 13849.

The requirements for the required safety level (e.g. SIL, ASIL, etc.) are defined in the respective specifications. The safety concept with specifications regarding software design and implementation shall be agreed with W&H.

### **5.3 Components with Integrated Software**

The procedure described in section 5.1 (notification of changes) also applies to changes to integrated component software (firmware versions).

### **5.4 Cybersecurity**

If electronics or software are included in the scope of delivery, it shall be ensured that unsecured access to W&H data and services is not possible. The required access protection during production and transport can be software-based or hardware-based. Furthermore, all of the suppliers' corresponding production facilities and their IT infrastructure shall be secured in accordance with W&H requirements as a minimum. The security concept shall be agreed between W&H and the suppliers and shall be approved.

## 6 Forms

<u>WH-8D</u>	8D report
<u>WH-A4</u>	Problem solving form (A4 single page)
<u>WH-NCR</u>	Non Conformity Request
<u>WH-NCR-notification</u>	WH-NCR identification sheet (Non Conformity Request Notification)
<u>WH-ECR</u>	Engineering Change Request)
<u>WH-ISIR</u>	Initial Sample Inspection Report
<u>WH-ISIR-notification</u>	WH-ISIR identification sheet (Initial Sample Inspection Report)

## 7 Glossary

- **FMEA - Failure mode and effect analysis**

The failure mode and effect analysis is a preventive quality method which is used to evaluate possible failures at an early stage of development on the basis of their impact/significance, along with their probability of occurrence and detection. Measures are derived to reduce the quality risk are derived from this analysis.

- **ISIR - Initial Sample Inspection Report**

- **KPI - Key performance indicators**

KPIs are figures that are collected monthly and compared with the upper limit. If the performance indicator exceeds the upper limit for a longer period of time, this may indicate that the processes have deficiencies. Measures shall be derived to improve the situation. One way of determining the measures is to analyze the causes using the 8D method.

- **CP - Control plan**

A control plan defines which product and process characteristics in the manufacturing process are important for a product or product group and how these are monitored. Furthermore, it regulates what is done if these characteristics are not OK. A control plan includes test and measurement methods, sample size and frequency, a reaction plan and corrective actions.

- **SPC (Statistical Process Control) and quality control charts**

The control charts are used to evaluate inspection data. The evaluation focuses on process stability over time. This is displayed graphically with the intervention thresholds and enables trends to be identified in a timely manner. Statistical process control (SPC) utilizes statistical methods to improve production processes.

- **Sub-supplier: The supplier of the W&H supplier**

- **WH-A4 problem solving form**

The WH-A4 problem solving form is based on the A3 problem solving sheet from Lean Production and the 8D form. It displays the results of the problem solving method utilized on a single page (DIN-A4). The fault description, immediate actions, root cause analysis (occurrence, non-discovery, system errors) and corrective measures are part of this pragmatic method.

- **WH-QD20: W&H Global Supplier Quality Directive**



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