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ICS

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- a) Added: Last paragraph in Chapter 6
- b) Replaced: Yellow instead of green label in Chapter 11
- c) Added: Hyperlink in Chapter 11
- d) Updated: Addresses of Beuth-Verlag and VDA in Chapter 12

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## 1 Purpose of the production process and product approval (PPF)

The PPF process ensures that the physical products manufactured by the supplier fulfil the requirements specified by Voith Turbo GmbH & Co. KG – hereinafter referred to as “VTA”. It is integrated in the VTA development process and pertains to the approval procedure of system components and production parts which the supplier develops and/or manufactures in the course of product development and modification on behalf of Voith Turbo.

The PPF process is conducted according to the production process and product approval process (PPF) of VDA Volume 2.

The purpose of the PPF process is to prevent serial occurrences of failures and their severe consequences for VTA caused by deficiencies in the product arising from process, production or material faults. This is achieved mainly by the following means:

- Proof of fulfilment of agreed quality requirements before the beginning of series production (stipulated by order and delivery specification QVP; see VBN 3206 advance quality planning QVP)
- Proof of the correct implementation of requirements, specifications and statutory requirements for the product and process (master sample approval)
- Verification of the product and production planning process whose positive result leads to a documented approval (process audit)
- Clearly defined general conditions between the supplier and VTA

## 2 Scope of application

This Voith standard applies to suppliers of Voith Turbo, specifically for the market segments road, rail and industry, and at all locations and Voith Turbo companies, in conjunction with the respectively valid order and delivery specification. This Voith standard replaces the QA guideline for master samples (QRar031) of the market segment road within Voith Turbo.

## 3 Initiators

The supplier is obliged to conduct the PPF process in the following cases:

- New products and/or parts or when a product is ordered for the first time.
- After a change in a product, visible from a change in the drawing index, on all characteristics thereby affected.
- After a change in the drawing index, on all characteristics thereby affected.
- After a change in a subcontractor of the supplier.
- After a refused delivery.
- After an interruption of deliveries for longer than one year.
- If production facilities are stopped for 12 months or longer (products for the spare parts market may be exempted from this).
- For changed production processes.
- After the use of new/modified shaping devices (e.g.: casting, punching, rolling, pressing dies, for several forms or multiple shaping/batch, each cluster).
- After a move of the production location or use of a new or moved machine and/or equipment.
- After use of alternative materials and designs.

In the following cases, the supplier may inform the responsible quality departments of the Voith Turbo factories and apply for approval of exemption from the procedures and scope of the master sample inspection:

- After an interruption of deliveries for longer than one year.
- If production facilities are stopped for 12 months or longer (products for the spare parts market may be exempted from this).
- Very small series, customer service parts.
- Standard and catalogue parts.
- Current approval for series delivery by another division of Voith Turbo.

## 4 Disregard of the master sample presentation

If a part is newly ordered by a division of Voith Turbo which has already been approved for series delivery by another recipient factory of Voith Turbo according to the production and product approval procedure, a PPF process is no longer necessary in the cases and under the conditions listed below. The decision regarding the necessity of the PPF process will be taken by the QA department of the recipient factory.

The approval must pertain to the valid issue of the drawings and the other Voith Turbo recipient factory must have been supplied without inadmissible interruptions. However, the supplier is then obliged to submit the approval report and the last order for a delivery.

Different assembly conditions may make a PPF process necessary. The same provision applies to the individual parts of assemblies which have been inspected and approved in the past.

## 5 Presentation stages

The presentation stage determines which documents, records and possibly samples must be sent to Voith Turbo for production process and product approval. This presentation may also be conducted on the supplier's premises. Presentation stage 2 applies generally for deliveries to Voith unless other agreements have been made between the quality departments of the recipient Voith factories and the supplier. If inspections are made with a different presentation stage, this is indicated in the order text of the master sample order.

Item	Requirements	Presentation stages		
		1	2	3
1	Master sample report cover sheet	X	X	X
2	Test results (e.g. dimensions, measurement according to data record, material properties, function, appearance, weight, reliability, feel, sound, odour, process capability data etc.)	X	V	V
3	Supplementary sheet "Substances contained in purchased parts" (future "Material data sheet")	X	X	X
4	Samples (number and supplied quantity as agreed)	A	A	A
5	Documents (e.g. customer's drawings, CAD data, specifications, approved design modifications etc.)		V	V
6	Design and development approval		X	X
7	FMEA System FMEA of the product (if the supplier is responsible for the design) System FMEA of the process		E	E
8.1	Process flow diagram (steps of production and testing)		X	X
8.2	Production control plan (QA plan, see appendix)		X	X
9	Work (production) and test plan			E
10	List of test instruments (product-specific)			X
11	Test instrument qualifying reference			V
12	Machine/processability examination		X	X
13	Proof of compliance with statutory and customer-specific requirements if agreed with Voith Turbo (e.g. environment, safety, recycling)		X	X
14	List of all employed subcontractors with allocation to the part and the process			

<b>X</b>	Requirement for the respective presentation stage; to be submitted to the responsible QA department of the recipient factory, one copy to be retained in the manufacturer's factory
<b>V</b>	The scope is to be agreed individually with Voith Turbo and must be retained in the manufacturer's factory, but must be immediately available to Voith Turbo on request
<b>A</b>	Number of samples ( $\geq 0$ ) is to be agreed with Voith Turbo
<b>E</b>	For viewing only, to be retained in the manufacturer's factory, but must be presented on request of Voith Turbo to Voith Turbo for viewing

## 6 Prototype production / other samples

Other samples are samples in accordance with DIN 55350, Part 15, which have not been manufactured with series-type equipment or not under series conditions or not according to released drawings and other guidelines. Other samples must not be used for production process and product release. These samples can, however, be used for products suitable for the customer if they meet the required specifications. A release of other samples, such as for trial or installation samples by the development or design departments of Voith Turbo, does not at the same time mean the series release and does not give reason to waive the PPF process.

Prototype parts are to be treated like other samples and are normally used for trial purposes.

For prototype parts a prototype inspection report (measurement report, material and, if required, function) must be presented on first-time delivery and change (Index / I.D. Number). Use the VDA first sample sheet for this. In this report all drawing features and scopes of changes are to be evidenced on at least one part.

The main features are to be documented 100% in the prototype stage in the ordered quantity. The main features are marked in the drawing or are to be agreed upon by the supplier with the development and design departments of Voith Turbo.

The surveyed parts are to be marked and the consecutive number assigned to the measurement report.

For the marking of prototypes and other samples, the yellow master sample label is to be used:

[http://voith.com/de/VN\\_3205\\_Anlieferung\\_und\\_Kennzeichnung\\_Erstmuster.pdf](http://voith.com/de/VN_3205_Anlieferung_und_Kennzeichnung_Erstmuster.pdf)

## **7 Master samples**

A master sample inspection is regarded here as the verification of samples. The samples are tested according to the agreed, specified requirements, are assessed and the results are documented. The inspection for the production process and product approval must be conducted with master samples.

Master samples are products and materials completely manufactured and tested under series conditions with the planned machines, systems, equipment and test instruments and processing conditions.

Master samples intended for examinations, tests and despatch to the customer should be taken as random samples from production under series conditions.

According to DIN 55350 Part 15, miscellaneous samples are samples which have not been manufactured with series equipment or not under series conditions or not to approved drawings and other specifications. Miscellaneous samples must not be used for production process and product approvals. However, these samples can be employed as agreed with the QA departments of the recipient Voith Turbo factories for saleable products if they fulfil the specifications.

Prototype parts are to be treated as miscellaneous samples and are usually employed for test purposes.

The number of parts to be documented must be agreed with Voith Turbo. The master samples must be supplied with the master sample test report and the documents stipulated according to the presentation stage (see Chapter 5) to the recipient Voith factory by the agreed date and according to the master sample order. They must be explicitly marked as master samples in compliance with Voith Turbo master sample marking (see Chapter 7). To identify the tested characteristics, sequential numbers must be used in the master sample test report and in the current drawings approved by Voith Turbo, which must also be enclosed.

Assemblies manufactured to a Voith Turbo design must be subjected together with their individual components to a master sample inspection and must be presented to Voith Turbo.

For products manufactured to the supplier's own design, the supplier must inspect the assembly and present this to Voith Turbo. Master sample inspections must also be conducted for the individual components and, if applicable, sub-assemblies. Voith Turbo must be allowed to view this documentation on request.

Deviations from the specifications of Voith Turbo which are not detected during the process and product approval process will entitle Voith Turbo to reject these at a later time.

With regard to cast and forged parts, the supplier manufactures, possibly in agreement with the QS offices of the facilities, a technically appropriate assortment of component sections and also supplies these, in order to evidence wall thicknesses, radii etc., as fulfilled or, unless otherwise agreed within the framework of quality planning, these sections are used for the assessment of internal errors.

Material properties of cast parts according to DIN EN 1559 -1, -2, -3, -4, -5, -6 in currently valid edition and the designated Voith order and delivery specifications.

## **8 Master sample documentation**

The production and processing of the master sample inspection report are to be conducted according to the procedure described in VDA Document No. 2, Sect. 4.11, "Reporting/forms". The documents to be submitted must be submitted completely in German or English in the form of a measurement report, a material report with appendix "Substances contained in purchased parts" (the future "Material data sheet") and, if applicable, a function report according to the drawing and the supplementary specifications.

The documentation of the master samples must be supplied simultaneously with the master samples. Lacking master sample documentation will lead to a negative assessment of the supplier. Master samples without master sample documentation cannot be processed. If acceptance is necessary for reasons of short time, the QA departments will necessarily produce a minimum of documentation themselves. The expense of this will be charged to the supplier (reworking at the expense of the supplier).

For repeat inspections, the numbers of the test reports which have made new or repeat inspections necessary must be entered in the master sample inspection report.

Form sheets for master sample inspections and production control plans can be obtained from the VDA ordering addresses or the QA departments of the factories.

## **9 Master samples made to CAD data**

Measurements must be made according to the valid 3D data model. The number of measurement points must be chosen such that all geometrical features are reliably measured. Details of the measurements must be agreed with the quality department of the recipient Voith Turbo factory.

**10 Material data measurement**

The material data measurement is a part of the inspection. The data is entered in the International Material Data System (IMDS). If agreed with the recipient Voith Turbo factory, paper form such as VDA Volume 2 may also be accepted.

## 11 Delivery and marking of the master samples

Samples must always be despatched separately from series-manufactured material; samples must be addressed in separate package units to the goods reception of the recipient factory.

The individual master samples must be numbered to ensure that they can be correlated with the test documents. The master samples must be delivered with a separate delivery notice which must clearly bear the note "Master samples" with the part number and designation.

Each packing unit of the samples must be clearly marked with the yellow label "Initial delivery". The label must be attached externally and easily visible to each packing/transport unit.

The delivery papers must also be clearly marked (preferably stamped) with the note "Master samples".

## 12 Applicable documents

Standards

Source:

Beuth Verlag GmbH

www.beuth.de

01	DIN EN ISO 8402	Quality management, terms
02	DIN EN ISO 9001:2000	Quality management systems, requirements
03	DIN EN ISO14001	Environmental management systems
04	DIN 55350-11	Terms of quality assurance and statistics
05	DIN EN 1559 -1	Casting foundries – Technical delivers specifications Part 1: General
06	DIN EN 1559 -2	Casting foundries – Technical delivers specifications Part 2: Supplementary requirements on steel castings
07	DIN EN 1559 -3	Casting foundries – Technical delivers specifications Part 3: Supplementary requirements on iron castings
08	DIN EN 1559 -4	Casting foundries – Technical delivers specifications Part 4: Supplementary requirements on aluminium alloy castings
09	DIN EN 1559 -5	Casting foundries – Technical delivers specifications Part 5: Supplementary requirements on magnesium alloy castings
10	DIN EN 1559 -6	Casting foundries – Technical delivers specifications Part 6: Supplementary requirements on zinc alloy castings

Verband der Automobilindustrie e.V. (VDA)

Source:

Verband der Automobilindustrie e.V. (VDA)

Qualitätsmanagement Center (QMC)

www.vda-qmc.de

11	Volume 1	Quality evidence
12	Volume 2	Quality assurance of deliveries in the automotive industry
13	Volume 4	Quality assurance before series manufacture
14	ISO/TS 16949	Quality management systems, special requirements for the application of ISO 9001:2000 for series and spare parts production in the automotive industry

Voith Standards and Quality Directives

15	VN 3206	Quality pre-planning for purchased parts suppliers
16	QSV	Quality assurance agreement of Voith Turbo
17	VN 3068	Technical delivery instructions for aluminum casting

