

QUALITY ASSURANCE

in balancing and
spin testing technology



INSPECTION LABORATORY
FOR BALANCING TECHNIQUE

Inspection laboratory for balancing technique with unique worldwide expertise

Balancing machines are sophisticated measuring devices

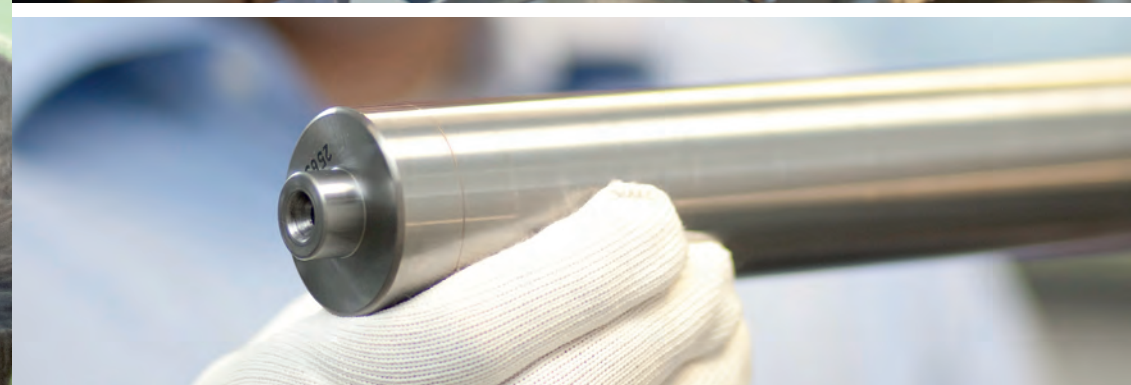
Highprecision measuring equipment that can withstand the harsh environment of production? For many unthinkable, but in the case of balancing and spin testing systems still an everyday requirement. But balancing machines in particular are measuring equipment of the highest order. According to one of the fundamental requirements of ISO 9001, these must be “calibrated at specified intervals against measurement standards traceable to international or national measurement standards”. Only machines tested in this way provide verifiable measurement results which confirm their product quality and competitiveness.

So that you too can be sure that your balancing and spin testing system also complies with the defined requirements, we offer a range of individual service packages. Together, with our experts, you can then decide which level of testing is appropriate for you.

The “Inspection Laboratory for Balancing Technique (PFA¹)” is the top address for the qualification of balancing and spin testing systems and corresponding working standards. The laboratory of Schenck RoTec GmbH is the only one in the world which has implemented the more stringent requirements on testing and calibration laboratories, and holds official accreditation to DIN EN ISO/IEC 17025. It is therefore the first centre of expertise at which users and service providers can have their measurement and testing equipment certified irrespective of the manufacturer – confidentially, reliable and independently.

APPLICABLE STANDARDS FOR QUALITY ASSURANCE:

- ▶ DIN EN ISO 9001
- ▶ DIN EN 9100
- ▶ AS 9100
- ▶ ISO/TS 16949
- ▶ DIN EN ISO 10012
- ▶ VDA 6.1, 6.2 and 6.4



¹ PFA = Prüflabor für Auswuchttechnik

Inspection and maintenance of machines

Individual performance levels for all requirements



Balancing machines and spin testing systems are precision measurement equipment and have measurement accuracies which are comparable to a high quality coordinate measuring machine. If the verification of its capabilities is neglected, errors are not detected and the product quality suffers. This can lead to higher reject rates, or in the worst case even recalls. We therefore recommend, in addition to the maintenance of your machines, to have a verification carried out by our inspection laboratory.

The PFA procedures are accredited, validated and specifically tailored to individual machine types:

- ▶ Inspection of universal balancing machines to ISO 21940-21 or SAE ARP 4048, SAE ARP 4050, SAE ARP 5323
- ▶ Inspection of balancing machines in individual or series production
- ▶ Inspection of high speed balancing machines for tasks according to ISO 11342
- ▶ Inspection of spin testing systems

INSPECTION OF MACHINES

Conformity verification by accredited inspection laboratory on the basis of standards or validated laboratory procedures. Compliance with QM standards by periodic monitoring with metrologically traceable test equipment.

A QUALITY LEVEL INSPECTION CERTIFICATE

- ▶ Evaluation by laboratory management
- ▶ Complete test report in accordance with DIN EN ISO/IEC 17025

B QUALITY LEVEL INSPECTION REPORT

- ▶ Evaluation by laboratory management
- ▶ Abbreviated report comparable with works calibration certificate

CERTIFIED MACHINE



MAINTENANCE

Check of the machine function and reliability, basic testing of the measurement system according to specific machine checklist by qualified service staff.

STANDARD PLUS ACCEPTANCE TEST CERTIFICATE 3.1 DIN EN 10204

- ▶ provided together with checklist after plausibility evaluation by acceptance officer

STANDARD WORKS CERTIFICATE 2.1 DIN EN 10204

- ▶ Together with checklist on customer request

MACHINE SERVICE



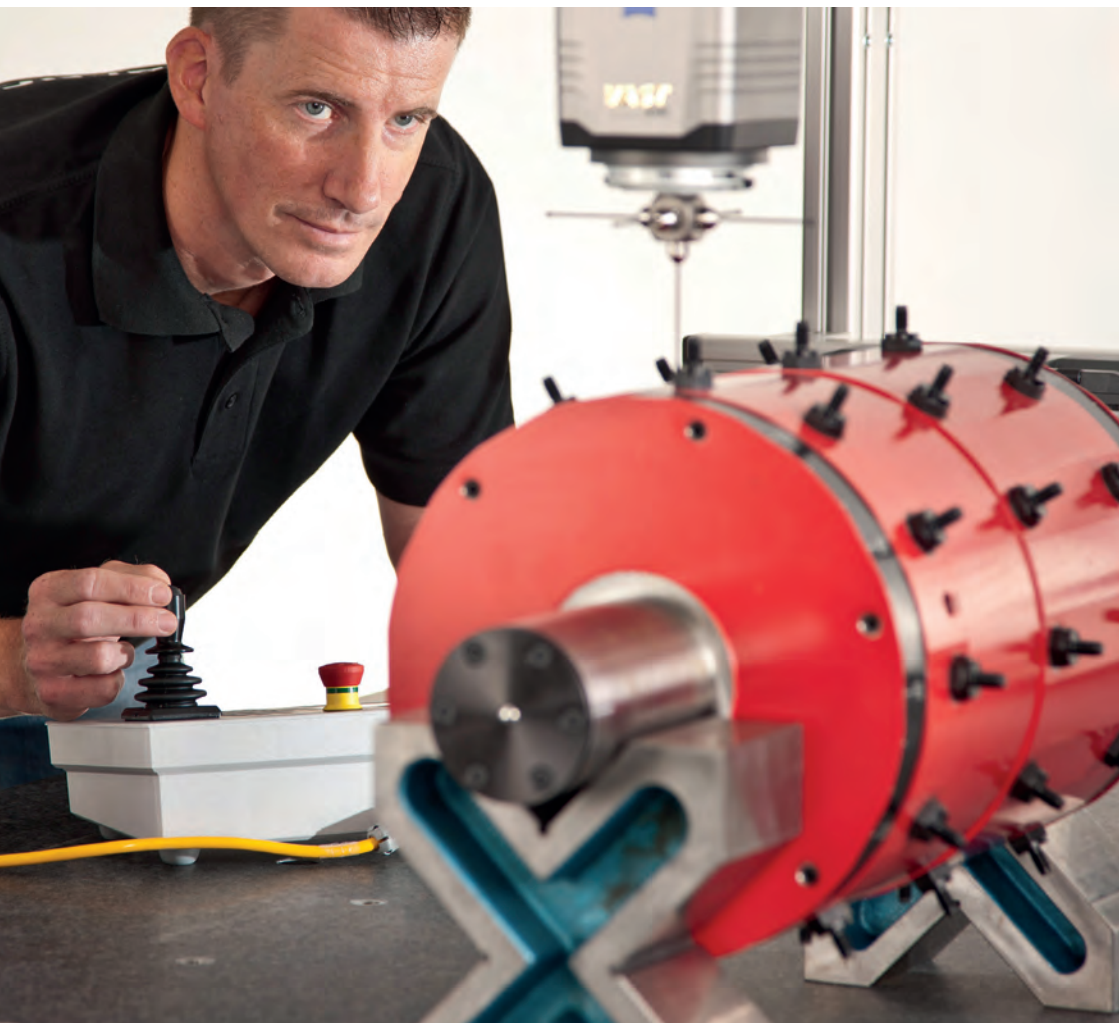
Inspection of working standards

In the calibration and adjustment of balancing machines, setup or master rotors as well as matching test weights are indispensable. These working standards must be treated as other measurement or testing equipment, and be subjected to periodic verification, in order to ensure reliable measurements. Failure to do so can result in adverse effects on the product quality, and possibly serious economic consequences.

The PFA covers all relevant measurement factors, such as geometry, mass and unbalance, and allows complete inspection and certification of:

- ▶ Proving rotors and weights in accordance with ISO 21940-21 or SAE ARP 4162
- ▶ Setup and master rotors for balancing machines in series production
- ▶ Other disc or cylindric type masters or complete assemblies
- ▶ Standardised etalons or self-made measurement standards

We recommend the use and certification of own working standards. These are then available to you not only for regular laboratory inspection, but also for your own checks between the inspection intervals. Alternatively, a certified working standard can also be rented from us.



Quality levels conforming to your QM system

In principle, the following applies: every rotor can be certified to every level. The inspection laboratory for balancing equipment offers three performance levels, which differ from each other by their technical measurement depth of detail and the resulting documentation.

A QUALITY LEVEL INSPECTION CERTIFICATE

- ▶ Full traceability with all information incl. uncertainty of measurement
- ▶ Documentation that complies with the standards
- ▶ For auditable measurement equipment monitoring

REFERENCE

e.g. for ISO or SAE rotors, airlines industry or other users with a strictly standard compliant QM system



B QUALITY LEVEL INSPECTION REPORT

- ▶ Traceability by reference to measurement equipment numbers
- ▶ Largely standard compliant documentation
- ▶ Usually adequate for qualified measurement equipment monitoring
- ▶ No information on measurement uncertainties or the calibration status of the measurement equipment used

MASTER

e.g. for test or ISO rotors



C QUALITY LEVEL INSPECTION PROTOCOL

- ▶ Documentation of the current condition
- ▶ No traceability

BASIC

e.g. for test or setup rotors which are not subject to measurement equipment monitoring



We are happy to pass on our knowledge: We advise you before an order with regard to the requirements for qualification of your measurement or testing equipment, and work out the most suitable and economical procedure for you.



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