

VGB-Standard

Condition Monitoring and Inspection of Components of Steam Boiler Plants, Pressure Vessel Installa- tions and High-Pressure Water and Steam Pipes

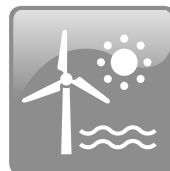
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VGB PowerTech Service GmbH
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P.O.Box 10 39 32, 45039 Essen
Phone: +49 201 8128-200
Fax: +49 201 8128-329
E-Mail: mark@vgb.org
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1 Preamble

New Approach in legislation

The European Union has led to considerable changes in the legislation concerning the manufacture and operation of components of pressure equipment at European level. Therefore, a new approach is necessary also for the field of condition monitoring. To make understanding of this topic possible within the context of these changes, it is necessary to understand the intentions of the European Union.

The basis for all changes is the constituting treaty of the European Community. Article 3 of this treaty mentions the removal of obstacles for the free exchange of goods, persons, services and capital between the Member States, which is one of the fundamental fields of activity of the community. Furthermore, Article 28 sets forth that quantitative import restrictions or measures of the same effect between the Member States are subject to prohibition.

For the implementation of the free movement of goods, the European Council decided on a New Approach to the free Single European Market. To this end, numerous guidelines were issued concerning manufacturing and the minimum protection of consumers and employees, which aim at the following aspects:

- (1) To reduce governmental interventions to a minimum
- (2) To limit fabrication guidelines to the essential requirements
- (3) To liberalise the market for certified inspection agencies (notified body and certified laboratory)
- (4) To unify standards at European level
- (5) To set uniform minimum standards for occupational health and safety at European level

However, the technical standards were not made legally binding because the boards of the private institutions for standardisation are not democratically legitimated. For this reason, there is an area of discretion for procurement that plant owners and manufacturers may use for their purposes.

EC Directives on manufacturing aiming at the implementation of the New Approach have to be adopted in national legislation without major changes. The most important directive on condition monitoring of pressurised components with respect to the fabrication requirements is the Pressure Equipment Directive which was transposed into German legislation by the Pressure Equipment Ordinance (14th GPSGV).

The Occupational Health and Safety Guidelines which are minimum requirements and may be extended as regards their field of application and requirements at the time of transposition into national legislation, apply to the field of plant operation under the plant owner responsibility. For Germany, they were, among others, adopted by the Ordinance on Industrial Safety and Health (BetrSichV). The resulting changes of the technical regulations [TRBS - Technische Regel für Betriebssicherheit (Technical Regulations on Industrial Safety and Health)] led to new areas of discretion and flexibility for the plant

owner and shall replace the proven technical regulations (like e. g. TRD, TRB, TRR) effective to date.

The changes are so extensive that many power plant owners are barely able to completely use the newly emerging areas of discretion. Owing to the fact that the market for accredited inspection bodies has been liberalised, it is necessary to harmonise inspections and inspection periods. Therefore, the overall objective of this VGB-Standard is to propose a set of measures in the form of different inspection modules, without claiming to be exhaustive. The modules chosen by the plant owner allow effectively carrying out inspections on the components of steam boiler plants, pressure vessel installations and pipes under internal pressure, and simultaneously using the entire discretionary area, including the extension of inspection periods (see VGB-Guideline R 104 O). This may include an adaptation of inspection periods for steam boiler plants to inspection periods e. g. for pipes under internal pressure or pressure vessel installations, if necessary.

The more accurately the plant condition is recorded and evaluated on the basis of these modules, the more accurately the test and inspection methods, the extent and periods of tests and inspections for periodic inspections may be scheduled and ordered by the plant owner. This is a new situation for plant owners, because in the past the periodic inspections were carried out by the inspector according to national regulations. Nevertheless, also the hitherto existing regulations allowed adapting the test and inspection measures to the operational condition after consultation with the inspector. In the future the organisation of inspectors will be replaced by the accredited inspection body (zugelassene Überwachungsstelle ZÜS). The plant owner may arbitrarily choose the accredited inspection body. In this respect, the knowledge and documentation of the plant condition becomes more important for the plant owner than it has been up to date.

No liability will be taken for the content of this VGB-Standard and its references, as well as for the factual accuracy of representation shall be excluded. This VGB-Standard is published in German and English. The German version applies to all cases of disagreement.

Users of this VGB-Standard are asked to inform the VGB on experience gained with the application of this VGB-Standard, ambiguous ways of interpretation, and inadequacies in representation as well as to submit proposals for improving this guideline so that VGB office, upon evaluation of the information provided, may supplement or change this guideline accordingly.

With respect to the first edition the following essential changes were made in edition to editorial changes:

- Text extension to include pressure vessels
- Supplementation of sections 4.2.1, 5.0 (Picture 1), 5.3.3.1, 5.3.7.1, 5.3.7.2 und 5.3.7.2
- the following sections were included 5.2, 5.2.1, 5.2.2, 5.2.3, 5.3.1, 5.3.4, 5.3.5, 5.3.6 und 5.4

Essen, January 2012
VGB PowerTech e.V.

Authors

The VGB office would like to express its gratitude to the persons involved in the establishment of this VGB-Standard:

- Dr. Jörg Bareiß EnBW Kraftwerke AG
- Olaf Baumann VGB PowerTech e.V.
- Franz-Josef Diederich RWE Power AG
- Tino Fischbeck RWE Power AG
- Dietmar Gocht STEAG Energy Services GmbH
- Hans-Gerd Harms RWE Power AG
- Bernhard Hoffmann RWE Power AG
- Peter Lange Vattenfall Europe Generation AG & Co. AG

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