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Report

of the evaluation of pressure transmitters regarding their resistance to internal burn-out upon exposure to oxygen pressure surges

File number	11-475/2010
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Order of	19 February 2010
Reference	Order No. B/5145/242-9-
Received on	6350/W0965862 22 February 2010
Test / trial material	Drawings of the WIKA pressure transmitters provided with thin-film sensors according to the assembly drawing No. 11554053.00 of 18 February 2010, Index B BAM Order No. 11.1/50 023
Received on	22 February 2010

All pressures mentioned in the report are overpressures. This test report consists of sheets 1 to 3.

Documents

The drawings listed below were available for evaluation:

Drawing number	Date	Modification/Index
11554053.00	2010-02-18	**B**
11505524.01	2009-12-10	**—**
11501766.01	2010-01-19	**—**
Data sheet serial no. 2089044.06	01/04	**—**
Data sheet serial no. 1316095.10	08/99	**—**

Evaluation of the resistance to internal burn-out

2.1 Basis of evaluation

No experimental test for resistance to internal burn-out was required since the evaluation can be based on the available documents and test results. The evaluation was based on the note of instruction M034 (BGI 617), "Oxygen", version 12/2005, of the Employer's Liability Insurance Association of the Chemical Industry.

2.2 Evaluation of the metallic materials

The metallic materials used according to the drawings mentioned above in the area in contact with oxygen are as follows:

Material CoCr20Ni15Mo, material no. 2.4711
- Material X2CrNiMo17-12-2, material no. 1.4404
- Material X6CrNiMoTi17-12-2, material no. 1.4571

The steel alloys mentioned have a combined Cr and Ni content by weight of at least 22%. Accordingly, they also meet the material requirements of the note of instruction M034, "Oxygen", Supplement 1 of Appendix 2 for oxygen pressures of > 40 bar.

- Material X3CrNi Mo AI13-8-2, material no. 1.4534

The steel alloy mentioned has a combined Cr and Ni content by weight of less than 22%. Accordingly, it does not meet the material requirements of the note of instruction M034, "Oxygen", Supplement 1 of Appendix 2 for oxygen pressures of > 40 bar. However, there are no safety-relevant reservations against its use as long as no non-metallic components are used.

2.2 Evaluation of the non-metallic materials

An evaluation of non-metallic materials is not required since none are used.

Drawing control

In drawings no. 11554053.00, no. 11505524.01 and no. 11501766.01 the designation "APPROVAL DRAWING" was crossed out in the text box, since the present evaluation is only a safety-relevant one.

Other discrepancies were not found.

4 Evaluation and Summary

The WIKA pressure transmitters for evaluation provided with thin-film sensors according to the assembly drawing no. 11554053.00 for oxygen are shown in the drawings listed under 1 and meet the requirements of the note of instruction M034, "Oxygen", version: 12/2005, of the Employer's Liability Insurance Association of the Chemical Industry, except for the material no. 14534. However, there are no safety-relevant reservations against its use as long as no non-metallic components are used.

The BAM has no reservations against the use of these pressure transmitters for gaseous oxygen at operating pressures of up to 400 bar and operating temperatures of up to 70 °C.

The validity of this report ceases immediately if the materials in contact with oxygen, as shown in the drawings, are replaced with other materials. The drawings mentioned have been marked with the BAM inspection note. They are a binding part of this report.

Notes

Drawings as attachment

BAM Federal Institute for Materials Research and Testing
D-12200 Berlin, 10 March 2010

Technical Department 11.1
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requested by

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Head of the study group

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"Safe Handling of Oxygen"

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