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Technical Report No. 71385385

Rev. 1

Dated 2011-04-18

Client: Maico Elektroapparate-Fabrik GmbH
Steinbeisstr. 20
D-78056 Villingen-Schwenningen

Manufacturing place: Maico Elektroapparate-Fabrik GmbH
Steinbeisstr. 20
D-78056 Villingen-Schwenningen

Test subject: Ventilators Type: ERM 22 E Ex e with the marking:

⊕ Ex II 2G Ex e II T1, T2, T3
-20°C ≤ T_a ≤ +50°C

Test specification: EN 13463-1:2009 Sections 8.4.1; 8.5.4; 8.5.5
EN 60079-0:2009 Section 26.13
EN 14986:2007 Section 4.5

Purpose of examination: Certification of housing material VAMPSTAT Y 35GC 04 VO 30 NERO.
Test for thermal endurance to cold and heat, resistance to impact and surface conductivity

Test result: Housing, or impellers, or end covers made of the material VAMPSTAT Y 35GC 04 VO 30 NERO can be used, subject to the conditions under point 4 of this report.

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1 Equipment Description

1.1 Function and Main Components

The semi-radial tube ventilator type: ERM 22 E Ex e is used for installation into ventilation systems in hazardous explosive atmospheres of zone 1 (gasses/vapours/mists). Main components of the semi-radial tube ventilators are a double-poled asynchronous motor with cage rotor and capacitor auxiliary winding, a motor capacitor, a distribution box, a cable and line input, a tubular housing, an impeller and a safety grid.

Pictures to Equipment



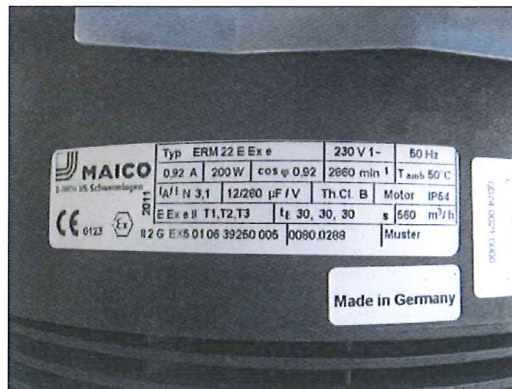
Picture 1: Front view



Picture 2: Rear view



Picture 3: Angle-view



Picture 4: Type label



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1.2 Technical Data (excerpt according to manufacturer's information)

Type:.....ERM 22 E Ex e
Supply voltage:.....230 V
Rated current:.....920 mA
Rated output:.....200 W
Rated frequency.....50 Hz
IP protection type:.....IP64
Rotational sp.....2860 min-1
Ratio I_A / I_N.....3.1
Time t_E:.....at T1 = 30s, T2 = 30s, T3 = 30s
Environmental temperature:.....-20°C ≤ T_a ≤ +50°C
Motor capacitor(characteristics):.....12 µF / 280 V / 50 Hz

1.3 Labelling

⊕ II 2G Ex e II T1; T2; T3
-20°C ≤ T_a ≤ +50°C

2 Order and Information for the Conduct of the Assessment

2.1 Date of Order, Sign of the Customer

Order of 18th February 2011

2.2 Date and Place of the Assessment

February / March 2011; Laboratory in Filderstadt, Department PS-MMY-STG

2.3 Test Sample

For conduct of the assessment the following test samples were available:

Two functioning semi-radial tube ventilators type: ERM 22 E Ex e.

2.4 Description of Test Task

Test for certification of housing material VAMPSTAT Y 35GC 04 VO 30 NERO. Test for thermal endurance to cold and heat, resistance to impact and surface conductivity.

Certification of the following versions and pertaining certificates:

Axial ventilators EZQ 20/4-E E Ex e und EZS 20/4-E E Ex e / Z: EX 5 00 09 39250 001

Semi-radial tube ventilator ERM 18 E Ex e / Z: EX5 01 10 39250 006

Semi-radial tube ventilator ERM 22 E Ex e / Z: EX5 01 06 39250 005

Semi-radial tube ventilator ERM 25 E Ex e with supplement 1 / Z: EX5 01 06 39250 004

Axial ventilators DZ. ../. B E Ex e with supplements 1, 2 und 3 / Z: EX5 03 06 39250 007

The semi-radial tube ventilator was selected for testing as representative for the mentioned models because of its construction design ERM 22 E Ex e.

3 Test Results

The test for endurance to cold was carried out. No cracks, outgassing or other deviations are noticeable at the test objects.

The test for endurance to heat was carried out. No cracks, outgassing, inclusions of air or other deviations are noticeable at the test objects.

The test for surface conductivity was passed.

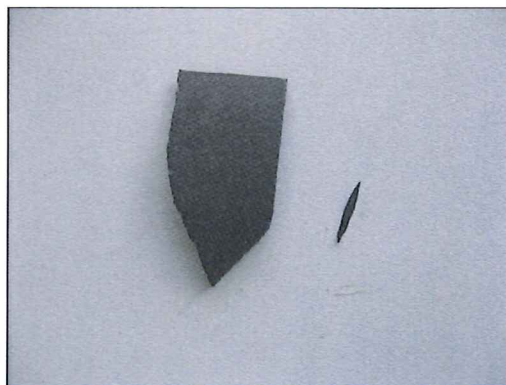
Both test objects passed the impact test after warm storage.

Only one object passed the impact test after cold storage. The second object showed clear damages at the impeller and at the outer shell. One part of the impeller was knocked off and at the outer cover there was a visible chipping. In the end, no object which could damage the impeller to an extent that it breaks can enter through the barrier in front of the ventilator. Should, in spite of this, a blockade occur through a foreign object or a chip, the mandatory protective switch would cause a shut-down. The crack in the outer cover of the ventilator does not impact on its function. This fault does not cause a risk of ignition.

Pictures to impact test after cold storage at -30°C:



Knocked-off impeller



Impeller chip



Crack in the outer cover



Crack in the outer cover

4 Conditions for Placing on the Market and Commissioning

The following conditions are required for installation, safe operation and maintenance of the ignition protection:

The ventilator housing (support structure, protective grid, protective measures and other outer parts) must be constructed solidly enough that no deformation from external impact can occur at critical points. Turning parts must not touch the housing.

The protective grid must be sufficiently stable that no entering foreign object can damage the impeller. The protective grid must be installed before commissioning of the ventilator.

The safety-related information of the manufacturer concerning installation of the ventilator must be paid attention to.

5 Test Documentation

5.1 Submitted test Documentation

- | U01 | Test documentation to laboratory tests by the manufacturer
- | U02 | Data sheets to material VAMPSTAT Y 35GC 04 VO 30 NERO
- | U03 | Proof of calibration of the used measuring instruments
- | U04 | 2 Samples of material VAMPSTAT Y 35GC 04 VO 30 NERO
- | U05 | 2 Test objects

The documents are kept at the test location.



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5.2 Internal Documents Prepared by the Test Laboratory

- | U06 | Test documentation
- | U07 | Photo documentation
- | U08 | Test protocols
- | U09 | List of test equipment

The documents are kept at the test location.

6 Summary

Housing, or impellers, or end covers made of the material VAMPSTAT Y 35GC 04 VO 30 NERO can be used, subject to the conditions under point 4 of this report.

7 Final Provision

The above mentioned material can be used as material for housings, or impellers or end covers for the following ventilator versions subject to the conditions under point 4 of this report:

Axial ventilators EZQ 20/4-E E Ex e and EZS 20/4-E E Ex e / Z: EX 5 00 09 39250 001

Semi-radial tube ventilator ERM 18 E Ex e / Z: EX5 01 10 39250 006

Semi-radial tube ventilator ERM 22 E Ex e / Z: EX5 01 06 39250 005

Semi-radial tube ventilator ERM 25 E Ex e with supplement 1 / Z: EX5 01 06 39250 004

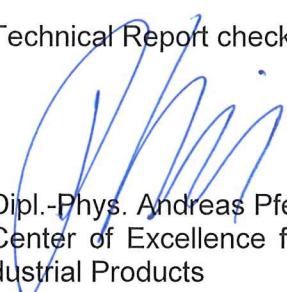
Axial ventilators DZ. .../ B E Ex e with supplements 1, 2 und 3 / Z: EX5 03 06 39250 007


TÜV SÜD Product Service GmbH

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Technical Report checked

Engineer


Dipl.-Phys. Andreas Pfeil
Center of Excellence for Machinery and Industrial Products


i.A. Frank Pscheidt-Denzler
Center of Excellence for Machinery and Industrial Products