

Performance test for bare shaft blower

Process description



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1 Performance test

1.1 Aim of the test

This is a simplified test acc. to DIN 1945 part 1 (ISO 1217).

The acceptance test demonstrate:

1. The guaranteed intake volume flow
2. The guaranteed power consumption

1.2 Short description of the machine

In the three-lobe blower, the medium is conveyed vertically by two symmetrical rotary pistons; these run in the same cylinder and thus form a closed conveying chamber. The synchronisation of the rotary pistons, which run without contact, is carried out via control wheels. Control channels in the cylinder control the backflow of the conveyed medium into the conveying chamber in such a way that interference can suppress pulsation as far as possible. The fixed bearing at the gear side is a double-row angular ball bearing and the floating bearing at the drive side is a cylindrical roller bearing or a deep groove ball bearing. The drive shaft is fitted with a seal.

Type of gas used in the test: Air

1.3 Guarantee

1.3.1 Guarantee conditions

| Size | Symbol | Unit |
|--------------------|--------|-------------------|
| Intake pressure | p_1 | bar |
| Discharge pressure | p_2 | bar |
| Intake temperature | t_1 | °C |
| Speed | n | min ⁻¹ |

1.3.1.1 Guaranteed performance

| Size | Symbol | Unit | Tolerance: [%] |
|------------------|--------|---------------------|-------------------|
| Intake flow rate | V_1 | m ³ /min | ±5.0 |
| Shaft power | P_w | kW | ±5.0 |

Performance test

Test sequence

1.4 Test layout

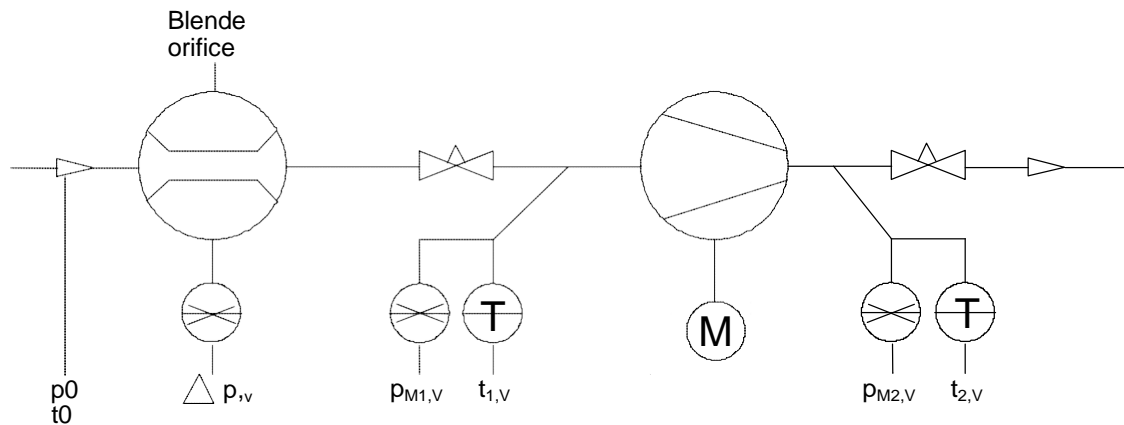


Fig. 1: Test layout

1.5 Measurement devices

Measuring instruments calibrated by certified specialist companies are used for the following measurements:

- Pressure measurement
- Temperature measurement
- Electric power
- Speed measurement

Detailed information on design and tolerance ranges can be found in the respective calibration certificates.

1.6 Test sequence

The blower is installed and aligned in front of the drive motor. Test bench pipes are mounted on the intake/discharge flange of the blower. Measurement devices for measuring temperature, pressure and electrical power are installed. In addition, the measuring orifice and the corresponding measuring tube for determining the flow rate are installed.

The blower is started and adjusted to the stationary operating conditions. Once the stationary operating conditions have been reached, the required measured values are recorded. For technical reasons, it may not be possible to perform the test with the actual conveyed medium and under the actual operating conditions. The test results are entered in the inspection certificate.

1.7 Evaluation of the measurement results

Based on the results, an adjustment is made for the operating data. The values calculated from these data for the intake flow rate and the power consumption at the drive shaft as well as the percentage deviation are listed on the inspection certificate.

1.8 Documentation

The result of the performance test will be summarized in the acceptance test certificate 3.1 acc. to DIN EN 10204.