Test procedure for seal packing

Cetim test benches to perform the test procedure Pr EN 16752

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Cetim disposes of test benches to perform the tests detailed in the document Pr EN 16752 « Centrifugal pumps – Test procedure for seal packing » : an ESA – FSA type test bench, specifically for packings and a high performance test bench

The document Pr EN 16752 gives details of a test procedure for packings to be used to seal the stuffing boxes of centrifugal pumps. In order to perform these tests, Cetim disposes of two main test benches.

Context

The aim of the document Pr EN 16752 is to give details of a test procedure for packings to be used to seal the stuffing boxes of centrifugal pumps.
It gives provisions on the design of test equipment, standard test parameters and reporting criteria.
It does not specify performance criteria which should be agreed between supplier and customer, but does define 3 tightness classes.
According to the tightness class, results of the test gives gland temperature, shaft and gland leak rate separately and power consumption. Tests parameters are also recorded during the 100 h duration of the test (inlet and outlet fluid temperature, pressure and rotation speed).

Tests conditions

All tests shall be carried out at ambient temperature, i.e. the fluid shall enter the test housing at 20°C with a possible deviation of +10/-5°C.

A minimum of 2 tests is to be performed. The defined test conditions are the following:

- **Test medium**

The test medium shall be clean water.

- **Shaft diameter**

The shaft diameter shall be between 40 mm and 65 mm inclusive.

- **Packing cross section**

The nominal packing cross-section shall be between 9.5 mm and 12.7 mm inclusive.

- **Surface speed**

Packings shall be tested at one steady speed rating, chosen between 8 and 9 m/s inclusive.

- **Pressure**

Packings shall be tested at the steady pressure rating of 0.6 MPa with a possible deviation of +/- 0.1 MPa, and the pressure shall be monitored within the test housing.

- **Tightness classes**

Test shall be performed in order to achieve one of the three following Tightness classes T1, T2 or T3 during the 100 hour test period (that is, excluding the break-in period), corresponding to the following total leakage levels:
T1 = less than or equal to 5 ml/min
T2 = less than or equal to 15 ml/min
T3 = less than or equal to 30 ml/min

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Cetim Test bench

ESA-FSA type test bench

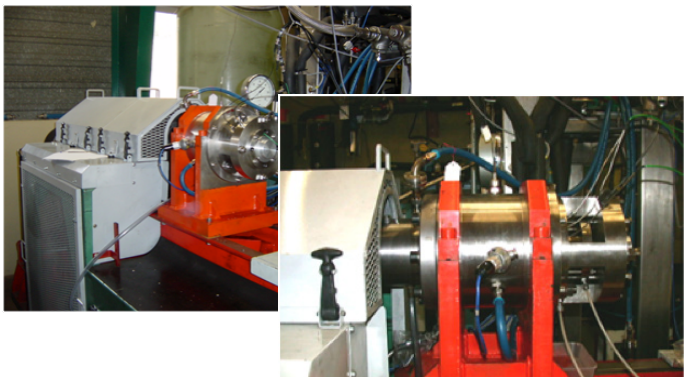
This test bench has been developed specifically to perform tests on packings and is highly instrumented.

- **Geometrical characteristics**
  - Shaft diameter: 60 mm
  - Gland external diameter: 80
  - Packing section 10 x 10 mm
- **Test condition**
  - Fluid pressure: 0 to 10 bar
  - Speed rotation: 0 to 3000 rpm
- **Instrumentation**
  - Temperature: fluid, gland on 4 points (°C)
  - Friction torque (N.m)
  - Packing compression distance (mm)
  - Packing compression force (N)
  - Gland and shaft leakage (ml/min)

High performance test bench

A specific test module on Cetim's high performance test bench has been developed in order to test packing under high solicitation level. This configuration corresponds to tests at higher pressure or higher speed rotation.

- **Geometrical characteristics**
  - Shaft diameter: 60 mm
  - Gland external diameter: 84
  - Packing section 12 x 12 mm
- **Test condition**
  - Fluid pressure: 0 to 20 bar (possible up to 60 bar)
  - Speed rotation: 0 to 7000 rpm
- **Instrumentation**
  - Total leakage (ml)
  - Leak rate (ml/h)
  - Gland temperature (°C)
  - Number of gland adjustments
  - Amount of each adjustment (mm)
  - Power consumption (W/mm^2)



References

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