ELCOM

COMPRESSOR TESTER

Functional tests before final assembly and performance tests of the finished compressors

- Tests for tightness, start-up, discharge
- Mechanical design test
- Manual and automatic contact
- Modifications for different types of compressors
- Saving of test results locally and in a database

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COMPRESSOR TESTER

FUNCTIONALITY

The tester measures the electrical, pneumatic and mechanical parameters of compressors for refrigeration systems. This is a so-called function tester that tests the functionality of the tested product. The interoperative tester tests the compressors before sealing lids and painting. In the event of a defect, the tester diagnoses the fault and can be corrected and retested. The performance tester tests the finished painted compressors before sending them to the customer.

The tester consists of a measuring switchboard with power autotransformers, a central part with components for measuring pneumatic tests and 4 fully automatic units for electrical and pneumatic contacting. The measurement of all electrical, pneumatic and mechanical variables is done with NI cards in the cDAQ chassis. The SW application is created in the LabView environment, a PLC is used for motion control. Autotransformers can also be replaced by a static power supply with the possibility of continuously adjustable voltage and frequency, including the user's choice of starting ramps.

The tester is equipped with an RFID reader at each station. The model of the compressor is read from the RFID tag and the test results are stored in it. In the event of a defective part, the type of defect is recorded and the compressor is automatically sent via the line to the repair workstation, where it is displayed to the operator.

The total cycle rate of the tester is approximately 12 s per piece tested.

ELECTRICAL TESTS

The course of voltage, current of the main and auxiliary phases and power consumption of single-phase motors is measured and recorded. For three-phase motors with variable speed unit, the power consumption of the unit is measured on the line side. The shape and values are evaluated according to the preset limits of the model. This test also measures the compressor discharge. The supply range is 0-250 V AC/50 Hz/25 A, for DC compressors the supply range is 0-60 V DC/27 A. The measured data are recorded for each piece in the interval of 300 ms in the network database and locally on the PC tester to the text file. The selection of the voltage, start and run elements is done automatically based on the preset configuration for the particular model.

DISCHARGE TEST

The compressor starts up to a back pressure of 3 bar (manually adjustable on the regulator), the air flow is measured after the start of the compressor in the range of 0-30 l/min. All values are measured and recorded at 300 ms intervals and stored in a network database and locally on a PC tester in a text file. The stable value of the discharge after the defined period time is evaluated in comparison with the limits defined in the configuration file for the specified model.

TIGHTNESS TEST

The compressor is connected to a test pressure of 8.8 bar (SW definable) at the outlet pipe, then closed and the pressure drop is measured over time. All values are measured and recorded at 300 ms intervals and stored in a network database and locally on a PC tester in a text file. The course of the pressure drop over a defined period time is evaluated, compared to the limits defined in the configuration file for the specified model.

MECHANICAL TEST

For some types of compressors tested, the positions of the tubes and connectors are measured with analog position sensors. The values are also stored locally and in the database.

A separate application is available for viewing and exporting data from the database.

ELCOM
Test and Measurement

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