

Poppe + Potthoff Maschinenbau GmbH
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PRESS INFORMATION

Pressure cycling test rig tests climatic components at -40 to +140 degrees Celsius

Poppe + Potthoff Maschinenbau has developed a pressure cycling test bench for efficient endurance tests with media-carrying vehicle components

For thermal management in vehicles, cooling and heating systems are essential: they protect against overheating and provide comfort. To facilitate and accelerate lifetime tests, Poppe + Potthoff Maschinenbau has developed a specialized system. It simulates the drive operation for the test specimen by means of freely programmable temperature, volume flow and pressure changes in sinusoidal and trapezoidal form.

Mobility requires reliable cooling and heating systems. These help man and machine - whether electric or internal combustion engine - to adapt to varying environmental conditions on land, at sea and in the air. Climate systems and all their components need to endure high load changes in the long term. Instead of trying the load-bearing capacity in real operation, manufacturers can now use the pressure cycling test rig from Poppe + Potthoff Maschinenbau to test their components flexibly, economically and in fast motion at an early stage of development.

Test at -40 to +140 degrees Celsius

For this purpose, the component, such as an additional heater for an electric car, is inserted into the test chamber. The test medium used is a water-glycol mixture or pure glycol (e. g. Glysantin G40, G44, G48). Tests can be carried out in a temperature range from -40 to +20 degrees Celsius for the cooling circuit and from +20 to +140 degrees Celsius for the heating circuit. By means of pressure, a specially developed closed test medium circuit prevents the generation of alcoholic vapors (risk of explo-

sion). An additional climate chamber can optionally be used to generate the environmental simulation.

The flow rate of the test medium can vary from 3 to 30 l/min at a pressure of 0.2 to 10 bar (max. 12 bar). The load changes are freely programmable with sinusoidal or trapezoidal rise in a test frequency of 0.2 to 1 Hz. With the testing unit, complete systems as well as individual components made of various plastics, metals and sealants can be tested. With the help of realistic simulation, the weak points in the bonded material are precisely determined – for example, in the area of a welding seam – and can be optimized early on during the development process.

Optimization of climate components and systems

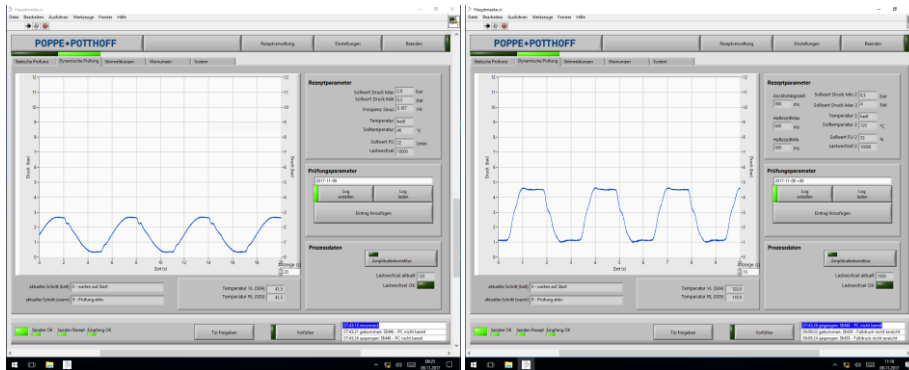
Measurement data acquisition and visualization is carried out with LabVIEW applications from National Instruments, as with all PPM systems. The open software structure enables additional sensors and measurement data to be integrated into the test. In this way, numerous client-specific relevant parameters can be mapped. All test sequences and data are automatically stored on the system and can be exported to the network for evaluation. The system can be adapted to customer requirements, remote maintenance and on-site service complete the service package.

3012 characters (incl. spaces), 475 words

Photos:



Fig. 1: The compact pressure cycling test rig from Poppe + Potthoff Maschinenbau tests climatic components at -40 to +140 degrees Celsius. Temperature, flow rate and pressure changes can be programmed freely in sinusoidal and trapezoidal form, enabling fast and economical testing.



Figs. 2 and 3: For component testing at -40 to +140 degrees Celsius, the volume flow of the test medium can vary from 3 to 30 l/min at a pressure of 0.2 to 10 bar (max. 12 bar). The load changes are freely programmable with sinusoidal or trapezoidal rise in a test frequency of 0.2 to 1 Hz.

Source: Poppe + Potthoff; Download in print quality: [Download ZIP](#)

Poppe + Potthoff Maschinenbau GmbH designs and manufactures test stands for measuring the strength and durability of components in automotive engineering and shipbuilding as well as other industries. The precise and high-performant special machines by the specialist for high-pressure and test technology are used in research, development and production. This includes test stands for measuring bursting pressure and tightness, impulse testing, autofrettage as well as automated testing. In addition, comprehensive component tests are offered as a service. The company based in Nordhausen (Germany) is a member of the Poppe + Potthoff Group.

Poppe + Potthoff stands for precision. The group develops and manufactures customer-specific steel tubes, common rail subsystems, high pressure tubes, precision components, line shafts, couplings as well as specialized test stands and other machines. Poppe + Potthoff enables highly sophisticated solutions in automotive engineering and shipbuilding, machine tool building and mechanical engineering as well as other industries. The family-owned enterprise with its headquarters and technology center in Werther (Germany) was founded in 1928 and has more than 1,500 employees. Poppe + Potthoff is active in more than 50 countries with its subsidiaries and long-term partners – always in close contact with its customers. www.poppe-potthoff.com

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