

Complete pressure calibration with a single hand-held instrument!

Pressure calibration with the CPH6600

Author:

Marco Wörner, Dipl.-Ing. (graduate engineer)
Product Manager
WIKA Alexander Wiegand SE & Co. KG
Calibration technology



Next to temperature, pressure is probably the most measured process variable in process engineering. Both mechanical and electrical pressure measuring instruments are commonly used for this. Depending on the the application, appropriate pressure measuring instruments are available in a variety of designs.

In order to ensure the quality and safety of the processes in the long run, periodic calibration of these pressure measuring instruments is needed.

On-site pressure calibration

Calibration can be carried out in the laboratory, in the workshop or directly on site. For the majority of pressure measuring instruments in a plant, a high-accuracy calibration in a laboratory is not necessary. In this situation, a quick calibration, directly in the plant, using a portable pressure calibrator - the "hand-held" - is recommended.

The basic requirement for pressure calibration is that both the item being calibrated and the calibration standard are at the same pressure. The pressure on site can be generated in various ways. Frequently, external hand pumps which can generate pressure manually are used. Pneumatic hand pumps are available for low pressures (<40 bar), while for high pressures, hydraulic versions are available (> 1000 bar).

In order to avoid generating the pressure manually, a pressure supply case can be used. This consists of a cylinder filled with nitrogen gas, with which the pressure can be provided. For both methods mentioned here, an additional pressure calibrator is needed, since both the hand pump and the pressure supply case can only supply the pressure.

The most modern and convenient solution is using portable pressure calibrators, which combine both a calibration standard and pressure generation in a handy and compact instrument. On the one hand, it takes away the need for complex assemblies, while on the other hand, it reduces the risk of leaks, since the number of connections can be reduced.

CPH6600 hand-held pressure calibrator with integrated pump

The CPH6600 from WIKA Calibration Technology brings together all that is needed for pressure calibration - in a single instrument. It enables you to perform a complete pressure calibration with just one hand – the second remaining free for other important operations. Consequently, with the CPH6600, the calibration process can be considerably simplified, made safer and also accelerated.

Pressure generation, using the pump integrated in the hand-held, is achieved either manually via a pump handle at the bottom of the instrument, or, with the built-in electric pump, simply by pressing a button.

Since, more and more, processes feature transmitters with electrical output signals, an additional multimeter function has been integrated. In addition to measuring the current and voltage, the instrument also includes a 24V voltage supply.

To complete the range of functions, pressure switch tests can also be carried out on it. For this, the pressure on opening, the pressure on closing and the hysteresis of the pressure switch is recorded and shown on the display.

In addition to pressure, temperature also often plays an important role in processes. Consequently, by connecting an external temperature sensor, the ambient temperature, and also the medium temperature, can be measured with high accuracy.

Handling and operation are very simple and user-friendly. The CPH6600 features a large, easy-to-read screen, on which up to three process parameters can be displayed simultaneously - meaning pressure, temperature and electrical signals can be measured at the same time. This further underlines the multi-functionality of the instrument.

Carrying out a calibration with the CPH6600

The CPH6600 is optimally designed for the calibration of pressure transmitters and also pressure switches.

To calibrate a transmitter with a measuring range of, for example, 0 to 10 bar, the process connection of the transmitter, pressure-free, should first be connected via a flexible hose to the pressure connection of the CPH6600, and then the transmitter output connected with measuring cables to the CPH6600's measuring channel. Then, a zero point adjustment is performed, with the vent valve open, by pressing the ZERO button; after which the vent valve is closed and the pressure/vacuum valve is set to a positive pressure. With the integrated electric pump, individual test points can now be set, and with the help of the fine control the

exact pressure setting can be reached. A typical calibration consists of five to ten test points, which are distributed uniformly over the entire measuring range. These points are checked with both rising pressure as well as with falling pressure.

To calculate the error on the test item, the CPH6600 has a special feature that instantly displays the deviation of the test item on the display. Let us assume that in the above example, the pressure transmitter to be tested has a measuring range of 0 to 10 bar and outputs a corresponding 4 to 20 milliamp signal. Thus, the operator can predefine the calibrator with a pressure range of 0 to 10 bar, whereupon the calibrator calculates and displays the deviation as a percentage of the transmitter's 4 to 20 milliamp output signal. And so, the required error calculation does not have to be done by the operator anymore.

Contamination of the pressure generation

Pressure measuring instruments come into contact with different process media in different plants. To prevent contamination by the process media, a dirt trap can be used. This is, in most cases, a suitable solution for the separation of the integrated pump from the contaminated calibration item.

Should the pump become contaminated anyhow, due to the innovative design, it can be cleaned through two valves on the back of the instrument.

Conclusion

The CPH6600 pressure calibrator is a complete solution which includes all that could be needed for pressure calibration. An increase in the efficiency of the calibration and monitoring process can be achieved through optimal test intervals and thus short downtimes for measuring instruments.

Number of characters: 6276

Contact:

WIKA
Alexander Wiegand SE & Co. KG
Monika Adrian
Services
63911 Klingenberg, Germany
Tel. +49 · 9372 · 132-9972
Fax +49 · 9372 · 132-423

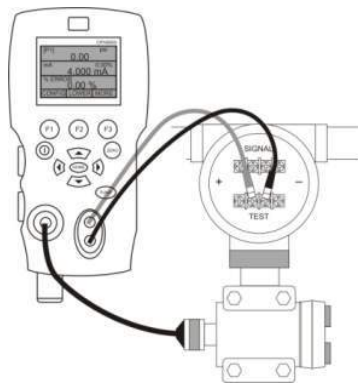
E-Mail m.adrian@wika.de

WIKA photos:

Application photo



Transmitter calibration:



Dirt trap:

