CETA® Newsletter

+ + + + + CETA Newsletter no. 5 of 09.05.2006 + + + + +

Dear readers,

Right on time for the CONTROL 2006 exhibition, here is our CETA newsletter no. 5. We are presenting at the exhibition the following innovations:

1) CETA standard fixture for leak tests. On the basis of ball valve leak tests, we will make a practical demonstration of its function. Through many discussions with customers, we learned about the requirements for a standard fixture and have now implemented them.

2) CETA accessories catalogue, including a great variety of application-related accessories.

Best regards

Günter Groß
Managing Director

Contents

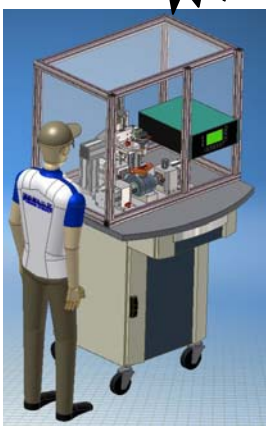
CETA accessories catalogue

NEW

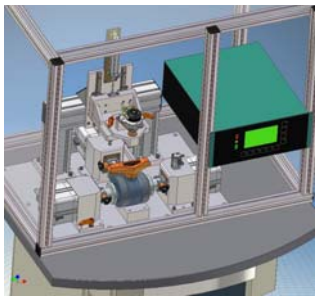
At the request of many customers, we have compiled an accessories catalogue, which has been issued on time for the CONTROL 2006 exhibition, and can also be downloaded as a PDF-document in the download area of our internet site. This catalogue includes a variety of accessory items which we know from experience have already stood the test of practice. Moreover, you will find in our catalogue information about our company, as well as practical information from the sector of industrial leak-testing technology. With this additional service, we want to support you with the process-reliable implementation of your tests. We would be glad to receive your feedback, so that we can improve on our catalogue to make it even more user-oriented.

CETA standard fixture

NEW



The standard fixture is conceived as a standing/ sitting workstation. The control cabinet, maintenance unit and valve cluster are integrated in a mobile floor unit, which serves as base frame for the fixture. Different types of PLC controls can be selected. The options two-hand start, guard door, and light grid are possible. The adaption of the test part is specific to the customer and is established in detail with the customer. Through integration of the CETA test device best suited for the desired type of leak test, we have a complete, self-contained test stand. Of course, the technical feasibility of the leak test is checked during project planning, so that you can depend on a process-reliable solution for your leak tests. Our customers will benefit from a lot of advantages with this modular concept and the “all-in-one” approach.



Automatic function control

During the leak test, the measured value (e.g. the pressure loss) is compared to the permissible tolerance. If the measured values of the test part are contained within the acceptable limits, the part is rated as a good part. For this purpose, the settings of the test device should be correct. To check the correct setting of the differential pressure transducer, CETA has developed a patented additional function, the “automatic function control” (patent no. 100 45 472). This function can be integrated as an option to the leak detectors of the CETATEST 810 series. The functionality of the automatic function control is implemented by additional hardware components and a special firmware. During the filling phase, the pressure impulse necessary for the function control is initiated. The pressure impulse is of the same order of magnitude than the pressure

CETA Testsysteme GmbH • Marie-Curie-Straße 35 - 37 • D-40721 Hilden
☎+49 (0) 2103 / 2471-75 • 🖷 -76 • ✉ sales@cetatest.com
www.cetatest.com

variation occurring during testing of the real test part and is consequently aligned with the working point of the differential pressure transducer. This control function comes after the measuring phase. During this so-called control phase, the system checks the deflection of the differential pressure transducer.
The frequency of this control can be determined and modified by the user, and can be consigned in a separate program which can be called up specifically in case of a test, per PLC or manually (in case of a manual test stand).
As an alternative, the control can be made automatically after a defined, freely programmable number of test cycles, without activation of a special program.
This control takes place in the real testing environment, without any specially prepared test part. The advantage of this function is that it is not necessary to have a separate test leak for every testing situation. However, this function does not strictly replace the test leak. Checking the calibration of a test device by means of a test leak is an independent testing procedure, as required for example for the control of test equipment. This function effectively supports the reliability of the testing procedure and the required testing quality.

CETA practical tip: capability index C_g

The capability index C_g is used for evaluation of the testing capability of a test device and constitutes a measure of repeating accuracy.
The capability index is established on the basis of a statistical evaluation. In practice, this means that 25 measurements are made with a tight test part, followed by 25 measurements with a test leak additionally connected to the test circuit. The flow value of the test leak must be chosen so that it corresponds to the permissible leak rate. This simulates a marginally defective part. During this procedure, a sufficient time interval should be kept between the single measurements, so as to avoid interference to the measurements due to thermal effects (warming during the fill phase, and cooling during the dump phase). These measurements should simulate the case of changing and newly adapted good and defective parts, as occurring in practice.

The C_g value is quantified by the following:

$$C_g = \frac{0{,}2 \cdot T}{6 \cdot s}$$

By tolerance T, we understand in this metrological context the difference between the average value measured with the master tight part and the average value measured with the added test leak (with a flow value corresponding to the permissible leak rate limit). The standard deviation s is calculated from the measurement distribution of the marginally defective parts. The following figure represents a typical measurement distribution.

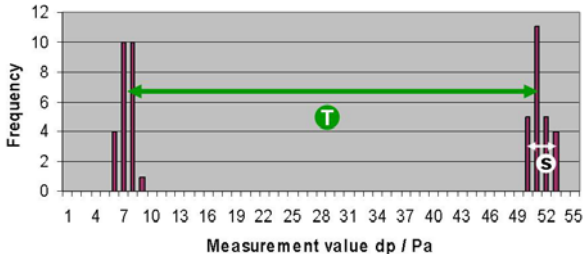


Figure: Histogram of the measurement distribution for a capability index C_g = 1,48

The corresponding statistical interpretation of the measured values is represented in the following chart:

	Tight part	Tight part with test leak
Average	7,32 Pa	51,32 Pa
Standard deviation s		0,99 Pa
Tolerance T	44 Pa	
C_g value	1,48	

In practice, values of $C_g > 1{,}33$ or even $C_g > 1{,}67$ are required. By means of the C_g value, it is possible to judge objectively if the test procedure reliably achieves repeating accuracy – i.e. if the good and defective parts (simulated here by the added test leak) can be clearly identified and rated.
The C_g value is determined by CETA Testsysteme GmbH as standard within project planning and is of particular interest, not only when the customer has to fulfill a C_g requirement. An offer will only be issued when the testing process has proved reliable.

CETA Testsysteme GmbH • Marie-Curie-Straße 35 - 37 • D-40721 Hilden
☎+49 (0) 2103 / 2471-75 • 🖷 -76 • ✉ sales@cetatest.com
www.cetatest.com