CETA® Newsletter

+ + + + + CETA newsletter no. 28 of 10.10.2016 + + + + +

Dear readers,

Here is our 28th CETA-Newsletter, issued on the occasion of the MOTEK 2016 trade fair. You can find us at exhibition stand 3176 in hall 3, where we will present our test devices and demonstrate some practical applications, such as our compact table test stand unit for leak-testing of encapsulated test parts. We will be joined by our partner 3S GmbH, a company specialized in leak-testing solutions for parts containing gas or fluid and in detection of leak rates up to $1x10^{-6}$ mbar*l/s. We are looking forward to meeting you and to having lots of interesting discussions.

Wishing you a pleasant reading,
Yours sincerely,

Günter Groß
Managing Director

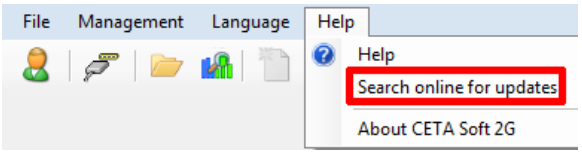
Contents

CETA presented at the 19th World Conference of Non-Destructive Testing

The 19th WCNDT (World Conference of Non-Destructive Testing), organized by the German Society for Non-Destructive Testing (DGzfP), took place in Munich from 13th to 17th June 2016. This international conference is held every 4 years (20th WCNDT to be held in Seoul, South Korea). This event was attended by 2.500 participants and more than 270 exhibitors. It included 670 presentations (lectures and posters). CETA was represented by Sales Manager Dr Joachim Lapsien with two lectures on „Leak Test of Test Parts with Pressure Compensation Elements using the Test Medium Compressed Air“ and „Leak Test of Encapsulated Systems with the Test Medium Compressed Air“. If you are interested in these topics, please contact Dr Lapsien (tel: +49(0)2103/2471-19, e-mail: joachim.lapsien@cetatest.com).

Application Software CETA Soft 2G and Online-Updates

The analysis and control software CETA Soft 2G has been specially developed for communication with the CETATEST x15 devices. The software is used to control the test devices as well as transmit parameters, record of measurement values and measurement analysis (incl. automatic test part evaluation). The software is under continuous development and updates are provided regularly. Please use the Help menu while connected to the internet in order to search for, download and manually install updates. This ensures that you are always using the current version of CETA Soft 2G.



Wireless Connection of CETA Soft 2G for CETATEST x15 Series

Leak testers of the CETATEST x15 series can be equipped with a wireless interface module. If the application software CETA Soft 2G is installed on a tablet or a notebook with full-fledged Windows operating system (from Windows 8 on), you can use these to control the test devices by wireless connection and benefit from the full potential of the CETA Soft 2G software (parameterization, recording of measurement series and measure-

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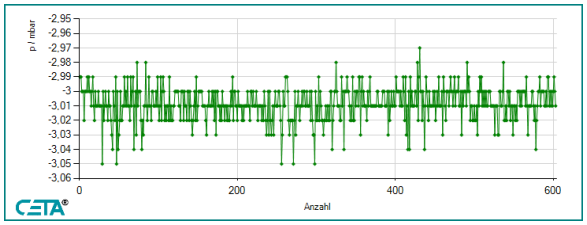
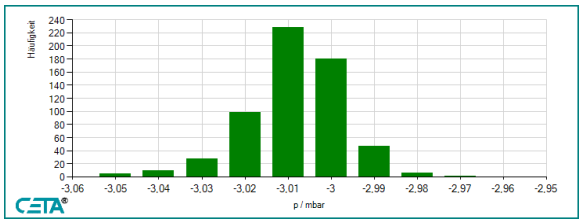
ment curves). Since several sessions of CETA Soft 2G can be started on one computer, you can assign one device to each session of the software. This is a clever solution to control several test devices via computer/tablet and wireless data connection. The wireless data transfer is so efficient that it even allows simultaneous transmission of measuring curves for 2 different test devices with transmission intervals of 25 ms between two consecutive values.

Leak Tester CETATEST 815: New Electronically-Controlled Pressure Ranges (± 5 mbar and ±50 mbar)

A large number of leak tests are performed at test pressures between 100 mbar and 10 bar. However, some industrial applications require leak-testing at very low pressure. In addition, the test should allow for both positive and negative target gauge pressures. We have risen to meet this challenge. Using an electronic pressure regulator and a number of technical modifications and optimizations, we developed a solution for pressure ranges of ±5 mbar and ±50 mbar.



Distribution of filling pressure with 603 repeated measurements (target filling pressure: -3 mbar)



Bar chart of filling pressure (target filling pressure: -3 mbar)

On the basis of 603 documented repeated measurements with a test part volume of several liters, it was ascertained that the filling pressure of -3 mbar could be obtained with excellent repeatability. The recorded filling pressure lay between -2,99 mbar and -3.01 mbar in 455 cases. This represents 75,6 % of all measurements. An absolute deviation of 0,01 mbar from the target filling pressure of -3 mbar represents only 0,3 % of the target value. Only 16 measurements (equivalent to 2,7 % of the total number of measurements) showed a deviation of the filling pressure of more than 0,03 mbar but not exceeding 0,05 mbar. The results with positive gauge pressure are equally impressive.
This technical solution was also extended to the pressure range of ±50 mbar. Thus two additional pressure ranges are available for the device CETATEST 815: ±5 mbar and ±50 mbar. And the use of an electronic pressure regulator gives the user utmost flexibility.

CETA Practical Tip: Conversion of Leak Rate Unit „mbar*l/s“ to „ml/min“

The leak rate units used in the industry are „mbar*l/s“ and „ml/min“. The question frequently arises as to how to convert these units.
The so-called leak rate formula permits an estimation of the temporal pressure decay dp/dt in the unit „Pa/s“, with the air leak rate Q in „ml/min“ and the volume V in „ml“.

$$\frac{dp}{dt}\left[\frac{Pa}{s}\right] = \frac{Q\,[ml/min]}{V\,[ml]} \cdot \frac{100.000\,Pa}{60\,s/min}$$

The transposition of the equation to leak rate Q yields:

$$Q\,[ml/min] = \frac{dp}{dt}\left[\frac{Pa}{s}\right] \cdot V\,[ml] \cdot \frac{60\,s/min}{100.000\,Pa}$$

Given a volume V of 1 l (= 1.000 ml), a leak rate of 1 mbar*l/s corresponds to a pressure variation of 1 mbar/s due to leakage (= 100 Pa/s = dp/dt). By inserting this value in the equation above, we obtain:

$$Q = 100\,Pa/s \cdot 1000\,ml \cdot \frac{60\,s/min}{100.000\,Pa} = 60\,ml/min$$

It follows that: 1 mbar*l/s = 60 m/min. Thus the leak rate of 0,6 ml/min often used for water leak tightness in the industry corresponds to 10^{-2} mbar*l/s.

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