



Dear Readers,

today we inform you, among other things, about an application in which small volume and encapsulated RFID transponders are tested for tightness using the CETATEST 515.

Do not miss: soon we will be expanding our range with online seminars.

Wishing you a pleasant reading

Günter Groß - Managing Director

### Content

- CETA in international market studies
- Online-Seminars:  
CETA know-how for the practical use
- Quality assurance of the tightness of RFID transponders in the production process
- CETA practical tip:  
Leak test of a RFID transponder in practice

## CETA in international market studies

CETA is the largest German owner-operated manufacturer of leak and flow test devices and has an export rate of approx. 50%. The high reliability and good product quality of the test devices is highly appreciated by the customers.

Accompanying there is an active marketing, e.g. active press work, presence in national and international industry portals, exhibition on relevant fairs (also by the CETA cooperation partners), presence on national and international congresses (by lectures, workshops and posters) as well as the publication of articles in relevant technical journals.

Therefore we are especially pleased that CETA is perceived in **international market studies** beside well-known market companions, e.g:

- QYReports • [www.qyreports.com](http://www.qyreports.com)
- Trends Market Research • [www.trendsmarketresearch.com](http://www.trendsmarketresearch.com)
- Market Reports World • [www.marketreportsworld.com](http://www.marketreportsworld.com)

### These include, for example, the current studies

- „Global Leak Test Equipment Market Research Report 2019-2026“ - *QYReports*
- „Covid-19 Impact on Global Leak Tester Industry Research Report 2020 Segmented by Major Market Players, Types, Applications and Countries Forecast to 2026“ - *Market Report World*

These studies contain information on business development, market shares, activities and general market statements. [QYReports](#) and [Trends Market Research](#) are among the leading publishers of market research reports, supplying renowned clients worldwide.

The consideration of CETA in international Studies show, that CETA is also perceived internationally as an established provider. Let us convince you of our range of services!



## Online seminars - CETA know-how for practical use



We put a lot of focus on individual consulting and competent project support. Now we extend this with our online project „CETA DIGITAL“.

For this purpose the CETA experts will give you in a free of charge online seminar series under the motto „CETA know-how for the practical use“ valuable tips from the practice for the practice. We will deal with aspects which frequently occur

in the practical environment of leak and flow testing. Further online formats are in work.

If you are interested we will be pleased to add you to our e-mail distribution list and send you the participation information.

Please register by phone or e-mail:  
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## Quality assurance of the tightness of RFID transponders in the production process

RFID (Radio Frequency Identification) technology enables contactless data transmission without having to establish direct contact between the transmitter (transponder, tag) and the receiver (reader). This makes this method suitable for a wide range of applications (access control, work safety, traceability, medical technology, explosion protection „Ex“). In the automotive sector, wireless RFID sensors are used for monitoring functions (e.g. wheel rotation speed, tire pressure monitoring).

RFID transponders are available in various sizes and different designs. Depending on the area of application, they must be designed accordingly robustly. And, depending on the application, they must be sealed against water and moisture. As part of quality control, these products are tested for leaks during the production process (100 % inline routine testing).

The RFID transponder consists of an encapsulated housing with integrated electronics. The two halves of the housing are often ultrasonically welded together. This encloses an „air cushion“ that protects the electronics. The housing must be leak-tight so that no moisture can penetrate. Due to the usually flat small housing design (typically 5 to 10 cm<sup>3</sup> outer volume) and the small inner volume (approx. 0.3 to 1 cm<sup>3</sup>), high-resolution measurement technology is required.

The differential pressure tester CETATEST 515 in the variant „sealed component, high resolution“ was especially developed for the



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process reliable leak test of small volume test parts and the detection of very small volume differences. Hereby highly sensitive pressure sensors and a measuring technique optimized for the detection of smallest volume differences are used. For example, volume differences of only 0.03 cm<sup>3</sup> can be reliably resolved in a basic volume of 10 cm<sup>3</sup> (0.03 cm<sup>3</sup> corresponds to the volume of an O-ring with 12 mm diameter and 1 mm thickness).



Encapsulated test parts are tested in a hood which is pressurized, whereby the pressure loss into the interior of the test part caused by leakage is measured. Attention must be paid here: If the test part has a gross leak (e.g. housing defect), it is filled directly during the filling phase of the hood. In this case only the tightness of the hood surrounding the test part would be tested. Thus the test process consists of two steps: first the gross leak detection followed by fine leak testing. Typical test pressures are between 100 and 500 mbar. The requirements for the leak-tightness (permissible leakage rate) result from the application area of the transponder.

## CETA practical tip: Leak test of a RFID transponder in practice

The round RFID transponder has a diameter of 30 mm and is 6 mm high and should be waterproof at the pressure of 200 mbar.

For watertightness, the standard industrial air leakage rate of 0.01 mbar·l/s (corresponding to 0.6 cm<sup>3</sup>/min) is often taken as a basis. The external volume of the transponder is 4.24 cm<sup>3</sup>. The near-contour test cover (0.5 mm air gap around the test part) has an empty volume of 5.28 cm<sup>3</sup>. This enables the clear identification of test parts where the inner volume of only 0.31 cm<sup>3</sup> is additionally filled in case of a gross leakage.

In the case of a borderline test part with a leakage rate of 0.6 cm<sup>3</sup>/min, this results in a pressure gradient of 142 Pa/s, which can be resolved without any problems.

Both tests (gross and fine leakage test) can be carried out in a total test time of less than 3 seconds. In a measurement system analysis a Cg-value (capability index) of significantly greater than 5 is achieved. It is also possible to detect an even significantly lower leakage rate in a process-safe manner, which emphasises the efficiency of the used leak tester type CETATEST 515.



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