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Rising production volumes, higher requirements - Industrial testing technology is becoming a key factor in defense production

Quality assurance through leak and flow testing integrated in production | CETA exhibits at the EUDEX trade fair

Abstract

The expansion of the European defense industry requires not only additional manufacturing capacity but, above all, stable, repeatable production processes. Automated leak and flow tests play a crucial role in this regard: They ensure the quality of safety-critical components, reduce scrap and rework, and provide complete quality documentation. At the Euro Defense Expo (EUDEX) 2026 (September 22–25, 2026, Essen), CETA Testsysteme GmbH will present solutions for leak and flow testing integrated into production.

Increasing production volumes require industrial mass production

The European security and defense industry is undergoing a profound transformation. As defense expenditures rise, production capacities are being expanded, supply chains diversified, and manufacturing processes scaled up to handle higher volumes. Production is increasingly shifting from a predominantly project-based model to industrial mass production.

This transformation is driving higher demands for process reliability, traceability, and reproducible quality. Thousands of identical components must be manufactured reliably, and product quality must be documented.

Quality begins in the production process

Safety-critical electronic products used outside must function reliably even under varying environmental conditions. Even the slightest manufacturing deviations can allow moisture or dust to penetrate sealed systems. This can cause malfunctions or the failure of the entire system.

For this reason, the focus of quality assurance is increasingly shifting from traditional final inspections to the manufacturing process itself. The goal is to detect deviations at an early stage and prevent defective components from entering subsequent production steps.



Electro-optical sensor systems must be waterproof.

Image source: CETA Testsysteme GmbH / Canva / Generated by AI

Leak and flow testing as a key technology in the manufacturing process

Automated and objective testing methods are becoming increasingly important, particularly in high-volume production. These methods provide measurement values for each individual component and enable continuous monitoring of production quality. This allows changes in the production process to be detected and corrected at an early stage.

Industrial leak and flow testing plays a central role in this context. Numerous components of modern defense systems must be protected against environmental influences or reliably ensure defined media flows.

Typical components are electronic control units, sensors, actuators, wireless and communication systems, monitoring systems, energy storage devices, battery enclosures, optoelectronic systems, hermetically sealed units, connectors, valves, cooling circuits, and hydraulic and pneumatic components.

Depending on the component and test requirements, differential pressure, pressure drop, flow, or mass flow methods are used. The goal is to reliably detect even the smallest leaks or to quantitatively measure flow (e.g., in valves and cooling channels).

The measurement data enable continuous monitoring of process stability and provide reliable quality verification for each individual component.

Successful testing technology starts with the right approach

However, the performance of a test device alone does not determine the success of a testing solution. Just as important are a testing concept tailored to the application, the selection of suitable measurement methods, and optimal integration into the production line.

Component geometry, material properties, leakage rates, test times, and environmental conditions must be taken into account as early as the project planning phase. Only the combination of measurement technology, application expertise, and process understanding enables stable and reproducible test results.

CETA Testsysteme GmbH - Experience ensures process reliability

Experienced technology partners play a significant role, particularly when establishing new manufacturing capacity, as they accompany their customers through all phases of the project.

For more than 35 years, CETA Testsysteme GmbH has been developing measurement and test devices for industrial leak and flow testing. CETA supports its customers from the feasibility study through the development of a test concept all the way to integration into automated production lines.

These "Made in Germany" test devices use compressed air as the test medium. Typical test pressures range from 1 bar to 10 bar. Compressed air can be used to detect leakages down to 10^{-3} mbar·l/s (depending on the size of the test volume). And with the flow testers, gas flow rates from 3 ml/min to 200 l/min can be measured.

Standardized test methods are used here, as described in DIN EN 1779 (Criteria for the Selection of Leak Test Methods) and DIN EN 13184 (Pressure Change Methods).

The testing methods that have proven themselves in the automotive, electronics, energy technology, medical technology, and electric mobility sectors can be applied to numerous applications in the security and defense industries - particularly where high production volumes are combined with safety-critical quality requirements. CETA is distinguished by its in-house development and manufacturing capabilities, a calibration laboratory accredited to DIN EN ISO/IEC 17025 (D-K-19566), and a quality management system compliant with ISO 9001. Several thousand CETA test devices are in use worldwide on production lines for quality control.

EUDEX as a platform for cooperations

Euro Defence Expo (EUDEX), the leading international trade fair for the defense industry, will take place alongside security essen, the leading international trade fair for civil security, from September 22–25, 2026, at the Essen Exhibition Center.

By participating in the Euro Defense Expo for the first time, CETA is underscoring its growing commitment to the security and defense industry. The company intends to collaborate with manufacturers, system integrators, research institutions, and public-sector customers to develop solutions for future testing tasks in industrial defense production.

At the trade show, CETA will demonstrate a leak test using compressed air on an electronic control unit with the CETATEST 820 leak tester. The pressure loss caused by leaks will be quantitatively determined using the differential pressure method.

CETA at the EUDEX 2026 trade fair | September 22–25, 2026 | Essen

Joint community stand of the State of North Rhine-Westphalia, Hall 3, Booth 3B17

Further information

[CETA Homepage](#)

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[Trade Fair EUDEX 2026](#)

[CETA Exhibitor Profile at the EUDEX 2026](#)

CETA Press text: 6833 characters including spaces

Company profile

CETA Testsysteme GmbH - Solution partner for industrial leak and flow testing

CETA Testsysteme GmbH, based in Hilden near Düsseldorf, Germany, was founded in 1988 and has been active for more than 35 years as a manufacturer of physical measurement instruments used in leak tests and flow measurements. Compressed air is used as test medium. This testing procedure is characterised by the fact that it can be integrated in the production line with high process reliability.

The test equipment "Made in Germany" is developed in-house and along with the components and accessories (e.g. calibration standards) are manufactured by CETA. This takes into account the high demands on the quality of the internal modules used. A comprehensive range of test devices means that the right solution can be found for almost any testing application.

Semi-automatic test stands are also offered. The test devices are used by customers for quality assurance, quality control and production assurance. The customers are mainly from the automotive industry, e-mobility, medical technology, heating and air conditioning industry, energy sector, fittings and household appliances industry, packaging industry, security and defence industry.

The company is certified according to DIN ISO 9001 and won the Quality Award of North Rhine Westphalia in the industry category in 2002. Since 2012, CETA has been consistently certified with a very good credit rating.

The calibration laboratory was accredited in 2004 by the German Calibration Service (DKD) and in 2014 by the German Accreditation Body (DAkkS) - as the successor to the DKD - as a DAkkS-accredited calibration laboratory. The DAkkS-accredited calibration (compliant with the DIN EN ISO/IEC 17025 standard) meets the requirements of the IATF 16949 standard applicable in the automotive industry.

CETA Testsysteme GmbH is the first German manufacturer of leak testers to deliver its test equipment with DKD- or DAkkS-accredited calibration certificate as standard since 2004. From mid-2024, flow testers as well as pressure manometers and calibration standards will also be supplied with a DAkkS-accredited calibration certificate as standard and at no extra cost on initial delivery.

The comprehensive range of services includes consulting, feasibility studies, commissioning, training, maintenance and calibration.

With cooperation partners in China, India, Indonesia, Mexico, Poland, Portugal, Singapore, Thailand, the Czech Republic, Turkey and Hungary and with thousands of test devices in use all over the world, CETA Testsysteme GmbH presents itself as a competent solution partner for industrial leak and flow testing.

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Press Release

CETA Testsysteme GmbH



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