

Still plenty of scope for more quality: leak testing in production and industry

“Quality made in Germany” - the reputation of our products, which is envied around the world, is worth hard cash. Tested parts and products are easier to sell, create trust and reduce breakdown damage. And yet there is still untapped potential in continuous quality assurance. The key term here is inline EoL leak testing (end-of-line testing). A technical article by Dr. Joachim Lapsien.

The one-hundred-percent quality testing of all product components - this has long since become standard in many industries. Nowadays, no car leaves the factory without its smallest part having passed through end-of-line testing. Every aeroplane that takes off has run through an EoL test. And the individual parts of every life-preserving medical appliance have passed through in-production testing.

But in many product areas, the testing of individual pieces is not yet on the agenda – at least until the first damage event occurs.

Type testing versus routine testing

Of course, a multitude of legal requirements already exist for every product or production part, from electrical connectors to gas stoves. This normally also includes being leak-proof against dirt and moisture, the requirements for which are described in the definition of the so-called IP protection classes, and the normalised standards of which are legally specified. But this is precisely where the decisive difference begins.

The IP protection class tests are type tests. For these, prototypes and models are laboratory-tested for leak-proofing against the penetration of moisture, strictly according to the specification of the IP protection class being aimed for. The result of the testing is summarised in a test certificate. The type testing supplies proof that the product possesses the characteristic claimed for it by the manufacturer and meets the requirements of the relevant conditions.

Most of the time, nothing is done until the horse has already bolted

This simplified type testing is sufficient for products manufactured in small batches and normally also for individually constructed devices. But what happens when enormous quantities are being produced and the manufacturing conditions on the production line do not correspond with those of the model or gradually change - and this has effects on the leak-proofing of the products?

When leaky products are delivered, it is too late to intervene correctively. Apart from dealing with customer claims, it is then a matter of introducing and integrating corrective actions, usually under great time pressure.

Routine testing ensures consistent production quality

Routine testing on the other hand provides proof of consistent production quality. When certain products are manufactured in huge quantities and in some industries, it has already been common for years for every product to have been 100 percent in-production tested for leak proofness. The

more complex and valuable the product is, the more this is the case; e.g. where reworking is economically worthwhile, or the more sensitive and critical the application is in which the product is used or if the subsequent damage caused by the failure of the components would be very great. Here, one does not rely upon type testing. It is precisely for these reasons that e.g. products that are used in the auto industry are tested for leak proofness in 100 percent inline testing.

Need to weigh up costs

The integration of an inline leak proofness testing process involves costs of course. And at this point it is necessary to consider which possible costs are higher: failures in the field with the customer, caused by production problems leading to consequential damage, or the costs for the certainty of supplying only tested and leak-proof products.

The reasons why, in many cases, inline routine testing is the better choice are plain to see. As well as product liability, protection against possible claims for compensation or downtimes of one's own production, tested quality is above all else an unbeatable marketing instrument: it creates trust among end consumers and industrial customers.

The author:

Dr. Joachim Lapsien is a sought-after expert and speaker on everything to do with the subject of leak proofness testing. He is the Sales and Marketing Manager of CETA Testsysteme GmbH in Hilden, a solution-providing partner for industrial leak proofness and flow tests.

CETA Testsysteme GmbH
Marie-Curie-Str. 35-37
40721 Hilden
+49 (0)2103 / 2471 - 75
sales@cetatest.com
www.cetatest.com