

LEAKAGE TESTER ONLINE

Using the Hydrogen-Detection Using the Pressure Drop-Detection

Quality control online

In food-processing industry, quality control is very important in every process of manufacturing. Nowadays, safeguarding systems are urgently necessary in modern manufacturings and packaging companies to avoid extensive complains and loss of turnover as well as contributory fault of 'foodborn diseases'. Food-processing companies can not afford to lose their reputation. Especially the food-hygiene-regulation obligates food-companies to self-control for detection and avoidance of danger for health, starting from manufacturing, working up and distributing of food.

WHO recommends a systematic scheme for quality control in companies, based on the HACCP-concept (Hazard Analysis and Critical Control Points). Today, this concept for failure prevention in food-industry is queried regularly, when large orders are tendered. An admittedly structured concept like HACCP for self-control and quality assurance is also an excellent marketing-argument an can improve the image of the food industry significantly. Leak packages contain a high risk of microbial contaminations and an early ruin of the goods, as well as changed product properties and changed taste.

The leakage tester LTO serves as an automatical leak detection of foil-packed products during the process of manufacture. Packagings can concern heat-sealed bags or deep drawing packagings. Leak tests occur automatically, continuously or during the process of manufacture.

Physical specifications

Dimensions

200 x 100 x 150 cm (H x B x L)

Net Weight

± 200 kg



LTO (Leakage Tester Online)

Features

- auto-sampling
- trace gas of pressure drop-detection
- user-related systems available
- single workstation - measuring optional
- permeation 'quick-test' optional
- high sensibility and selectivity

Pressure drop-measuring method

The leak tester LTO is integrated into the running packing line. Using the pressure drop-method, 4 up to 10 packages are taken out of the process of manufacture. They are transferred into the test chamber and tested selectively. Leak packagings are ejected immediately when leaving the chamber. Tight packagings are transported back into the packing line. In case of a positive result (leak packaging), a signal alarm occurs.

A continuous transport of the not-tested products in the packing line is ensured during sampling and measurement procedure. The pressure drop-measuring method can be applied usefully at a leak-size from about 40-50 μm on.

Hydrogen-measuring method

The new generation of leak testers use hydrogen as test gas. By security reasons, there is no pure hydrogen inserted.

Because of that, a gas-mixture of 5 % hydrogen and 95 % nitrogen is used. This mixture is - see also ISO10156 - not combustible, untoxic, environment-friendly and non-corrosive. It is applied with the definition 'forming gas' since decades.

In terms both of hydrogen and nitrogen are found in all biological systems. They are both harmless for health. High acquisitions- and maintenance costs for mass-spectrometers when using helium as test gas and the development of high-performance hydrogen leak testers lead industry to rediscover hydrogen as a trace gas.

Because of its multivarious usability and its crimp production method, forming gas is a very cheap gas. Additionally, hydrogen is legalised as food-additive. A rate of about 1 % hydrogen in the protective atmosphere of a packaging is sufficient for testing in most cases. These advantages qualify hydrogen as test gas for leak tests in packagings.

Properties of hydrogen

Hydrogen is the ideal test gas for leak detection and leak tests. It is the lightest substance in the universe, its molecular velocity is larger and its viscosity is lower than that of any other gas .

These properties make hydrogen behave very different than other trace gases.

The normal background level of hydrogen in air is only 0.5 ppm, whereas the level of helium is 5 ppm.

The background level limits the practical sensitivity of any gas detector. Hydrogen is a naturally occurring gas which is totally non-toxic and has no adverse effects on the environment.

Hydrogen test chamber

To detect a leak in a packaging, for example consisting of foil, forming gas is filled into the packaging. This can be done before sealing. This packaging is inserted into an integral test chamber or into a single test chamber. After closing the chamber, the hydrogen concentration rises in the environment of the packaging, in case of a leakage. A detection 'tight' or 'leak' takes place. Leak packagings are ejected, tight packagings are transported back into the packing line.

Leak lokalisation

'Leak'-marked packagings can be analysed manually by using the leak tester H2000 after ejection. A precise leak-localisation is possible, a test 'bubble formation under water' is unnecessary.

To test single leak packagings, hydrogen can be brought into the packaging subsequently, by injection forming gas. Additional equipment according to this application is available.



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