

1.6.11. ANALYSIS OF MODERN METHODS AND CONTROL DEVICES OF TECHNOLOGICAL INSTALLATIONS LEAKPROOFNESS AND THEIR CLASSIFICATION

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Hermiticity, as a feature of products preventing ingress of gas or liquid substances through a shell, is one of the hermetic products quality criteria. Hermiticity problems occur not only in production and operation of industrial products but also in common use.

Progress of the modern science and engineering is inseparably related to variety of hermetization products. These are ships and ground transportation vehicles, unique large-scale accelerating and thermonuclear machines, microminiature electronics, industrial refrigeration machines and household refrigerators, chemical production machines, underground cables and pipelines, food containers and a great number of other objects, products and systems.

In the process of analyzing trends, the further development of the mass-spectrometric method of hermiticity testing can be noted. It can be accounted for comprehensive capabilities of the method such as ultra-high sensitivity, capability for assessment of hermiticity degree with utilization of different testing substances – helium, argon, hydrogen and other gases. On the basis of the method, automatic units for the purpose of hermiticity testing both small-scale and rather large products have been created and continue to be created. Automatic mass-spectrometer leak testers are produced on the basis of this method.

The ultrasound hermiticity testing method acquired widespread use and continues developing.

Any operating equipment with defects, generate a wide spectrum of sounds. High-frequency ultrasound components of these sounds inherently have a very small pitch of waves and thereby being beams which makes them easy to single out from ambient noises and to determine their source and location.

In recent years the **semiconductor gas-sensing sensors** acquire widespread use. The combination of high-sensitivity, selectivity and operational speed predesignate their usage for the purpose of creation of new, compact leak testers, constructed on the micro-electronic basis.

Analysis of other hermiticity testing methods was performed.

Also, in the present study a classification of modern hermiticity testing methods is given.