

TECNETIUM-99 EXTRACTION GENERATOR WITH AUTOMATIC CONTROL

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The extraction technology of obtaining technecium-99m includes a number of rather labour-intensive technological operations, carried out by the skilled staff. Operations are carried out in immediate proximity in which there is a generator to the chamber generator and last for a long time (up to 2 hours). Automatization of the process of obtaining technecium-99m is a matter of great interest for decreasing personnel irradiation and for reducing the influence of technological parameters. Besides much attention of tracking parameters and process stages, and control on extraordinary situations.

Required reliability is accomplished with the help of the duplicating of parameters control, the optimum placing of control points and construction of sensors. In case of an extraordinary situation the process is brought to a stop. The control unit consists of a controller, an interfaces and sensors. It is controlled with a special programme. An controller is a microprocessor with essential externat elements including an permanent storage unit for placing a control programme.

An interface has 32 entrance channels and 32 exit channels. It is used for connecting a controller with sensors and control units. Exit channels have power amplifiers, which control electromagnetic valves, rectifiers and other actuating devices. Sensors are used for testinig the solution level in extractors, the filling moments of phase separation, the temperature of hot and cold water, the operating rarefaction, the condition of stop valves. Sensors have suitable amplifiers(transformers) in order to coordinate with an interface.

All semiconductor and regulated elements of the control unit are located outside of the "hot" chamber. The principle of the unit's operation is as follows: after switching on the test programme checks good condition of

sensors and returns all the control elements to initial position. During the process of obtaining technecium-99m the unit tests and controls operating parameters and control elements: pneumatic valves and rectifiers. Completing separate stages of the process is determined with help of corresponding sensors, with respond to critical changes. Sensors are designed and placed so that their operation determine necessary instants of time reliably and definitely. Applying the above control unit test us increase safety and quality of operation and minimize quality of manual manipulation.