



## INSTALLATION FOR RECYCLING OF RARE GASES WITH THE PURPOSE OF THEIR REUSE IN SCIENCE SECTORS

### The purpose and scope of application

Despite the high cost of rare gases and, first of all, xenon, most consumers are very wasteful to these valuable products. In the case of scarcity of rare gases, the need for such unique substances can be partially met by recycling and reusable. The complex of equipment provides the collection of rare gas mixtures that result from their consumption in medical practice, space technology, laser technology, in the electronic and lighting industries. Secondary components are separated from the mixtures, and the target product (krypton or xenon) is purified to its original state due to the multistage separation under cryogenic conditions.

### Important parameters that characterize the level of scientific results

Purity of the product – 99,999%.

Capacity by input stream mixture– 1...1,5 normal m<sup>3</sup> per hour.

Part of the target product loss < 1 %.

Type of refrigerant – liquid nitrogen ( $T = 84 \text{ K}$ ;  $P = 2 \text{ bar (abs.)}$ ).

Capacity of the refrigerant – 6...10 kg per hour.

Dimensions – 2,8 x 3,0 x 2,8 m.

Energy consumption – 1 kW.

The low-temperature unit is fully automated.

The possibility of remote control, adjustment of the control algorithm and viewing of the collected datas through the Internet channel is provided.

### Intellectual Property Protection Status

Two patents were obtained.

### Market demand

In automated installations for preservation of krypton and xenon, in particular, interested foreign enterprises, which specialize in the production of electronic components and equipment to control their quality.

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### Status of development

An active prototype of the installation that is capable of operating in manual and automatic modes was produced. Various studies with simulation mixes accompanied by a gas analysis of the fractions were carried out

