SINUS, ELECTRON-BEAM STERILIZER OF POWDERED MATERIALS

Description
The Institute of High Current Electronics Institute offers SINUS, an electron-beam plant for sterilization of medical powders used in a pharmaceutical industry for producing drug tablets. Sterilization is performed by a low-energy (150 - 200 keV) high-current electron beam.

The plant includes:
- a source of nanosecond electron beam, periodically-pulsed high-current electron accelerator with cold cathode;
- a container for sterilized powder equipped with a powder and an agitator;
- irradiation channel with foil windows for electron beam input;
- a receiver of sterilized powder.

The powder is poured through a mesh window. The resulting uniform flow with the density of 0.1-0.2 g/sm³ is irradiated by the electron beam. The sterilized powder is collected in the receiver.

Technical specifications
Productivity (depending on bio-contamination level): up to 20 kg/hour
Power consumption: less than 3 kW from standard public net 220 V

Technical appraisal and economic benefits
Significant economy of the electric power in comparison with the thermal method. Since during sterilization the material is heated by than 5 C°, the temperature-sensitive powders can be sterilized.
As compared to X-ray and γ radiation: the technology employs no radioactive substances.
Much higher efficiency and lower electron energy as compared with X-ray sources.
High safety of the personnel with no bulky radiation shielding. The facility can be placed in a regular production room.
The device is computer-controlled.
The tests for various powders (starch and licorice root) have shown that complete sterilization is reached at a dose of about 10 kGy with no detectable physical and chemical changes of the sterilized substance.

Application areas
Pharmaceutical and food industry.

Development stage
Pilot plant is created.

Patent situation
Separate original units of the plant and technologies are protected by RF patents.

Commercial offers
Contract for manufacturing and delivery of the plant.
Investment contract for joint organization of the plant manufacturing and sale.
License agreement.
Other forms of cooperation of mutual interest.

Estimated cost
From 1.5 million rubles.
Contacts
Prof. Igor V. Pegel, Scientific Secretary
Institute of High Current Electronics, Siberian Branch of the Russian Academy of Sciences
2/3 Akademichesky Ave., Tomsk, 634055
Tel.: +7(3822) 49-19-47
Fax: +7(3822) 49-24-10
E-mail: contact@hcei.tsc.ru
http://www.hcei.tsc.ru