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ABSTRACTS

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ENVIRONMENTAL APPLICATIONS of HIGH POWER ELECTRON ACCELERATORS of ELV SERIES

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Beginning from 1971, the Budker Institute of Nuclear Physics SB RAS develops and manufactures the electron accelerators of the ELV type for their applications in the industrial, environmental and research radiation-technological installations. At present, the Institute offers the electron accelerators of ELV-series covering the energy range from 0.2 to 2.5 MeV with the beam current of accelerated electrons up to 400 mA, and maximum power of up to 400kW. By now, INP has delivered both inside of Russia and abroad over 70 accelerators of the ELV-series and their total operational time is of the order of 500 years.

For solution of a number of ecological problems related to the desinfection and cleaning the electron beam technology is used. The basic advantages of this technology compared to the other technologies used for this purpose are the following:

- ecological cleanes and safety;
- a complex effect on treated media, the compatibility with many convential method;
- full automation of process, reduction of required area;
- the lower (more than 3 times) electric energy consumption compared to other methods.

Ecological cleanes and safety of the method is achieved by the elimination or substantial reduction of the use of chemical reagent wich cause themselves the contamination of enviroment.

Accelerated electrons cause the complex effect on all kinds of contaminations. Simultaneously with the suppression of bacterial contamination they destroy practically all the chemical compounds.

BINP participate in solution of the ecological problem both by production of accelerators for environmental installation and by investigation for developing enviromental technologies. Our Institute (together with other organisations) have developed electron-beam processing for:

- waste water treatment;
- flue gas purification;
- destruction of toxic wastes;
- grain desinfection.

More than 10 our accelerators are employed in environmental installations. They have power less than 100 kW and are used mainly in experimental installations. The real enviroment projects require more higher power of electron beam. For this purpose we developpe the new generation of high power electron accelerators. They have a beem power of some hundreds kW. They are adapted for special requirements of enviroment technologies.