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Abstract 239**D.C. ELECTRON ACCELERATOR OF ELV-TYPE FOR
INDUSTRIAL, ENVIRONMENTAL AND RESEARCH APPLICATION**

**R.A Salimov, N.K Kuksanov, P.I Nemytov,
V.V Prudnikov, M.E. Veis, Ju.I. Golubenko,
S.N Fadeev, V.G. Cherepkov**

**Budker Institute of Nuclear Physics,
Novosibirsk, Russia**

E-mail: kuksanov@inp.nsk.su

ABSTRACT

The ELV electron accelerators are DC machines purposed for wide application in various technological processes. They are designed for round-the-clock operation in industrial conditions. The ELV machines have energy range from 0.5 MeV to 2.5 MeV with power up to 100 kW, and beam power up to 400 kW with the energy range 0.6 -1.0 MeV.

ELV accelerators are the most popular Russian accelerator. BINP develops and manufactures these accelerators from 1970. During this time it was delivered over 100 accelerators. Half of them were installed inside of former USSR and another half – abroad.

ELV accelerator can be equipped with a wide set of supplementary devices extending the application range. There are systems of ring and double side irradiation, 4-side irradiation system, extraction device for concentrated electron beam (both focused and adiabatically compressed), transportation system for cable, film and grain.

According to their parameters and possibilities for user ELV accelerators are one of the best in the world.

HIGH POWER ELECTRON ACCELERATOR ELV-12 FOR ENVIRONMENTAL APPLICATION**R.A Salimov, N.K Kuksanov, P.I Nemytov,
V.V Prudnikov, M.E. Veis, J.I. Golubenko****Budker Institute of Nuclear Physics, Novosibirsk, Russia****E-mail: kuksanov@inp.nsk.su****ABSTRACT**

The problems of ecology are very important for human civilization. EB technologies are very promising for decontamination and cleaning processing. BINP understands importance of environmental projects and participates in these programs as follows:

- a. We carry out preliminary experiments in BINP. For this purpose we have 100 kW multipurpose accelerator and many users can make several kind of ecological EB experiments.
- b. We delivery the accelerators for pilot plants. Usually it is accelerators with power <100 kW. We also make consulting of reactor and radiation protection designing.
- c. We developed high power EB accelerators for full scale installations.

It is ELV-12 accelerator. This accelerator has EB power 400kW, maximum beam current 0.5 A and energy range 0.6 – 1.0 MeV, consumption power 450 kW (efficiency 89%). It is adapted for environmental application.

ELV-12 accelerator was designed, manufactured and successfully tested in BINP at maximum power during long time. Then it was delivered to Korea for installation of dyeing waste water treatment. In the paper presented here the parameters of powerful electron accelerators and the main systems of the accelerator are considered.

**S. ELECTRON BEAM FORMING SYSTEM FOR IRRADIATION OF MAJOR
DIAMETER CYLINDRICAL PRODUCTS**

**V.L. Auslender, I.V. Gornakov, V.M. Radchenko, E. Shtarklev,
V.O.Tkachenko, L.A. Voronin***

**Budker Institute of Nuclear Physics, 11 Ac. Lavrentyev av.,
Novosibirsk 630090, Russia.**

***E-mail: nphialex@mail.ru**

ABSTRACT

The report describes electron beam (5.0 MeV, 50 kW) electromagnetic forming-system, which is destined for irradiation of cylindrical long goods, specifically for PE tubes 160 mm diameter. System consists of electromagnet, power supply units, beam distributions control units, etc. The particular geometry of magnet poles and special shape of current in the coils of scanning magnet are forming an irradiation field of necessary configuration, at that the hade of electrons on the surface of goods is close to 90° .

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ELECTRON ACCELERATOR FOR ENERGY UP TO 5.0 MEV AND BEAM POWER UP TO 50 KW SPECIALLY DESIGNED FOR USE IN INDUSTRIAL APPLICATIONS

**V. L. Auslender*, A. A. Bryazgin, I.V. Gornakov, B.L. Faktorovich,
I.G. Makarov, V. E. Nekhaev, A. D. Panfilov, V. O. Tkachenko,
A.F. Tuvik, L.A. Voronin**

**Budker Institute of Nuclear Physics, 11 Ac. Lavrentyev av.,
Novosibirsk 630090, Russia.**

***E-mail: V.L.Auslender@inp.nsk.su**

ABSTRACT

The report describes the industrial electron accelerator ILU-10 for electron energy up to 5 MeV and beam power up to 50 kW specially designed for use in industrial applications. The ILU-10 accelerator is a novel development and it is mainly designed for the processes requiring high energies of electrons and beam power. The ILU-10 machine that can work with maximum energy of 5.5 MeV ideally suites for the irradiation centers purposed for treatment of wide spectrum of goods. The electron energy of 5 MeV permits to treat the products that can have the surface density up to 4 g/cm².

**PROJECT OF HIGH POWER LINEAR ACCELERATOR FOR
E-BEAM AND X-RAY PROCESSING**

**V. L. Auslender, V.G. Cheskidov, G.I. Kuznetsov, A.N. Lukin,
I.G. Makarov, G.N. Ostreiko, A. D. Panfilov, V.V. Tarnetsky,
M.A. Tiunov, V.O. Tkachenko***

**Budker Institute of Nuclear Physics, 11 Ac. Lavrentyev av.,
Novosibirsk 630090, Russia**

***E-mail: V.O.Tkachenko@inp.nsk.su**

ABSTRACT

The report describes a project of industrial electron accelerator prototype for electron energy up to 5 MeV and beam power up to 300 kW specially designed for use in industrial applications. In the report the basic concepts and a condition of the project for today are reflected.

On the one of stage of work for design of its accelerating system we shall use the existing generator designed for ILU-8 accelerator. It is realized on the GI-50A triode and provides the pulse power up to 3 MW and up to 20-30 kW of average power.

Abstract 232**RADIATION SYNTHESIS TECHNOLOGY IN DEVELOPMENT
OF NEW MEDICAL PREPARATIONS**

V.L. Auslender¹, M.V. Korobeynikov*¹, E.P. Gulyayeva², A.V. Troitsky², E.I. Vereschagin², V.A. Shkurupy³, A.V. Artamonov⁴, O.V. Grishin⁴

¹**Budker Institute of Nuclear Physics, 11 Ac. Lavrentyev av.,
Novosibirsk 630090, Russia.**

²**Institute of Cytology and Genetics, 10 Ac. Lavrentyev av.,
Novosibirsk 630090, Russia.**

³**Scientific Center of Clinical and Experimental Medicine,
2 Ac. Timakov str., Novosibirsk 630117, Russia.**

⁴**Siberian Center for Pharmacology and Biotechnology,
10 Ac. Lavrentyev av., Novosibirsk 630090.**

***E-mail: M.V.Korobeynikov@inp.nsk.su**

ABSTRACT

The radiation synthesis technology was successfully used for immobilization (grafting) of proteolytic enzymes on polyethylene glycols. This process was realized using the electron accelerators type ILU-6 and ILU-10.

Radiation immobilization of enzymes is a single stage process that does not use toxic or harmful chemical agents. This technology can be used for many old well-known medicines and it will give them new life.

There are bacterial proteolytic enzymes that decompose non-vital proteins and do not affect on vivid tissues, but they are unstable, allergogenic and pyrogenic. A new medical preparation Trombovazim produced by radiation synthesis technology is first preparation in the new line. It has the wide spectrum of curing properties; it can be intravenously infused into the body and is easily absorbed in stomach.

The Isonicotinic Acid Hydrazide INH (isoniazid) is one of the main drugs used for tuberculosis treatment. The new preparation "Izodex" is the balanced mixture of INH and INH conjugated with dextrane. The "Izodex" is more efficient than pure INH, it has prolonged action and lower toxicity (in 5 times). "Izodex" permits to decrease the duration of treatment course in 2-3 times. The cost of "Izodex" produced by radiation synthesis is reasonable for mass production.