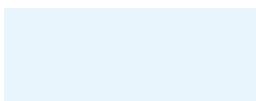
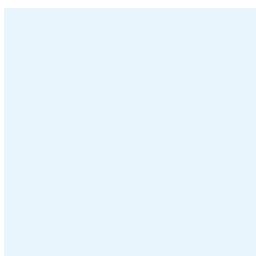




E-Beam Sterilization of Medical Devices



Herotron - The beta-sterilization specialists

Located close to the major logistics hub of Leipzig and right next to the A9 in Bitterfeld-Wolfen, Herotron E-Beam Service GmbH was founded in 2003 as a provider of irradiation services.

At its modern premises, Herotron operates two high-performance accelerators with different energies of 10 MeV and 20 MeV.



The range of services includes:

- Sterilization of medical devices
- Cross-linking of plastics
- Modification of crystalline structures in semiconductors and gemstones

In the field of science, the company is involved in pioneering visionary new products in collaboration with several different scientific institutions. In cooperation with its partners, Herotron devises solutions and new fields of application.



EN ISO 9001:2008
EN ISO 13485:2003/AC:2009
EN ISO 11137-1



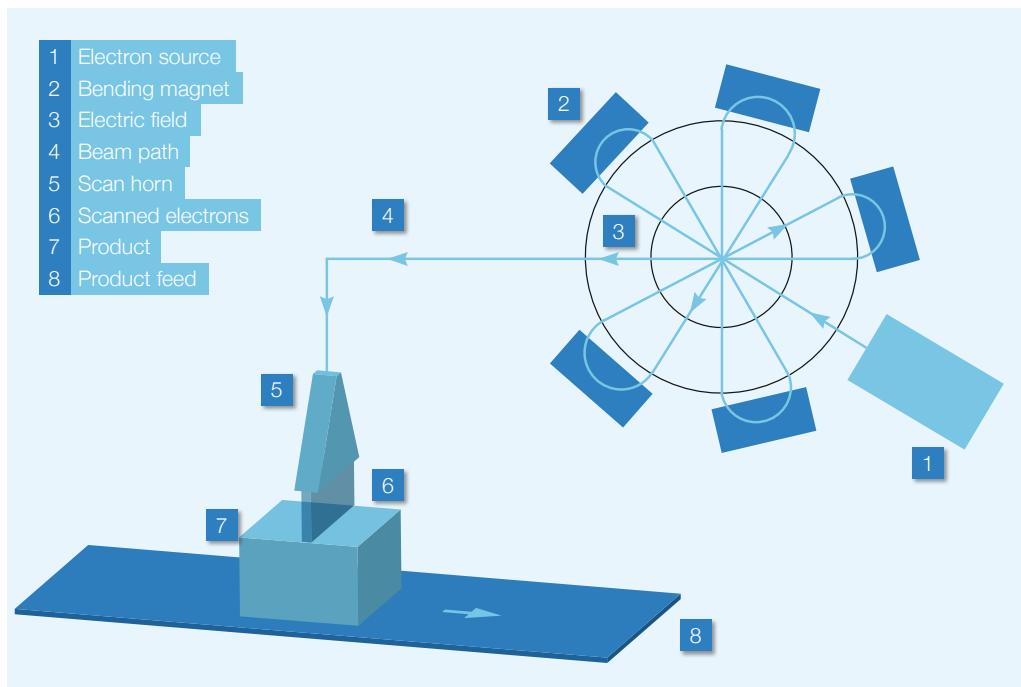
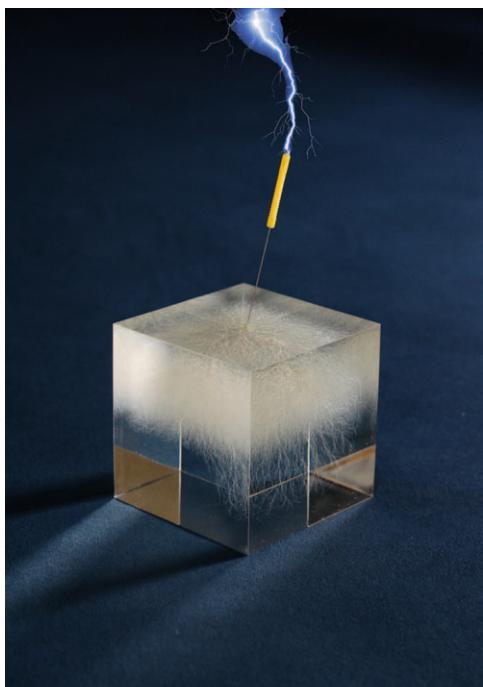
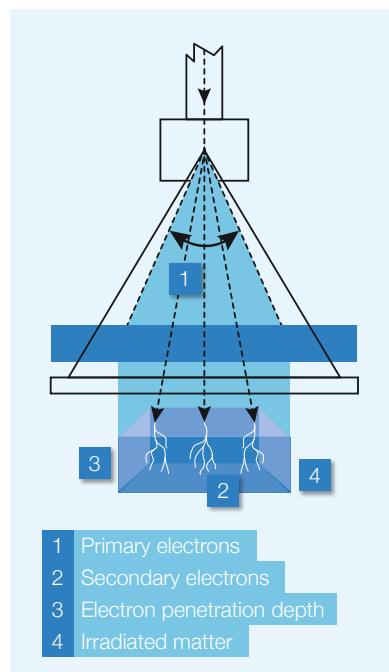
E-beam / beta radiation

Electrons emitted from an electron source are accelerated in an electric field, either on bent paths (rhodotron) or linearly by using alternating electric fields (linear accelerator).

The accelerated electrons are then deflected by an electromagnetic field and scanned onto the product through an exit window. The actual irradiation process is carried out under normal conditions.

Accelerator:

- 20 MeV 18 kW
MEVEX MB20
- 10 MeV 80 kW IBA
Rhodotron TT200

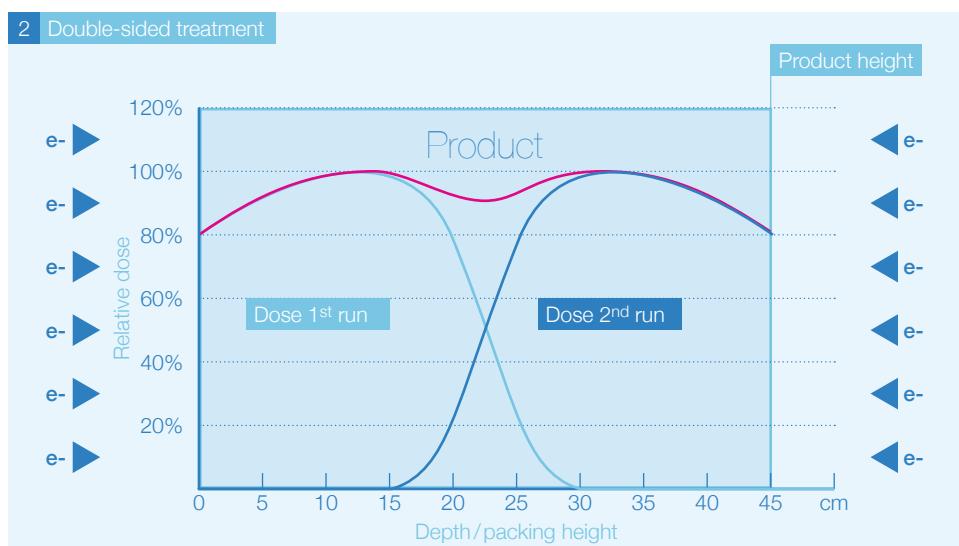
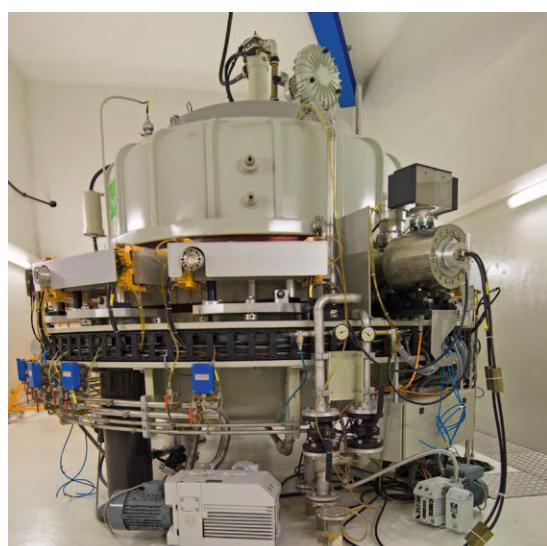
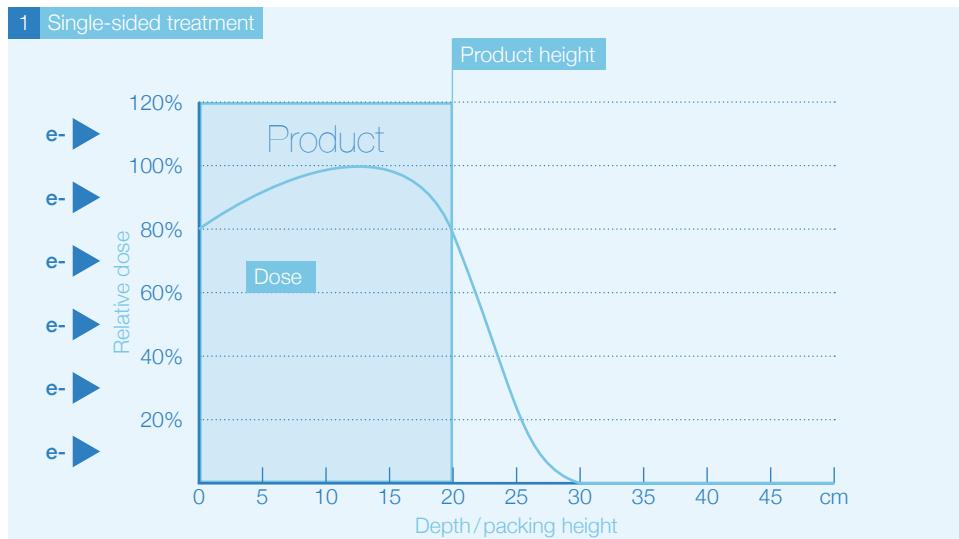


Process description

The E-beam sterilization process is based on penetrating unsterile products and their packaging with high-energy electrons.

Accelerated electrons are ionizing and therefore have a germicidal effect.

By passing through the “curtain” of electrons, the energy is absorbed by the material. This results in the chemical stimulation of molecules and atoms and the generation of free radicals.



The products can be irradiated on either one or two sides. The method and dose applied depend on the product characteristics and are determined in conjunction with the customer.

Dose depth distribution in material with a density of 0.19 g/cm^3 during 1 single-sided or 2 double-sided treatment at an energy of 10 Mev.

Process organization

Due to the precision of the high energy irradiation dose, it is possible to process products in a very short time. The accelerators used by Herotron E-Beam Service GmbH do not cause any activation of the irradiated product or any harm to the environment. The sterilization process is fast with a high throughput, so a just-in-time treatment can be integrated into the logistical processes of the manufacturer as a synchronized last step before delivery to the customer.

1 08:30 am Departure at manufacturer



2 10:30 am Arrival at Herotron



4 Irradiation



3 Gateway



5 Exit



6 Foil wrapping



7 13:30 pm Departure of the client



Sterilization of medical devices

Sterilization of medical devices by electron beam treatment is one of the safest and most efficient processes, as it eliminates not only all forms of microbial life, but also viruses, plasmids and spore forms, as well as DNA fragments.

The high energy of electron beams induces the generation of free radicals, which particularly destroy the sensitive nucleic acids of microorganisms.



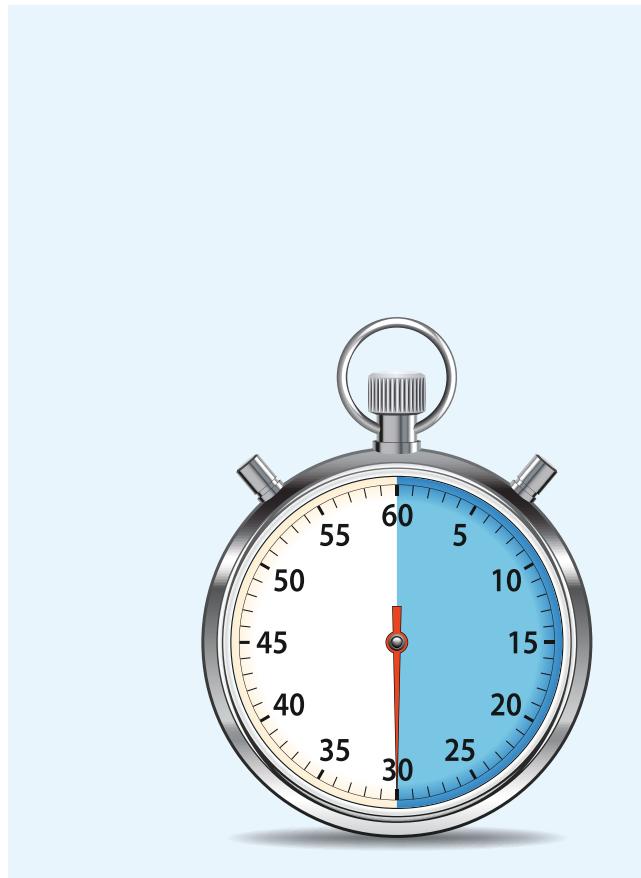
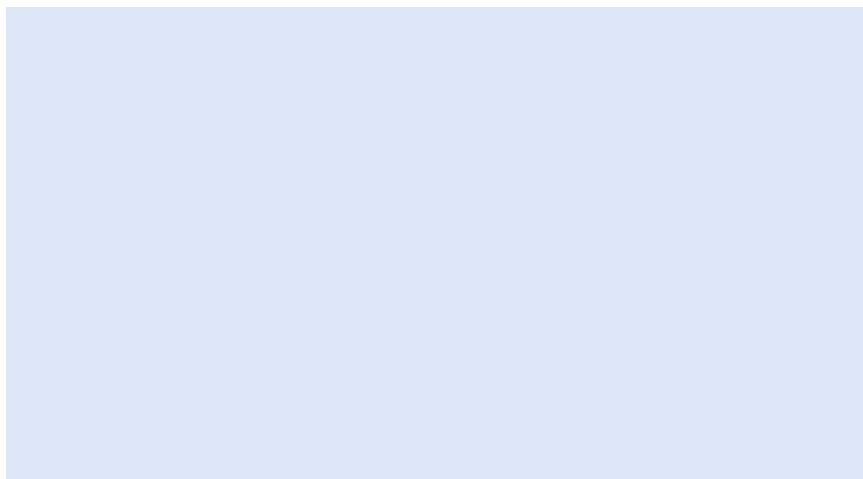
The following groups of products are especially suitable for radiation sterilization:

- Dressing materials and other sterile textiles
- Plastic medical disposables e.g. syringes, tubes, bags
- Implants



Advantages of radiation sterilization

- Complete sterilization of the product using high energy beams for uniform penetration
- Short irradiation times for better material compatibility
- Fast release of the product (dosimetric release)
- No residues, no degassing necessary
- No need for semi-permeable membranes
- No application of radioactive sources
- Good price-performance ratio





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