



High-end controls enable tumor therapy

Development partner of the
Heidelberg Ion Beam Therapy Center (HIT)





Heavy ion and proton therapy – Control systems in the fight against tumors

The Heidelberg Ion Beam Therapy Center (HIT) treats tumors with heavy ion and proton therapy.

It makes it possible to reach tumors located deep in the body or in extremely sensitive areas with the utmost precision, while sparing surrounding healthy tissue.

Specialists from Eckelmann AG developed, implemented and supplied the control systems for the particle accelerator and the therapy area.



Successful destruction of tumors: Acceleration to 70 % speed of light

The HIT was the first therapy facility in Europe to use heavy ions and the first in the world to have a gantry – a movable beam guidance in which the beam exit rotates 360° around the patient for optimum irradiation. This gantry has a diameter of 13 meters, a length of 25 meters and weighs 670 tons. Thanks to their physical properties, ions pass through the tissue as a sharply defined beam of radiation. Shortly before the particles come to a standstill, they develop their maximum effect directly in the tumor. The charged particles are accelerated to 70 % of the speed of light and then sent precisely in the direction of the tumor. How far the beam penetrates into the tissue depends on its energy (= velocity): The higher the energy, the deeper it penetrates the body. More than 100,000 different combinations of beam parameters can be set on the accelerator control system.

Eckelmann therapy control system: precise and safe treatment according to plan

This control system operates a large number of electromagnets and HF systems that force ions into their orbits and accelerate them, as well as numerous beam diagnostic devices.

The reservation and safe arbitration of the treatment sites to the accelerator as well as the request and targeted application of dense ion beams are carried out according to predefined treatment plans. During treatment, the ion beam must be permanently monitored and analyzed; it can be automatically switched off within 200 millionths of a second in an emergency.

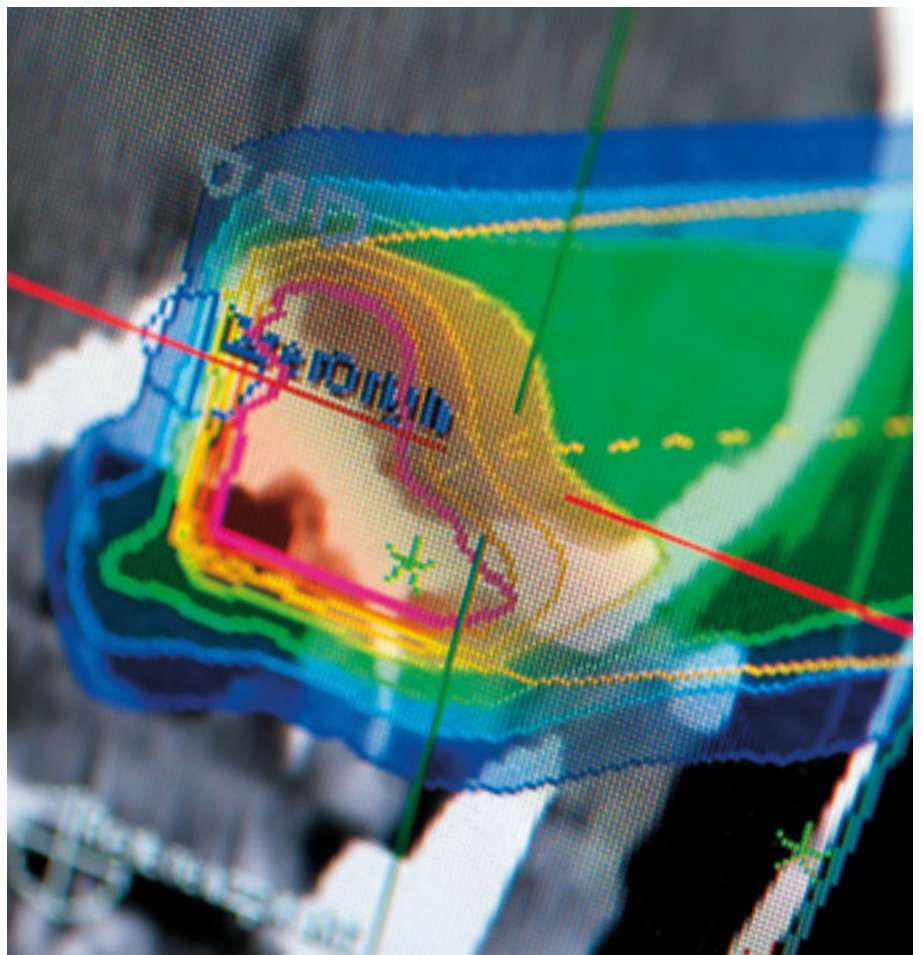
In the raster scan method, the heavy ion beam is deflected laterally with the help of magnetic fields and the insertion depth is adjusted from pulse to pulse via the energy of the ions. The beam remains on each point until the calculated target dose is reached.

1:1-service by the development team

Saving human lives comes first.

In this case, this requires the highest availability of the life-saving therapy system. In case of malfunction, the development team experts are available for the HIT twenty-four-seven and react within the shortest possible time upon request.

In addition, Eckelmann takes over the long-term support and further development of the existing systems as part of a long-term commitment.



About us

The Eckelmann Group presents itself as a full-service provider for industrial automation and digitalization. As specialists for the requirements of the pharmaceutical industry, biotechnology and medical technology, Eckelmann engineers offer industry-specific solutions from a single source: consulting, individual hardware and software solutions, turnkey automation systems, lifecycle management and smart service.

It goes without saying that we are **ISO 9001** certified. We also demonstrate quality management and certifications in the regulated environment, for example with **ISO 13485** as a supplier of medical technology, **ISO 62304** (medical device software), processes for **GMP/GAMP 5** and the manufacture of electrical equipment in accordance with **CE, UL** and **UKCA**.



Sites & partnerships – national & international
480 + employees



Talk with us.

Eckelmann AG
Berliner Strasse 161
65205 Wiesbaden
Germany
Phone: +49 611 7103-0

projects-sales@eckelmann.de
www.eckelmann.de



www.eckelmann.de/en