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Semcon development partner for revolutionary cancer treatment

Radiation therapy for cancer can cause many side effects for patients. By making use of the opportunities from new technology, Kongsberg Beam Technology is developing a world-unique proton treatment – with minimal side effects for multiple types of cancer. Semcon is responsible for the project's technical and digital development.

Today, most cancer patients are treated using radiation, intended to kill the diseased cells. However, the healthy cells around the tumour are also affected by the radiation. Proton radiation therapy has the potential for more accurate treatment, which means less impact on other tissue and organs.

“In the treatment of certain types of cancer, such as lung cancer, it is especially important that the radiation therapy is accurate since the organs are moving”, says Lasse Bjørkhaug, Project Manager at Semcon in Norway.

Using a digital twin, which is a virtual copy of a part of the body or organ, the treatment will be much more accurate than before thanks to a dynamic and predictive real-time image of the tumour under treatment.

“This project really can make a difference. Applying our digital excellence with experience from other industries gives us the opportunity to develop technology with new perspectives that can be of real benefit to patients”, says Lasse Bjørkhaug.

The system that Kongsberg Beam Technology has patented is called MAMA-K, Multi-Array Multi-Axis Cancer Combat Machine. The machine treats the tumour with a number of simultaneous proton beams and is especially adapted for more mobile organs, and it can be added to both existing and new proton machines.

Among other things, Semcon will be responsible for developing the control and monitoring systems for MAMA-K, a full-scale prototype for testing, as well as a digital twin of a patient or organ. This is achieved through excellence in systems architecture, project management, control systems, software, mechanics, and industrialisation, as well as requirements specification for medical devices.

Semcon is an international technology company that develops products based on human needs and behaviours. We strengthen our customers' competitiveness by always starting from the end user, because the person who knows most about the user's needs creates the best products and the clearest benefits to humans. Semcon collaborates mainly with companies in the automotive, industry, energy and life science sectors. With more than 2 200 specialised employees, Semcon has the ability to take care of the entire product development cycle, from strategy and technology development to design and product information. Semcon was founded in Sweden in 1980 and has offices in over 30 locations in eight different countries. In 2019, the Group reported annual sales of SEK 1.9 billion. Read more on [semcon.com](https://www.semcon.com)

“MAMA-K sets high requirements for accuracy and dynamic control. Semcon has long experience of implementing control systems with similar requirements in many industries. I am convinced that Semcon has the best prerequisites for emulating this in MedTech”, says Per Håvard Kleven, founder and owner of Kongsberg Beam Technology.

The next phase of the project is now underway and will continue until 2022, focusing on securing proof-of-concept and a prototype. In the subsequent and final phase, the concept will be tested and verified up until 2024. Testing will take place at the Norwegian Radium Hospital at Oslo University Hospital. Other partners include the University in Oslo, Onsagers and Oslo Cancer Cluster Incubator.

[Read more about Semcon's initiatives in medtech.](#)

For more information, please contact:

Per Nilsson, Director Marketing, Communication & Sustainability, Semcon

Phone: +46 [0] 739 737 200

Email: per.nilsson@semcon.com