CNAO and Hitachi launch advanced rotating proton therapy system in Italy

Hitachi system enables proton beams to be delivered from 360 degrees around the patient, expanding treatment capacity and supporting more precise, personalised care for complex and paediatric cancers

- CNAO and Hitachi have started patient treatments using Hitachi's advanced rotating proton therapy system in Pavia, Italy.
- Once fully operational, the system is expected to enable CNAO to treat more than 200 additional adult and paediatric patients each year.
- The 360-degree rotating gantry supports greater treatment flexibility and precise targeting of complex tumours while limiting radiation exposure to healthy tissue.

Pavia, November 16, 2026 - The National Centre for Oncological Hadrontherapy (CNAO) and Hitachi High-Tech, which manages Hitachi's proton beam therapy business, today announced the start of patient treatments using Hitachi's advanced rotating proton therapy system at CNAO in Pavia. Combining CNAO's 15 years of clinical and scientific experience with Hitachi's advanced particle therapy technology, the new facility will expand access to highly precise and personalised cancer treatment in Italy.

Once fully operational, the system is expected to enable CNAO to treat more than 200 additional adult and paediatric patients each year. Its high-precision rotating gantry enables proton beams to be delivered from angles spanning 360 degrees around the patient, providing greater flexibility in treatment planning and helping clinicians precisely target tumours while limiting radiation exposure to surrounding healthy tissue and organs at risk. The technology can also help optimise preparation and treatment times, reducing the duration of individual treatment sessions.

The start of clinical operation marks a further milestone in CNAO's development, exactly 15 years after the Centre treated its first patient in 2011. Since then, CNAO has treated more than 6,400 patients, including more than 300 paediatric patients, using both proton and carbon-ion therapy. This clinical and scientific expertise will now be combined with the capabilities of Hitachi's proton therapy technology to broaden treatment options for patients with complex cancers.

Bringing together clinical expertise and advanced technology

CNAO partnered with Hitachi to introduce an advanced proton therapy system designed to support highly precise, flexible and personalised treatment.

The new facility combines a compact synchrotron, with a high-precision rotating gantry and an active scanning beam delivery system. The scanning technology enables the energy and delivery of the proton beam to be tailored to the individual treatment plan.

The system also provides a large irradiation field of 30 x 40 cm2, enabling larger areas to be treated in a single field. Combined with the rotating gantry, this gives clinicians greater flexibility in selecting the most appropriate beam angles according to the location, size and complexity of an individual patient's tumour.

"*We are proud to see this advanced proton therapy system enter clinical operation at CNAO," said Lorena Dellagiovanna, Senior Vice President and Executive Officer, CHRO and CSuO,*

Hitachi, Ltd. "This milestone reflects the strength of the partnership between CNAO and Hitachi, bringing together CNAO's outstanding clinical and scientific capabilities with Hitachi's advanced technology and global experience in particle therapy. Most importantly, it demonstrates how innovation can deliver meaningful benefits for patients by enabling increasingly precise and personalised treatment, including for some of the most complex cancers and in paediatric care. This collaboration reflects Hitachi's commitment to contributing to society through technology and working with expert partners to improve people's quality of life."

Expanding treatment possibilities

The capabilities of the new system are particularly relevant for cases where clinicians need greater flexibility over the direction and delivery of the proton beam. These include tumours located close to moving organs, larger or extensive tumours, tumours in complex or difficult-to-reach anatomical areas, and paediatric solid tumours.

The ability to minimise irradiation of healthy tissue is particularly important in paediatric care, where limiting unnecessary radiation exposure can help reduce the potential risk of late adverse effects and protect patients' long-term development and quality of life. CNAO estimates that its expanded capacity could enable it to treat approximately 80 to 90 paediatric patients each year.

"*The ability to deliver the beam from 360 degrees around the patient provides greater flexibility in treatment planning and allows the dose distribution to be adapted to each child's anatomy, optimising the protection of organs at risk*," said Sabina Vennarini, clinical specialist in paediatric hadrontherapy at CNAO and Head of the Paediatric Radiotherapy Unit at Fondazione IRCCS Istituto Nazionale dei Tumori di Milano. "*This innovation broadens the possibilities for treating paediatric cancers and reinforces our commitment to reducing, wherever possible, the risk of side effects and long-term complications, with particular attention to patients' future quality of life*."

The system can also synchronise beam delivery with patient movement, such as breathing, supporting the treatment of tumours affected by respiratory motion. Its combination of scanning technology, a broad irradiation field and flexible beam delivery is designed to enable clinicians to develop treatment plans for a wide range of complex cases.

"*The start of treatments using the new rotating gantry marks another significant step forward for CNAO and for the patients we serve*," said Gianluca Vago, President of CNAO. "*Fifteen years after treating our first patient, we are continuing to advance personalised cancer care by combining our clinical and scientific expertise with advanced technology. The partnership with Hitachi has been fundamental to reaching this milestone and will enable us to expand our capacity, including for children and patients with particularly complex treatment needs. This achievement also reflects the essential support of the Italian Ministry of Health and the Lombardy Region, whose commitment has helped make this important expansion possible*."

About CNAO

CNAO (The National Center for Oncological Hadrontherapy), located in Pavia, Italy, is a world-leading clinical and scientific research center dedicated to the treatment of complex, inoperable, and radioresistant tumors. It is one of only eight centers in the world—and the only one in Italy—equipped with an advanced synchrotron capable of accelerating both protons and carbon ions and new ion species. This cutting-edge technology, known as hadrontherapy, delivers targeted radiation with surgical precision, destroying cancer cells while maximizing the protection of surrounding healthy tissues. To date, CNAO has treated 6,500 patients, including pediatric cases, with highly positive clinical outcomes. CNAO is a hub of international innovation, continuously expanding its technological frontiers to offer new hope to oncology patients. For more information: www.cnao.it | Watch our corporate video: https://youtu.be/A7h4kYTCKEY

About Hitachi, Ltd.

Through its Social Innovation Business (SIB) that brings together IT, OT(Operational Technology) and products, Hitachi aims to be a global leader in continuously transforming social infrastructure through digital, contributing to a harmonized society where the environment, wellbeing, and economic growth are in balance.
Hitachi operates worldwide across four sectors – Digital Systems & Services, Energy, Mobility, and Connective Industries – as well as a Strategic SIB Business Unit focused on new growth areas. With Lumada at its core, Hitachi creates value by combining data, technology and domain knowledge to solve customer and social challenges. Revenues for FY2025 (ended March 31, 2026) totaled 10,586.7 billion yen, with 606 consolidated subsidiaries and approximately 290,000 employees worldwide. Visit us at www.hitachi.com.

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