

CAS Ion Medical Technology Co., Ltd. (CASHIM)

CAS Ion Medical Technology Co., Ltd. (abbreviated as CASHIM) was established in 2018 by the Chinese Academy of Sciences Holdings and the Institute of Modern Physics of the Chinese Academy of Sciences. It is committed to promoting the industrialization of ion cancer therapy technology in China and beyond.

CASHIM is headquartered in Beijing, China, where it operates its marketing and TPS/TCS R&D centers. It has strategically positioned its hardware R&D center in Hangzhou, Zhejiang Province; its heavy ion system production base in Lanzhou, Gansu Province; and its proton system production base in Shaoxing, Zhejiang Province. As the sole entity in China with the requisite qualifications and comprehensive capabilities to design, manufacture, commission, operate, and maintain heavy ion therapy systems, CASHIM has garnered the market recognition by securing nine business contracts to date. Two systems are currently in full operation, and an additional three systems are expected to commence clinical services in 2025. This outstanding achievement has established CASHIM as the global leader in the deployment of heavy ion therapy systems. Located in Wuwei, Gansu Province, the first demonstrative heavy ion therapy system project has been a resounding success over the past four years, having provided treatment services to over 1,800 patients and yielding highly favorable clinical outcomes.

Throughout the implementation of the projects, CASHIM has not only delivered qualified ion therapy systems of high performance, but also cultivated a team of exceptionally skilled R&D engineers, dedicated operations and maintenance staff, and a sophisticated project management team.

CASHIM's main products include the Integrated Carbon Ion and

Proton Therapy System, and Integrated Proton and Helium Ion Therapy System. The details are as follows:

Integrated Carbon Ion and Proton Therapy System: It is equipped with a linear injector, a synchrotron (featuring the world's shortest circumference of 56m), and four treatment rooms. These treatment rooms are designed to meet various clinical requirements, with terminals in horizontal, vertical, 45-degree, and gantry setups. This system can flexibly use carbon ions and protons for therapeutic applications and can also use helium (He) ions and oxygen (O) ions for clinical research. The first Integrated Carbon and Proton Ion Therapy System is scheduled for delivery in 2027.

Integrated Proton and Helium Ion Therapy System: It is equipped with a linear injector, a synchrotron, and treatment rooms designed according to clinical requirements, with horizontal and gantry setups. For treatment, this system can use protons for all suitable tumors, and carbon ions with limited energy for superficial tumors. Additionally, it can use Helium ions for research purposes.

The principal features of CASHIM's products are as follows:

– Multi-energy operation technology

The synchrotron, a key component of CASHIM's products, is equipped with advanced multi-energy operation technology. This technology enables the generation of multiple particle beams with varying energies within a single operational cycle. Consequently, it significantly enhances the utilization efficiency of the particle beam and reduces the treatment time for patients. Notably, the switching time between different energy beams can be minimized to less than 200 milliseconds, thereby optimizing the overall treatment process.

– Phoenix Plan (Treatment Planning System)

The PHOENIX Plan is a comprehensive, all-in-one software solution to streamline the entire radiation therapy planning process. It integrates all essential clinical modules, namely

patient management, target delineation, plan design and optimization, plan evaluation, quality assurance, and system configuration management.

Highly versatile, the PHOENIX Plan is set to incorporate multiple particle therapy modalities, such as carbon ion and proton therapy. It also encompasses a wide range of relative biological effect (RBE) models, supports the automatic contouring of dozens of organs, and features an innovative Monte Carlo carbon ion dose calculation engine. With these capabilities, the PHOENIX Plan is poised to set a new benchmark in treatment planning software.

– Superconducting Gantry

The gantry of CASHIM's products is engineered using advanced curved composite superconducting magnet technology. Combined with the use of compact scanning magnets, this innovative approach enables a compact and lightweight design. As a result, the overall weight of the gantry is reduced to only 165 tons, making it the lightest heavy-ion gantry in the international market.