



Contribution ID: 2376 Contribution code: WEPM097

Type: **Poster Presentation**

Cryogenic System of the NHa C400 Cyclotron

Wednesday, 10 May 2023 16:30 (2 hours)

NHa and IBA are collaborating to develop a new cyclotron dedicated to hadron therapy.

This cyclotron is based on two symmetric NbTi superconducting coils, cooled at 4,3 K in helium bath. The cold mass is 15 tons, the diameter of the cryostat is about 5 meters. 470 liters of liquid helium are cooled by cryocoolers, and the coils are maintained at superconducting temperature by using a thermosyphon circulation principle. Due to the very expensive cost of commercial helium, a compact close loop cooling system has been developed to allow liquefaction of gaseous helium, and to allow re-liquefaction of the vaporized helium after a quench. The overall expected cooling time is lower than 60 days, and the recovery time after quench is shorter than 10 days. This liquefaction / recovery system is very compact and efficient, it will be set as close as possible to the cyclotron and service turret of the cryogenic coils.

The manufacturing of the cyclotron, as well as its main cryogenic systems, are in advanced stage.

In this poster will be presented the cryogenic process principles, the equipment developed and the manufacturing progress.

Funding Agency

Footnotes

I have read and accept the Privacy Policy Statement

Yes

Primary authors: MAUNOURY, Laurent (Normandy Hadrontherapy); COSSON, Olivier (Normandy Hadrontherapy); CAILLIAU, Philippe (Ion Beam Applications SA); Dr VELTEN, Philippe (Normandy Hadrontherapy)

Presenters: COSSON, Olivier (Normandy Hadrontherapy); CAILLIAU, Philippe (Ion Beam Applications SA)

Session Classification: Wednesday Poster Session

Track Classification: MC7: Accelerator Technology and Sustainability: MC7.T13: Cryogenics