

Data sheet

Specifically tailored for the in-situ production of radiopharmaceuticals used in molecular imaging applications, PMB designs and manufactures the cyclotron iMiTRACE®.

Due to its unique architecture, it offers unique characteristics as well as high performance, with a high level of reliability.



iMiTRACE Cyclotron



iMiTRACE is designed for the production of radioisotopes used for molecular imaging applications. It offers unique characteristics due to its architecture.

Versatile

12 MeV is the perfect energy for the on-site production of single-dose ¹¹C, ¹⁸F, ⁶⁸Ga, which are used for personalized molecular imaging.

Moreover, iMiTRACE is able to produce radioisotope batches (over 100 GBq of ¹⁸F per run).

Easy to use

iMiTRACE is designed for fully automated operation, from target selection and filling, to delivery to the radiochemistry. The intuitive user interface is designed to give all the information required depending on one's expertise and training level.

Innovative

With its patented self-shielded targetry, iMiTRACE is a lightweight cyclotron. It also is the first cyclotron using a helium-free superconducting and persistent magnet. As a result, iMiTRACE is compact and extremely stable in operation. The targets do not require helium cooling and provide high production yields.

Easy to maintain

The external ion source and targetries are easily accessible for maintenance operations. These characteristics minimize equipment activation, which reduces the dose for the maintenance staff and increases uptime.



Easy to install

Due to its lightweight and compact design, iMiTRACE is easily installed within new or existing buildings and requires only 50-cm-thick concrete walls.



Accelerator typeCyclotronManufacturerPMB-ALCENAccelerator's nameIMTRACE – He-freeBEAMExtracted particlesAccelerated particlesH-Particles energy12 MeVBeam current0 to 50 µAMaximum beam powerUp to 600WTARGETRIESTargetrise localisationAvailable targetry ports4Available targetriesYesWindowWolti-cusp external ion sourceVACUUMWulti-cusp external ion sourceVACUUMUnampe of targetry portsVacuum1 rotary roughing pump 2 turbomolecular pumpsOperational vacuum2 to 5.01° mbarOperational vacuum0.05.01° mbarMAGNETColl typeColl typeNb-Ti superconductingSuperconducting coolingSumitomo cryococler (Gifford Mc-Mahon)Operating current100 AMagnetic field with iron sectors3.26 STRF SYSTEMSickW x 3Frequency108 MHzRF power3.5kW x 3Dee voltage33kVRF MatchingAutomatic variable capacitorNumber of amplifiers3Amplifier typeSolid-stateSTER EQUIREMENTSYesWeight, nickuding shielding1700 kgPower requirements65kW, 240-480 VCyclotron volume, with shielding3.7x3.8x2 m ³ Operational vacuum2.3x3.2x2 m ³ Operating the shielding3.7x3.8x2 m ³ Operating the shielding3.7x3.8x2 m ³ O	GENERAL INFORMATION	
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Extracted particlesProtonsAccelerated particlesH-Particles energy12 MeVBeam current0 to 50 µAMaximum beam powerUp to 600 WTARGETRIESNumber of targetry ports4Targetries localisationExternal -1 m away from the cyclotronAdjustable steering and focusing on the windowYesAvailable targetries"F, ''C (CO_g et CH_g) "®G under developmentION SOURCE''YesTypeMulti-cusp external ion sourceVACUUM1 rotary roughing pump 2 turbomolecular pumpsOperational vacuum<5.10-7 mbar	Accelerator's name	iMiTRACE – He-free
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TypeMulti-cusp external ion sourceVACUUMPump type1 rotary roughing pump 2 turbomolecular pumpsOperational vacuum<5.10 ° mbar	Available targetries	 ¹⁸F, ¹¹C (CO₂ et CH₄) ⁶⁸Ga under development
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Pump type1 rotary roughing pump 2 turbomolecular pumpsOperational vacuum<5.10-7 mbar	Туре	Multi-cusp external ion source
Pump type2 turbomolecular pumpsOperational vacuum<5.10-7 mbar	VACUUM	
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Cyclotron volume, without shielding2,3×3,2×2 m³Cyclotron volume, with shielding3,7×3,8×2 m³	Weight, including shielding	17 000 kg
Cyclotron volume, with shielding $3,7\times3,8\times2\text{m}^3$	Power requirements	65 kW, 240-480 V
	Cyclotron volume, without shielding	2,3×3,2×2 m ³
Cyclotron room surface 31,5 m ² (4,5 x 7 m)	Cyclotron volume, with shielding	3,7×3,8×2 m ³
	Cyclotron room surface	31,5 m ² (4,5 x 7 m)



PMB designs, manufactures and commercializes high-technology products used in the medical, nuclear power, research, defense & security and industry fields. Our expertise lies in the brazing of complex mechanical assemblies, as well as in the design and manufacture of linear accelerators and cyclotrons.

PMB

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