

## iMiTRACE<sup>®</sup> Cyclotron

### *Datasheet*

A compact cyclotron to produce up to 4 PET radioisotopes

Specifically tailored for the in-situ production of radioisotopes used in PET applications, PMB designs and manufactures the cyclotron iMiTRACE<sup>®</sup>. Due to its innovative architecture, it offers unique characteristics as well as high performances, with a high level of reliability.



iMiTRACE is designed for the production of radioisotopes used for PET applications.

## Versatile

12 MeV is the perfect energy for the production of  $^{13}\text{N}$ ,  $^{11}\text{C}$ ,  $^{18}\text{F}$ ,  $^{68}\text{Ga}$ , which are used for PET imaging.

iMiTRACE is able to produce radioisotope batches (up to 3,5 Ci of  $^{18}\text{F}$  in 2 hours).



## Innovative

With its patented self-shielded targetry, iMiTRACE is a lightweight cyclotron. It also is a 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 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 the operator's and training level.

## Easy to install

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

## 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.



## GENERAL INFORMATION

Accelerator type	Cyclotron
Manufacturer	PMB
Accelerator's name	iMiTRACE – He-free

## BEAM

Extracted particles	Protons
Accelerated particles	H-
Particles energy	12 MeV
Beam current	0 to 50 $\mu$ A

## TARGETRY

Number of targetry ports	4
Targetries localization	External

## ISOTOPE PRODUCTION

Isotope	Type of target	Target volume (mL)	Target Material	Current ( $\mu$ A)	Irradiation time (min)	Activity EOB (Ci)
<sup>18</sup> F	Liquid target	0,5 / 1,3	H <sub>2</sub> O <sup>18</sup>	20 / 50	120	Up to 1,2 / 3,5
<sup>68</sup> Ga	Liquid target	1,3	[ <sup>68</sup> Zn]Zn(NO <sub>3</sub> ) <sub>2</sub>	Under development		
<sup>11</sup> C	Gas target	20	N <sub>2</sub> O <sub>2</sub> for CO <sub>2</sub> N <sub>2</sub> H <sub>2</sub> for CH <sub>4</sub>	50	40	Up to 1,7
<sup>13</sup> N	Liquid target	0,5	Ultrapure water	20	20	Up to 0,1

## SITE REQUIREMENTS

Weight, <i>without shielding</i>	4 500 kg
Weight, <i>including shielding</i>	17 000 kg
Power requirements : ON	35 kW
Power requirements : Std-by	10 kW
Cyclotron overall dimensions <i>Without shielding</i>	2,3×3,2×2 m <sup>3</sup>
Cyclotron overall dimensions <i>Including shielding</i>	3,7×3,8×2 m <sup>3</sup>
Internal room dimensions <i>with self-shielding</i>	31,5 m <sup>2</sup> (4,5 x 6,5 m)

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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.



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