



Contribution ID: 2154 Contribution code: WEPM125

Type: **Poster Presentation**

## **CERN-MEDICIS: Operational indicators to support the production of new medical radionuclides by mass separation**

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

CERN-MEDICIS is an isotope mass separation facility for biomedical R&D located in a class A laboratory, receiving up to 50% of the 1.4GeV PSB protons. It was commissioned with radioactive ion beams in 2017. MEDICIS has operated for the past 5 years in batch mode, with targets irradiated in a dedicated beam dump station at HRS, and with external sources provided by cyclotrons and nuclear reactors MEDICIS partners, notably during Long Shutdown LS2 [1,2]. Recent additions to the CERN-MEDICIS facility are the MELISSA laser ion source, radiochemistry on implanted isotopes, and online gamma implantation monitoring.

In 2022, we introduced key performance indicators (KPI's) to monitor the facility for collected efficiencies, the optimization of the radiological risks and impact of modifications of the irradiation station, like the yearly integrated luminosity serves as one of the KPI's for LHC. Defined KPI's cover different aspects in the operation cycle, such as planning in CERN schedule, target irradiations, process duration, radiological risk mitigation, facility downtime, developments and maintenance. MEDICIS KPI's can help distinguish which of the elements in the operation and in the facility life-cycle thus requires immediate intervention, developments or consolidation.

Those deal with the irradiation stations, beam-lines (parallel collections), target and ion sources (reliability), robot handling and infrastructure, or the separation process itself.

### **Funding Agency**

European Union's H2020 PRISMAP project No 101008571

### **Footnotes**

[1] R. Augusto et al., Appl. Sciences 4.2 (2014), 265.

[2] T. Stora et al. eds. (2022). MEDICIS-Promed:Advances in Radioactive Ion Beams for Nuclear Medicine. Frontiers doi:10.3389/978-2-83250-522-9

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**Session Classification:** Wednesday Poster Session

**Track Classification:** MC7: Accelerator Technology and Sustainability: MC7.T21: Infrastructures