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Linear IFMIF Prototype Accelerator (LIPAc) commissioning and LCS integration in CCS

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The Linear IFMIF prototype accelerator, LIPAc, aims at producing a powerful (9MeV, 1.1MW) deuteron beam at 125mA in CW, to validate the concept of the future IFMIF accelerator (40MeV, 125mA CW). The beam is accelerated through two main accelerating stages (RFQ and SRF Linac), plus two bunching cavities as part of the Medium Energy Beam Transport (MEBT). In order the beam to be accelerated continuous wave RF power at 175 MHz for the 18 RF power sources feeding the eight RFQ couplers (200kW), the two buncher cavities (16kW) and the eight superconducting half wave resonators of the SRF Linac (105kW) are needed in the final stage.

Presently LIPAc consists of the Injector, RF Quadrupole (RFQ), Medium Energy Beam Transport (MEBT), Diagnostics-plate and Low Power Beam Dump (LPBD) components, which is also referred to as the Phase B of the project. The Phase B aims to demonstrate the acceleration of a deuteron beam through RFQ up to 5.0 MeV in pulsed mode with a low duty cycle of 0.1%. This phase is currently under commissioning, which among the beam operation, RFQ conditioning and other activities mean integrating the local control systems (LCS) from EU coordinated by F4E (EU) to the central control system (CCS) that is designed and managed by QST (Japan). During the commissioning phase a lot of data have already been gathered and various EPICS tools (pyEPICS) have been developed to ease the commissioning and make the best out of the machine. Effective ways to share the data with the participating laboratories in Europe are currently under preparation. This talk presents the highlights from the LIPAc phase B commissioning in the view point of control systems.

Author: Mr JOKINEN, Antti (F4E)

Co-authors: Mr MOYA, Iván (F4E); HIRATA, Yosuke (QST); Mr CARA, Philippe (IFMIF/EVEDA Project Team); Mr SARTORI, Filippo (F4E); MARQUETA, Alvaro (F4E); GIL JALDO, Pilar (Seven Solutions); Mr MÉNDEZ, Miguel (Seven Solutions); Mr LÓPEZ, Antonio Miguel (Seven Solutions); Mr SUGIMOTO, Masayoshi (QST); Mr KONDO, Keitaro (QST); SHINYA, Takahiro (QST)

Presenter: Mr JOKINEN, Antti (F4E)

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