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Sub-system Integration and Operation Interface of the Linear IFMIF Prototype Accelerator (LIPAc)

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The IFMIF/EVEDA Linear Prototype Accelerator (LIPAc) is a prototype of the projected IFMIF accelerator. The installation and commissioning of LIPAc is progressing at Rokkasho Fusion Institute, QST (Japan). This prototype is aiming at accelerating a deuteron beam of 125 mA to 9 MeV in continuous wave mode (CW). Currently, the beam commissioning up to 5 MeV, so-called 'Phase-B', is underway at low duty cycle. One of the important features of this accelerator is that most of the components were developed individually and delivered by Europe as in-kind contributions. While QST is responsible for the installation, the operation is done by a joint operation team Japan-Europe. In the Phase-B operation, we need to operate several sub-systems together delivered by different institutes, i.e. the injector from CEA (France), RFQ from INFN (Italy), MEBT and the RF system from CIEMAT (Spain) with utilities (cooling system, HVAC) supplied by QST. The beam instrumentation has been developed by CEA, CIEMAT and INFN and some devices are assembled on Diagnostics Plate made by CIEMAT. These sub-systems are integrated in the central control system (TS, MPS, PPS) prepared by QST. We started the beam commissioning in June 2018 after the successful integration and management of the interfacing of such a different subsystem into one accelerator system. We will present the details of the integration of different subsystems, the procedure developed to reach the first beam commissioning and some improvements needed considering the feedback of this integration phase.

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