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Progress of assembly and installation of LIPAc SRF cryomodule under the EU–JA collaborative framework

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The commissioning of LIPAc (Linear IFMIF Prototype Accelerator) is ongoing at QST Rokkasho Institute for Fusion Energy within the engineering validation of the accelerator system up to 9 MeV/125 mA in continuous wave under international collaboration between Japan and Europe. Several SRF cryomodules will be required for IFMIF to accelerate deuterons from 5 MeV to 40 MeV. The prototype of the first of these cryomodules has been manufactured and will be installed and tested on the LIPAc. It holds the eight Half Wave Resonator and RF couplers to accelerate the beam and the eight superconducting solenoids to focus it. During the cryomodule assembly, several non-conformities were identified, including vacuum leaks and cryogenic pipe issues. These challenges were addressed through a coordinated effort involving Japanese and European partners. Solutions included the refabrication and repair in Japan of critical components, adhering to Japan's High Pressure Gas Safety Act and international standards. Material selection, thermal cycling treatments, magnetization assessments, and regulated welding with non-destructive tests (pressure and penetration) were jointly implemented. This poster outlines the technical approaches taken, highlights the collective efforts of the LIPAc team in resolving the encountered issues, and reports on the progress toward the successful assembly and validation of the LIPAc SRF cryomodule.

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Yes

Footnotes

Funding Agency

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