

Licensing and current status of the High Current Superconducting Cavities for the IFMIF Prototype Accelerator

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Use of the Advanced Fusion Neutron Source (A-FNS) for testing materials in a future fusion DEMO reactor aims to provide an accelerator-based D-Li neutron source to produce high-intensity, high-energy neutron flux to test samples as possible candidate materials. As the accelerator system validation activity to demonstrate deuteron acceleration by the low-energy section of an IFMIF deuteron accelerator up to 9 MeV with a beam current of 125 mA in CW, a linear IFMIF prototype accelerator (LIPAc) was commissioned under the Broader Approach (BA) Agreement of the fusion program between Japan and the EU. The licensing of a half-wave resonators (HWRs) operating at 175 MHz, a focusing solenoids and its cryoplant system for a SRF linac required by the Refrigerator system Safety Rule in the High-Pressure Gas Safety Law (HPGSL) in Japan are reported. The progress of developments in the IFMIF/EVEDA cryomodule such as the qualification of eight cavities, the RF conditioning results of eight high-power couplers, the high power tests of fully dressed cavities, and construction of cryoplant and the assembling status of the cryomodule at Rokkasho site are also reported.

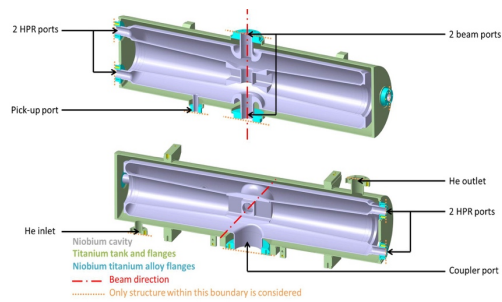


Fig. 1 Cross-section of HWR for IFMIF/EVEDA cryomodule .

References

[1] N. Basin, et al., Proceedings of SRF2019, Dresden, Germany , WETEA3 (2019).