ICFRM2007/6
Start of the Engineering Validation and Design Phase of IFMIF

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The "Broader Approach" Agreement, signed between Japan and the European Union on 5 February 2007 at Tokyo, consists of three projects:
· The design and construction of a superconducting tokamak, JT-60SA, replacing the current JT-60 in Naka, Japan,
· The creation of the International Fusion Energy Research Centre, at Rokkasho, Japan
· The Engineering Validation and Engineering Design Activities of the International Fusion Materials Irradiation Facility (IFMIF EVEDA). Thanks to this agreement, the fusion community has now a coherent programme towards the design of a fusion energy demonstrator (DEMO), with the combination of the physics knowledge and main fusion technologies with ITER and the research on the materials with IFMIF.

IFMIF consists of a set of two parallel deuteron accelerators (40 MeV, 125 mA each, CW) carrying the beams to a liquid lithium target flowing at a velocity of about 15 m/s. The interaction between the deuterons and the lithium generates a flux of neutrons whose spectrum is rather well suited with fusion needs (main peak at 14 MeV). Three sets of test cells will host the material samples, with damage rates ranging from 50 dpa per year to a few dpa per year for the lowest part of the test facilities. The overall available volume is 8 litres.

After several conceptual phases, the Engineering Validation and Engineering Design Activities (EVEDA, 6 years) aims at the validation of the main concepts thanks to the construction of three prototypes (the low energy section of one accelerator, the lithium target facilities and the test facilities), and the overall detailed design of the whole plant.

The paper will describe the overall project, its main challenges and its organisation.

Number of words in abstract: 272
Keywords:
Technical area: A1. Irradiation facilities (fission, spallation, IFMIF, charged particles) and innov
Special session: Not specified
Presentation: No preference
Special equipement: No special equipment