

Completion of the DEMO Joint Research Building for DEMO R&D

The DEMO Joint Research Building has been constructed, based on the agreement of EU and JA to enhance research activities in the remaining Broader Approach (BA) period. The construction of the building was started in February 2015, and was completed in February 2016. Figure 1 shows exterior views of the building.



Fig. 1 Exterior views of the DEMO Joint Research Building

The new building has two major facilities: a beryllium handling room to characterize small particle advanced multiplier/breeder materials and an experimental & material testing room for testing and data-basing of blanket structural materials. The beryllium handling room has a dedicated ventilation system, operated independently of that of the building; since beryllium powder and vapor are toxic materials under the Japanese regulations. Figure 2 shows a set of the beryllium facilities (Frequency of ventilation = 30 times/h, Permissible Be concentration = 0.002 mg/m^3).



Figure 2 Beryllium facilities (beryllium room and ventilation system)

The research activities planned to take place in this building also include data archival of structural materials for the blanket design such as creep fatigue. Atmosphere control, in particular, ambient temperature control is critical for long time creep tests. Thus, an environmental control unit has been installed in the material testing room (See Figure 3). A new facility has been completed for in-vessel loss of coolant accident (LOCA) or ingress of coolant event (ICE) experiments, designed to verify the safety code simulating the sequence of the in-vessel LOCA. A preliminary test will be carried out to confirm the function of the system. Some experimental facilities have been moved from the DEMO R&D building to the DEMO Joint Research Building as seen in Fig.3.



Fig. 3 Experimental & material testing room.

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