

## **Recent Activities on Tritium Technologies of BA DEMO-R&D Program**

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The R&D for tritium technologies to a demonstration reactor (DEMO) are planned to be carried out in the Broader Approach (BA) program in Japan by JAEA (Japan Atomic Energy Agency) with Japanese universities: 1) tritium analysis technology; 2) basic tritium safety research; and 3) tritium durability test. The EU joins the discussions and assessment of the R&D results. To carry out the above R&D studies at Rokkasho site, a multipurpose RI facility has been designed, and a draft of licensing documents has been prepared. The facility is the first and quite unique equipment in Japan, where tritium (~2 g/year), beta and gamma RI species, and beryllium can be used simultaneously. The facility is composed of a glove box, hoods, a waste water system, tritium removal systems, and some utility systems. The tritium removal systems are composed of that for the glove box atmosphere and that for effluent gases from all the components, and have been fabricated. An amount of tritium released in the facility has been examined in accordance with some typical scenarios. It has been confirmed that both the external and internal radiation dose for workers was quite smaller than regulation values.

A formal licensing work and installation and testing of the tritium removal systems will be carried out within this year. The above R&D subjects with tritium will then be carried out at the facility from 2011. To start the R&D subjects smoothly, some preliminary studies have been started with Japanese Universities for the tritium analysis and for the basic tritium safety. The main subjects of the tritium analysis are the technologies for BIXS, real-time monitor in water, and imaging plate. The materials of interest for the tritium safety include F82H, SiC, tungsten, and liquid advanced breeder materials.