

## DEMO R&D Activity

### Recent activities in JA Task-2 (Tritium Technology)

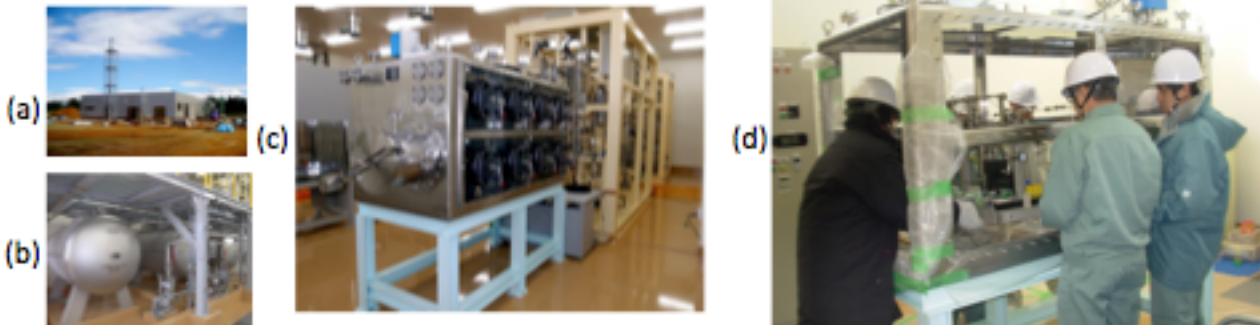
#### Subtasks

- Task-1: Tritium Handling Equipment
- Task-2: Tritium Accountancy Technology
- Task-3: Basic Tritium Safety Research
- Task-4: Tritium Durability Test

#### Responsibilities

- JA will implement the assigned R&D tasks under coordination by PL.
- EU will join the discussions and assessment of R&D results.

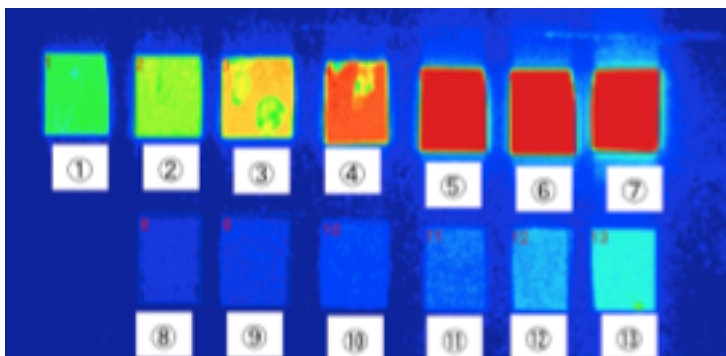
Until end of 2011; to start the above three R&D subtasks, a series of activities has been carried out as subtask 1: design and construction of tritium handling equipment; safety analysis for licensing of DEMO R&D building.



(a): DEMO R&D building; (b): Waste water tanks and drain system; (c): Glove box; (d): Tritium storage bed in glove box.

Two tritium storage beds using ZrCo alloy powder have been manufactured, and been installed in the glove box. In early 2012, a small amount of tritium is planned to introduce into the facility.

For the subtasks 2 and 3, main activities are carried out by collaborative R&D studies with Japanese universities. For subtask 4, some durability studies have been started for organic compounds at TPL (Tritium Process Laboratory).



The result of the IP exposed to the glass plate for 2 days. -Tritium concentration on the plate is from 74 kBq/g to 273 MBq/g.

#### Measurement of Tritium Concentration by Imaging Plates

Imaging plates (IP) consists of a storage film coated with photo-stimulated phosphor (BaFBr:doped  $\text{Eu}^{2+}$ ). The phosphor captures the X-rays induced by beta-rays from tritium. The phosphor emits the light by irradiating the laser light, so that we can know the amount of tritium by measuring the intensity of the light.