

# A Custom-made Shutter Block for the Imaging Instrument “RADEN” at J-PARC

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RADEN, named after the Japanese decorative craft arts, is an energy-resolved neutron imaging instrument proposed to the Materials and Life Science Experimental Facility (MLF) at J-PARC [1]. This instrument provides various imaging fields for not only conventional radiography/tomography, but also Bragg-edge [2], resonance absorption [3] and polarized neutron [4] with good energy resolution by means of Time-of-Flight method. Construction of the instrument at BL22 started in January 2013, and on-beam commissioning will be start in November 2014.

To maximize flexibility of neutron brightness, beam divergence and field of view at the sample position, an original shutter block that has a single shutter insert was replaced by a new one with three inserts. The uniform field of view of 300 x 300 mm<sup>2</sup> with L/D ratio of 720 at 23 m position will be provided by the shutter insert no. 3, whereas the most intense beam with L/D ratio of 180 at 18 m position will be transported by the shutter insert no. 1.

The original shutter block that stopped about 1900 MWh neutrons is shielded by thick steel plates at the large components handling room of the MLF. Major radioactive nuclides were <sup>60</sup>Co and <sup>54</sup>Mn after a half-year cooling. The radiation dose at the surface of the beam-stop position was ca. 11 mSv/h.

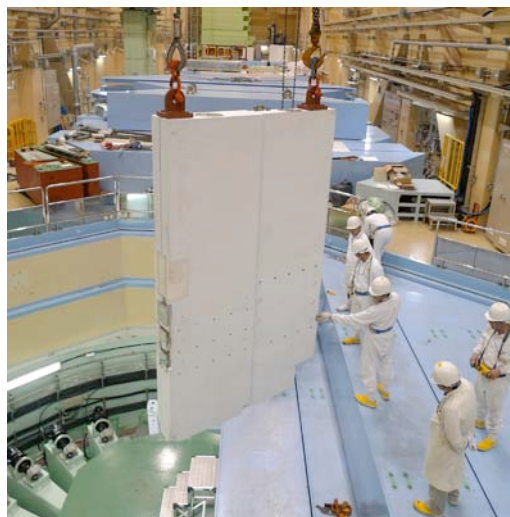


Fig. 1 Replacement work of the shutter block of BL22 at the MLF at J-PARC.

## References

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