Indirectly Water-Cooled Production Target at J-PARC Hadron Facility

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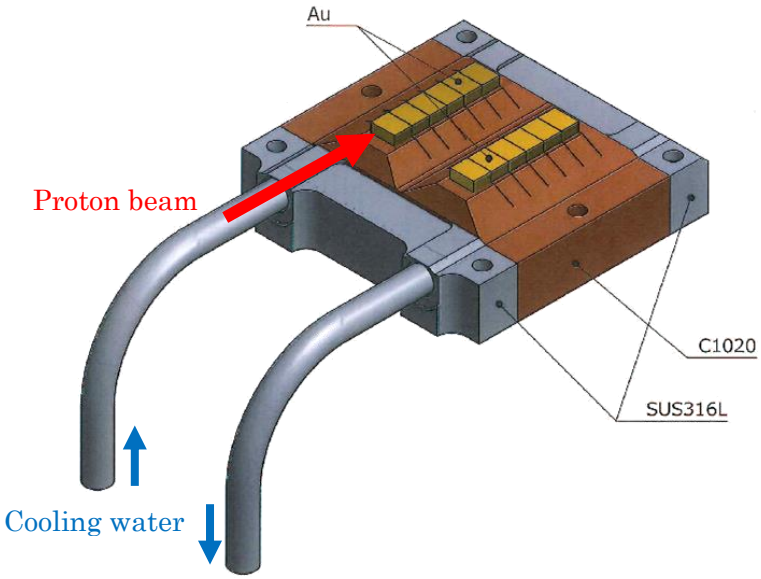
After the radiation accident at J-PARC Hadron Facility on May 23, 2015, we designed and constructed a new production target, which provides various secondary beams such as pions, kaons, and antiprotons for nuclear and particle physics experiments. The design goal of the new target is to be capable of a primary proton beam with the energy of 30 GeV and power of 50 kW. It was designed to satisfy following requirements;

1. Large mass number and high density for the intensity and quality of secondary beams.
2. Radiation hardness and chemical stability for the stable operation.
3. Sufficient cooling efficiency for the high-intensity primary beam.
4. Robust confinement for the prevention of the leakage of radioactive materials in the case of the target failure.

In this paper, technical details of the target material are presented.



Drawing of the water-cooled production target at the Hadron facility.