

Operation report for Nishina and RIBF water-cooling systems

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Operation condition

In FY 2018, the cooling systems in Nishina and RIBF were operated for approximately same periods as the accelerators. As the experiments of GARIS II in E6 room had begun, RIBF's cooling systems were operated for approximately two-and-a-half months, which was slightly shorter [than usual]. Nishina's cooling systems' which consisted of AVF-stand alone and AVF + RRC were operated for approximately seven months. There was no significant issue to cause interruption of accelerator operation' and the cooling systems were operated almost steadily except some of minor problems.

Trouble report

The problems of the cooling systems as follows; Burst of frozen cooling piping in the cooling tower in February 2018 due to the decrease of outside temperature, Malfunctioning of the inverter used for the water-cooling pump caused by aging degradation, Malfunctioning of the control valve.

Periodic maintenance

- (1) Cleaning of the cooling towers
- (2) Inspection and overhauling of the water-cooling pumps
- (3) Inspection of the inverter for the RIBF water-cooling pumps
- (4) Inspection and overhauling of the air compressor
- (5) Replacement of some superannuated hoses, joints' and valves used in the system
- (6) Cleaning of the strainers and filters used in the deionized water production system
- (7) Extension of the sensing wires of the water leakage alarm to floors of new areas
- (8) Switching electricity during planned power failure as well as restoration of each device
- (9) Securing of minimum power at low load operator of CGS (cogeneration system)

Establishment and improvement

In this fiscal year, it has been planned that four systems of the RIBF cooling tower' whose performances were degraded by aging' are to be overhauled on a



Fig. 1. Photographs of the four systems of RIBF cooling tower overhaul and new cooling systems for RILAC's superconductive.

large scale, new cooling systems are to be installed along with RILAC's superconductive, and construction of RRC cooling systems for reinforcement of cooling capacity and for stabilization of cooling water temperature. The construction of the RRC cooling systems mentioned above is aimed at elimination of the fluctuation of the magnetic field of an RRC electromagnet due to the inconstancy of the cooling water.

References

- 1) T. Maie *et al.*, RIKEN Accel. Prog. Rep. **51**, (2017).
- 2) T. Maie *et al.*, RIKEN Accel. Prog. Rep. **50**, (2016).

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