

## Nishina RIBF water-cooling system

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### 1. Operation condition

In fiscal year 2015, the Nishina and RIBF water-cooling systems were operated for six and five months, respectively. These operation periods correspond to the scheduled beam service time of RIBF, i.e., five months. In addition, Nishina's water-cooling system was used not only for full RIBF operation but also for the AVF standalone and AVF+RRC operations. During FY2015, there was no significant problem that resulted in beam service interruption for both Nishina and RIBF water-cooling systems. However, they were affected by small problems.

### 2. Trouble report

The most number of problems were related water leaks from a coupling and a joint and they also include the problem of the coolant pump being shut down for maintenance every year. Other problems include, the movement of the control valve of owing to the increase in radiation caused by the problems in the inverter of the water-cooling pumps and the accelerator driving.

### 3. Periodic maintenance

Routine maintenance works listed below are performed during the scheduled summer and winter maintenance periods of the RIBF accelerators.

- 1) Cleaning of the cooling towers
- 2) Checking and overhauling the cooling-water pumps
- 3) Checking the control system of the RIBF water-cooling system
- 4) Checking the inverter of the RIBF water-cooling pumps
- 5) Cleaning of the plate heat exchangers
- 6) Checking and overhauling the air compressor
- 7) Replacing some superannuated hoses, joints and valves used in the system
- 8) Cleaning of the strainers and filters used in the deionized water production system
- 9) Extending the sensing-wires of the water leakage alarm to floors of new areas

In addition, 2-3 times go the work that pro-backup, changes electricity and a cooling installation in a year during an accelerator outage to be affected by cooling facilities than a stop of steam and the cold water by rolling blackouts of RIKEN inside and a periodic inspection of the co-generation in the Nishina center.

### 4. Establishment, and improvement

New cooling facilities were not used, instead the old ones were improved by remodeling the coolant plumbing system and the SQUID monitors of the valve of the Big RIPS back up plumbing for 2015. We are planning to update the absorption-style refrigerator in the RIBF facilities in 2016.



Photograph of the Cleaning the cooling towers

### References

- 1) T. Maie et al.: RIKEN Accel. Prog. Rep. 47(2013)
- 2) T. Maie et al.: RIKEN Accel. Prog. Rep. 48(2014)

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