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RF Related Issues Encountered during over 15years of Operation of SPring-8

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Over 15 years of operation of the SPring-8 storage ring, we encountered several troubles in the RF system. Some of them will be picked up for the report.

As an example, we experienced the water leakage from the photon absorbers for the synchrotron radiation to protect RF cavities.

The cause was found to be the pinholes created by corrosion of the absorber water channel wall by the chemical reactions of the oxygen in the cooling water with the copper water channel wall. The improper structure of the absorber, the photon beam went through the water, made the chemical reaction possible for the copper wall with dissolved oxygen in the cooling water.

In addition to the improper structure, we found that the control of the water quality was important. The density of the copper ion has been monitored since then.

We encountered also to the water leakage from the output window part of the klystrons. The cause was found to be excess water flow to the cooling channels.

In conjunction with the investigation of the cause, control of the quality was important for the water inside the cooling channel during the storage period as backup stockage of the klystrons. The residual components solved in the water might cause damages to the cooling water channel.

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