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Operation Status of the RF Systems in Taiwan Light Source and Taiwan Photon Source

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Two synchrotron light sources are operated in the National Synchrotron Radiation Center (NSRRC), Taiwan: the Taiwan Photon Source (TPS) is newly built with a circumference of 518.6 meters and stored beam energy of 3.0 GeV, whereas the Taiwan Light Source (TLS) is operated over two decades with a circumference of 120 meters and stored beam energy of 1.5 GeV. Both light sources are equipped with high power superconducting radio-frequency (SRF) modules to accelerate the electron beam. The continuous wave 100-kW RF system for electron storage ring of the TLS has great reliability; its mean time between failure (MTBF) has a record of 862.8 hours in 2013 and lately 665.9 hours in 2015. Two 300-kW CW RF systems serves for electron storage ring of the TPS, higher and higher operation power are requested for greater stored beam current and more insertion devices and thus the operation parameters are still optimized from time to time. Moreover, a 60-kW RF system dedicates to the booster ring of the TLS to satisfy the top-up operation of the TLS storage ring, whereas a 100-kW RF system serves for TPS booster ring. An energy-saving operation scheme is successfully realized on the booster RF system of TLS which requests of beam injection of 2 seconds each minute. Herein not only the operation status and activity but also the foreseen challenges of the CW RF systems of both the TLS and TPS are presented.

Summary

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