

# Python-EPICS RF Conditioning Automatic Control System in the Spallation Neutron Source

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The SNS RFTF is used for RF conditioning to prepare RF structures such as ceramic windows and couplers for charged-particle accelerator installation and operation, involving high-power RF fields and heating to improve performance and remove impurities. A Python-based EPICS control system software and some hardware updates were developed to automate and optimize the conditioning process, with real-time monitoring of RF levels, temperature, and vacuum pressure. The CS-Studio (Phoebus) user interface were utilized to develop a GUI for user-friendly operation, adjusting parameter, and data collection. The system utilizes the High Power Protection Module (HPM) for interlocks from the vacuum and arc detection. The system has improved the efficiency and accuracy of conditioning at the SNS RFTF to ensure proper, and safe processes before installation and operation in LINACs. This presentation introduces the RF conditioning system update by software developments and hardware upgrades made in the SNS RFTF and utilization of the system for the proton power upgrade (PPU) projects in the SNS.

## Keyword

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