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Cryogenic Systems Control Migration and Developments towards the UNICOS CERN Standard at INFN

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The UNICOS (Unified Industrial Control System) developed at CERN, and widely adopted for all existing cryogenic plants there, has been chosen at INFN (Istituto Nazionale di Fisica Nucleare) LNL (Laboratori Nazionali di Legnaro) for the revamping of the local cryogenic facilities. The cryogenic systems at INFN-LNL comprise a 1500 W @4.5 K refrigerator for the ALPI superconducting accelerator, which includes 22 cryostats housing the superconducting cavities, a TCF50 refrigerator for the superconducting RFQ injector, and a TCF20 helium liquefier for local experiments needs. INFN-LNL has signed an agreement with TE-CRG @CERN for the transfer of the necessary knowledge in order to realize the new cryogenic control. Furthermore the collaboration has been extended to INFN Genova and LNGS (Laboratori Nazionali del Gran Sasso) for similar UNICOS applications. At INFN-LNL after the new control successfully realized with the TCF20 liquefier, the new UNICOS control migration is in progress to be applied to the distribution of helium in the complete superconducting accelerator, its relevant refrigerator, and in the close future to the injector and its related refrigerator. In the paper details will be described, which include the use of the Schneider PLC's and PVSS (WinCC OA) supervision. The progress in the communication with EPICS supervision will be also outlined. The goal of the project is to propose UNICOS as the control system for all INFN cryoplants and cryosystems, as done for other important European research laboratories.

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