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Power Interlock Controllers: PIC

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Before installation in the tunnel, the powering interlock controller (PIC) will be completely assembled and tested on all its functionality on the surface. One powering subsector in the tunnel will be managed by one dedicated powering interlock controller (two in the case of the long arc cryostat). For this, a dedicated test system is able to emulate all signals that the later on connected systems will exchange with the PIC. Hardwired interfaces with the power converters, the quench protection system, the AUG, the UPS systems and the beam interlock controller are verified along with the functionality of the PLC program and the communication with the supervision application. After this surface validation, the PIC is transported to the tunnel and installed in the foreseen rack. During the phase of individual system tests (IST), the same procedures as already performed on the surface are repeated. After the successful termination, the interlock cables from the power converters and the quench protection system are connected and the PIC functionality is validated with the real clients, using automated procedures as defined and prepared by SACEC (Software for Automated Commissioning of Electrical Circuits). These tests are performed once with the power converters still in short circuit (power cables not yet connected to the current leads) and once after the connection to the magnet string. Upon termination, powering tests can start for this powering subsector.

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