

THE NEW CONTROL AND INTERLOCK SYSTEM FOR THE SPS MAIN POWER CONVERTERS

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The Control and Interlock System (CIS) of the SPS main power converters was designed in the mid-70s and became increasingly difficult to maintain. A new system based on Programmable Logic Controllers has been developed by an external contractor in close collaboration with CERN. The system is now operational and fully integrated in the SPS/ LEP control infrastructure. The CIS is the first major contracted industrial solution used to control accelerator equipment directly involved in the production of particle beams at CERN. This paper gives an overview of the SPS main power converter installation and describes both the contractual and technical solutions adopted for the CIS. It first explains how the system was specified and how the contractual relationship was defined to cope with CERN's purchasing rules and the operational requirements of the SPS accelerator. The architectural design of the new system is presented with a special emphasis on how the conflict between safety and availability has been addressed. The performance of the system as well as the new features are finally summarised.