THE SLOW CONTROL SYSTEM OF THE ATOMIC BEAM SOURCE AT ANKE/COSY - AN INDUSTRIAL APPROACH BASED ON WINCC AND S7 PLCS

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For the ANKE experiment at the medium-energy ring COSY at Forschungszentrum Jülich, an Atomic Beam Source (ABS) is under development. The ABS produces a polarized atomic beam (H or D atoms), which will feed the storage cell. The necessary front-end equipment for the slow control system consists of more than 100 components, including a variety of vacuum pumps, vacuum gauges, RF generators, valves, leak detectors, temperature sensors, stepping motor controllers, PID controllers, flow controllers, etc. from different vendors. The slow control system should support the routine operation of the ABS as well as experimental tests of the ABS itself. Safety reasons and economic considerations lead to the decision to use mainly industrial equipment for the slow control system. The Siemens product WinCC - running on a PC under WinNT - has been selected as the core of the HMI component. The interlock system has been implemented on the base of Siemens S7 PLCs. In order to unify the interfacing to the control computer, all front-end equipment is connected via PROFIBUS DP. Proprietary serial protocols are translated via dedicated gateways. The paper presents the design of slow control system as well as the underlying motivations and reports on the experiences made.