UPGRADE INTERLOCK SYSTEM at Elettra

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Ever since Elettra has been running, the early 90s, the Interlock Systems and Access Control Systems have been using PLC Siemens S5 series

After more than 20 years an update was needed!

Why do an update?

- Two accellerators need to be operated from one control room (Elettra and Fermi)
- Series S5 is obsolete, there are no more devices for new developments
- Sometimes, due to external elements (relays, contacts etc ..) the plc stopped to work and the restart was not always easy
- Need to operate remotely
- Reduce recovery times and diagnostic
- Flexibility and expandability
- The supervisor SCADA is not anymore assisted

Choice: Siemens S7 -300

- Natural upgrade from S5 to S7; modern system, much in use (tested) even in large companies
- Possibility to use part of blocks of program code already compiled for Fermi
- High Reliability
- Excellent computing power (greater speed of processing)
- Small size
- Expandable
- Possibility to operate online via Ethernet by TCP/IP
- Integration with the control system used at Elettra by Tango technology
- Downtime necessary for realization: four weeks
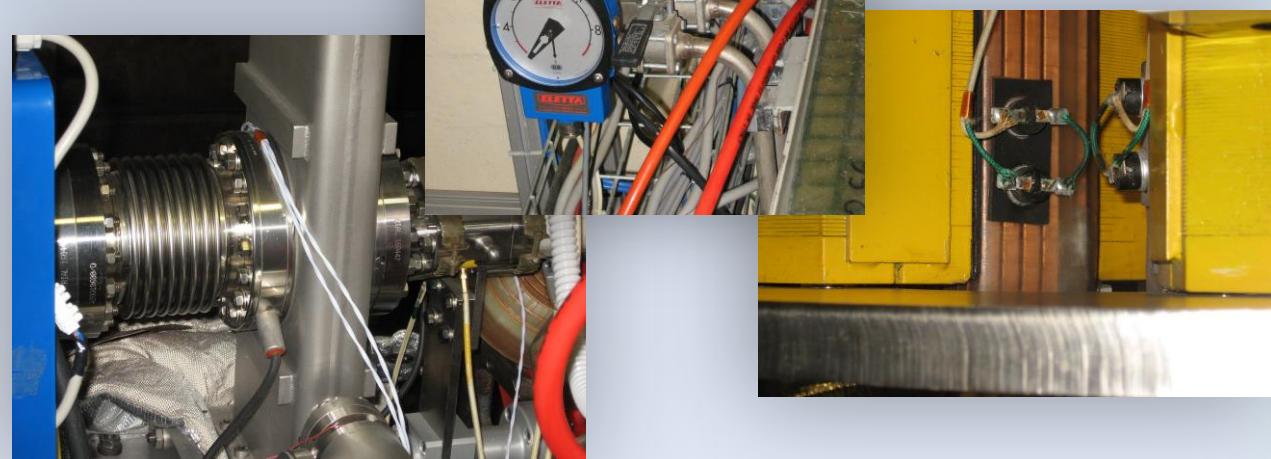
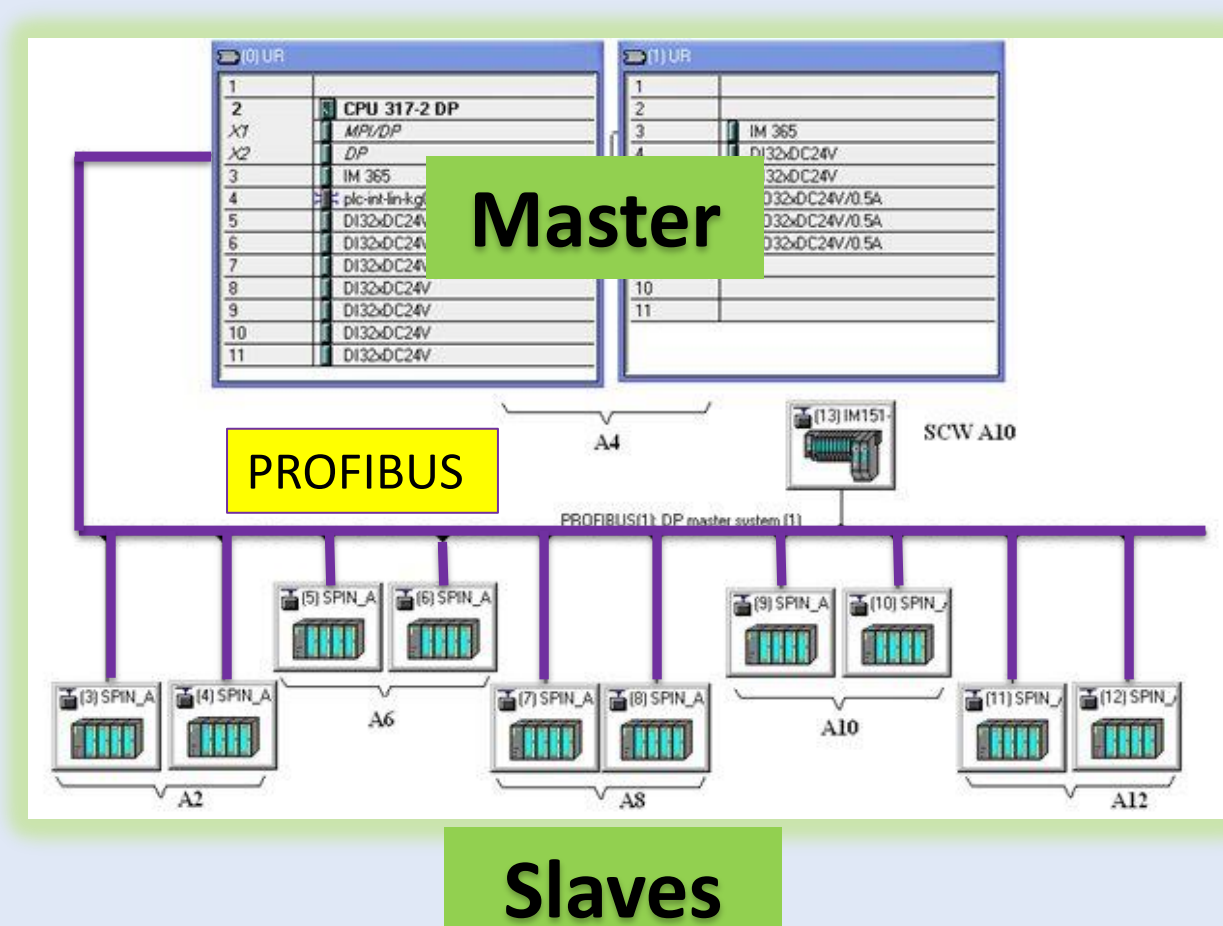**Elettra control room**   **Fermi control room**
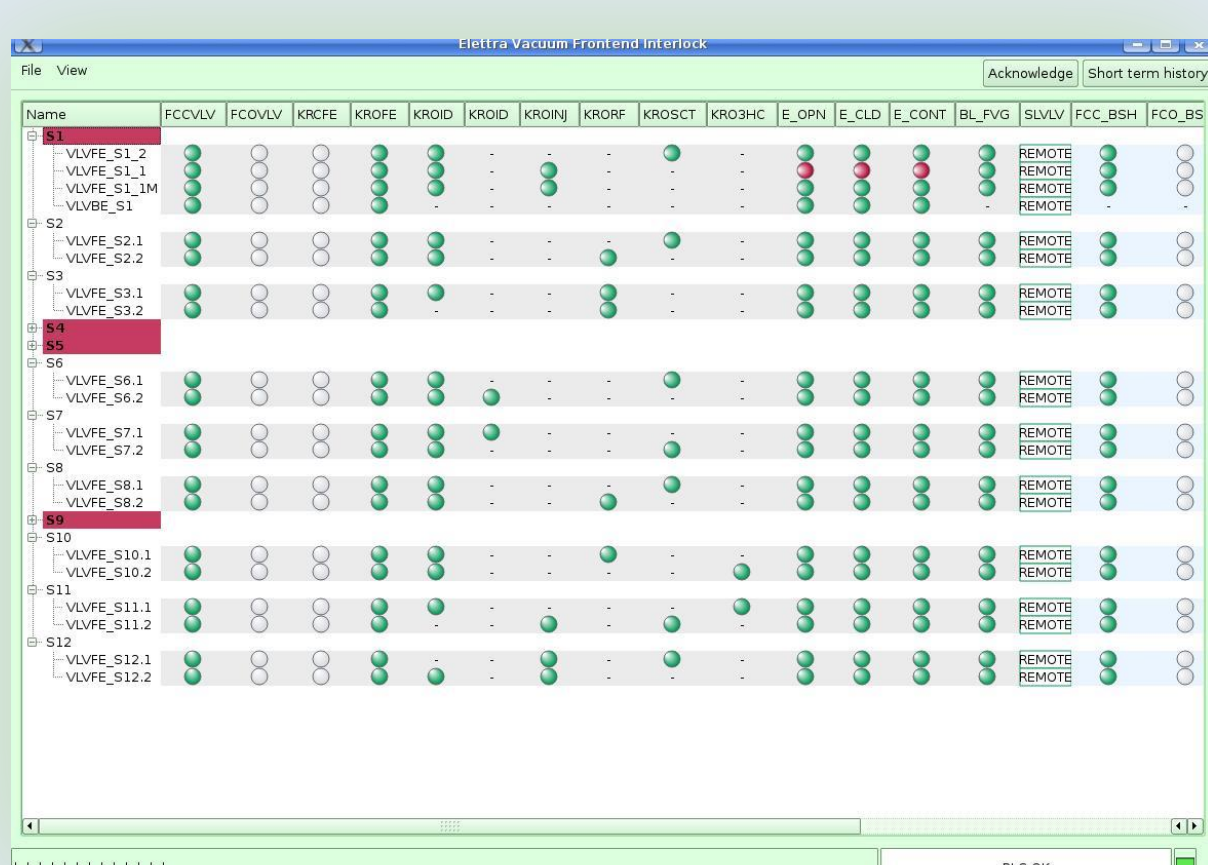
Plc Series S 5 - FS

Plc Series S 7 -300

Hardware devices already installed

Architecture

Master

PROFIBUS

Slaves

Supervision in control room

Realization

To minimize interventions thus making revision possible in four weeks, the connection with the hardware deployed in the field was maintained; which were then the same connections with valves, vacuum sensors, termoswitches, etc..

The system architecture which has been completely revised: instead of the six PLCs operating each to their own sector machine, now there is only one PLC and many peripheral stations connected via Profibus. Any subsequent change will be relatively easy to perform, it's enough to connect one or more peripheral stations, as you need to the network profibus

The Profibus cable has been laid in the service area during one of the shut down. PLCs have been removed and replaced with the new S7 gaining much space. Actions wiring were mostly made in the racks of the PLC. New software program codes have been written as between the two series of PLCs are not compatible

Building time:
- December 2012: drawings were made, components ordered; in the shut down of December 2012 the cable were laid on the floor
- from January 2012 new software PLC compiled, built pre-assembled
- from June 11 to July 6 (shut down) installation wires and testing
Everything was concluded on time and within budgeted costs (approximately 50,000 Euros)
The system has had no faults, blocks, anomalies, etc..
After realization there have been no downtime due to the system interlock
The system is implemented, updated, on specific requests

Personnel involved in the project:

Fabio Giacuzzo: (project manager)
Diego Vittor
Andrea Pozzer