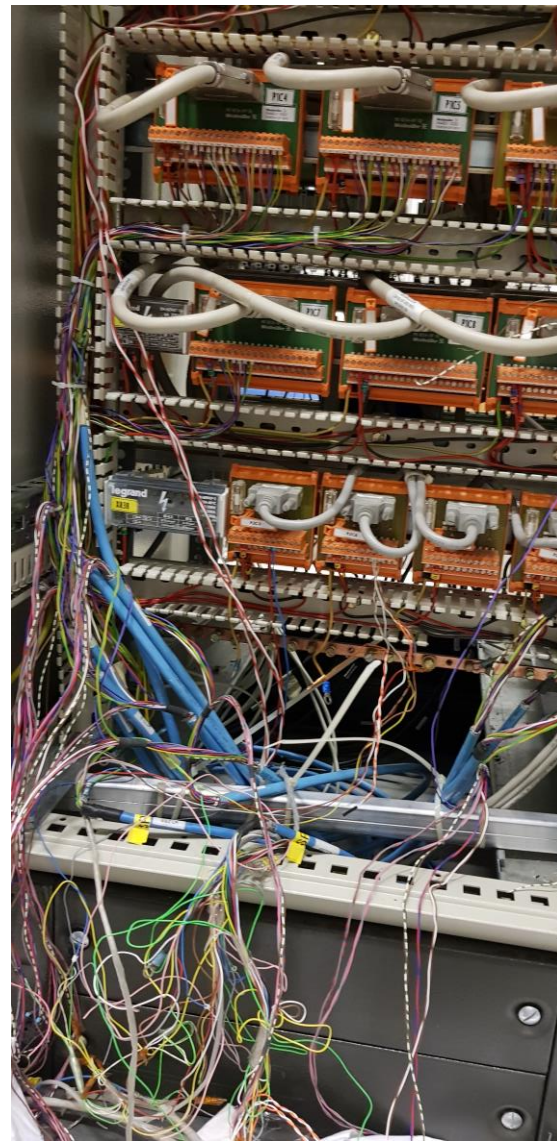


At the last TB agreed to move the PLC cabinet and the Dewar to the clean room.

Visits from Jean-Ives and several days spent by S. Ravat and L. Deront + young collaborator



WP elaborated by EP-DT: EDMS document(s) 2467122 v.1 "Workpackage agreement for EP-DT support to COMPASS" by Giovanna LEHMANN MIOTTO

2.2 Cold Silicon Tracker cooling control system

The cooling system of the Cold Silicon Tracker was built, commissioned and operated by CEA: the purpose is to cool down silicon detectors modules with liquid Nitrogen to a working temperature of 200 K. It is composed of a control rack, a valve box to distribute Nitrogen to detectors and a dewar.

This system was dismantled in 2018. Travel difficulties due to the SARS-COV-2 pandemics combined with the fact that CEA does not intend to continue ensuring the maintenance of this system in the long-term lead COMPASS to require support from the EP-DT-DI team to reconnect/refurbish the system for the 2021. It is nevertheless understood that COMPASS will find a solution within the collaboration for operations and 24/7 response during running of the experiment of this system. EP-DT-DI will only help re-installing the system and will apply several improvements for better cable and connections management.

The technical responsible in EP-DT for this work is Sylvain Ravat.

Tasks to be carried out by EP/DT-DI:

1. Assessment of the situation (starting already in 2020)
 - Carry out a complete analysis of the existing installation,
 - compare it with the available documentation,
 - perform, carry out a cables inventory,
 - repair all damaged cables/connectors
 - carry out a first reconnection of the system to validate signals.
2. Improve system safety and maintainability
 - The current safety valves are closed by default and require a 48V power supply to be opened. Nevertheless, the safe position for the valves in this application is to be open. An uninterruptible power source needed thus to be supplied, in order to keep the detector safe during power outages. **It is proposed to change the valves to a model that is open by default, thus eliminating the need for a safe 48V line.**
 - Cables are at present directly connected to the equipment: this approach is not suited for devices that are regularly displaced. **It is proposed to install patch panels at the PLC rack, valve box and detectors (3,4,5).**
 - The space available to make a patch panel at the detectors side is still to be checked with COMPASS.
3. Installation, test, commissioning
 - Install and connect the cooling system in its final position;
 - Check the PLC program to add or use existing DataBlocks for DCS communication;
 - Rewire the vacuum interlock system of the pumps;
 - Test of all signals with the PLC.

Tasks to be carried out by COMPASS:

Stefano Levorato is the technical contact on the COMPASS side and will follow up on the tasks listed below.

- Install the electronic cards on each detectors to validate the readout of the temperature sensors;
- Install Interlock box (based on temperature) for DCS;
- Find the cabinet for Remote IO of detector 6 (conic one): this detector is not used in 2021 but should be integrated into the control system for future use;
- Install vacuum system for valve box and detectors, including the local pump, valve and vacuum sensors;
- Reinstallation of gaseous Nitrogen supply to heat up detectors;
- Connection to compressed air for the control of the valve on valve box and for the safety valves both in the test area and then in the experiment area;
- Provide Ethernet connection for the PLC in the experiment area.

CEA still needs to provide support, as experts of the system. The contact person from CEA is Jean-Yves Rousse. In particular, CEA has to provide:

- The original, last working PLC Program;
- The cabling documentation;
- Technical advice and information for aspects that are not fully documented;
- **Expertise during commissioning.**

Valves ordered already TUM account

3.2 Cold Silicon Tracker cooling system

S. Ravat will supervise the work on the EP-DT side, in collaboration with S. Levorato. EP-DT-DI personnel is not charged to COMPASS but is estimated for internal book-keeping: it is expected that this work will require 3 staff months (L. Deront, S. Ravat), for preparation, development, FSU supervision, validation, commissioning and follow-up with COMPASS.

Real costs will be billed directly to COMPASS, on budget code Txxx.

Material	6000 CHF	Cables, connectors, patch panels, etc
FSU hours	220 h	Manufacturing in workshop and cabling installation
Total	17000CHF	