



Design and operation overview of cryogenic infrastructure for XFEL's superconducting cavities test stands

WAWRZYNIEC GAJ

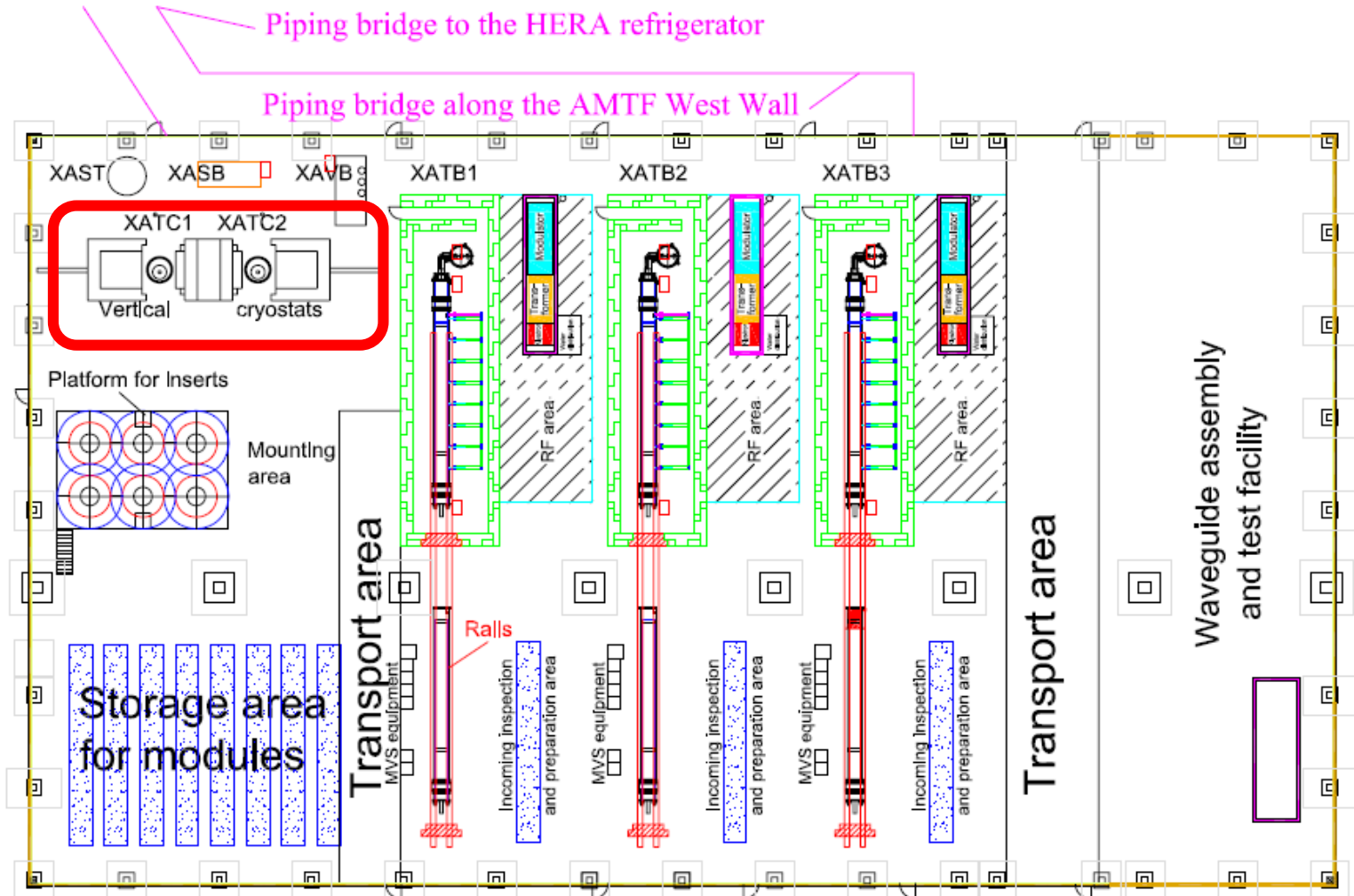
IFJ PAN

Content



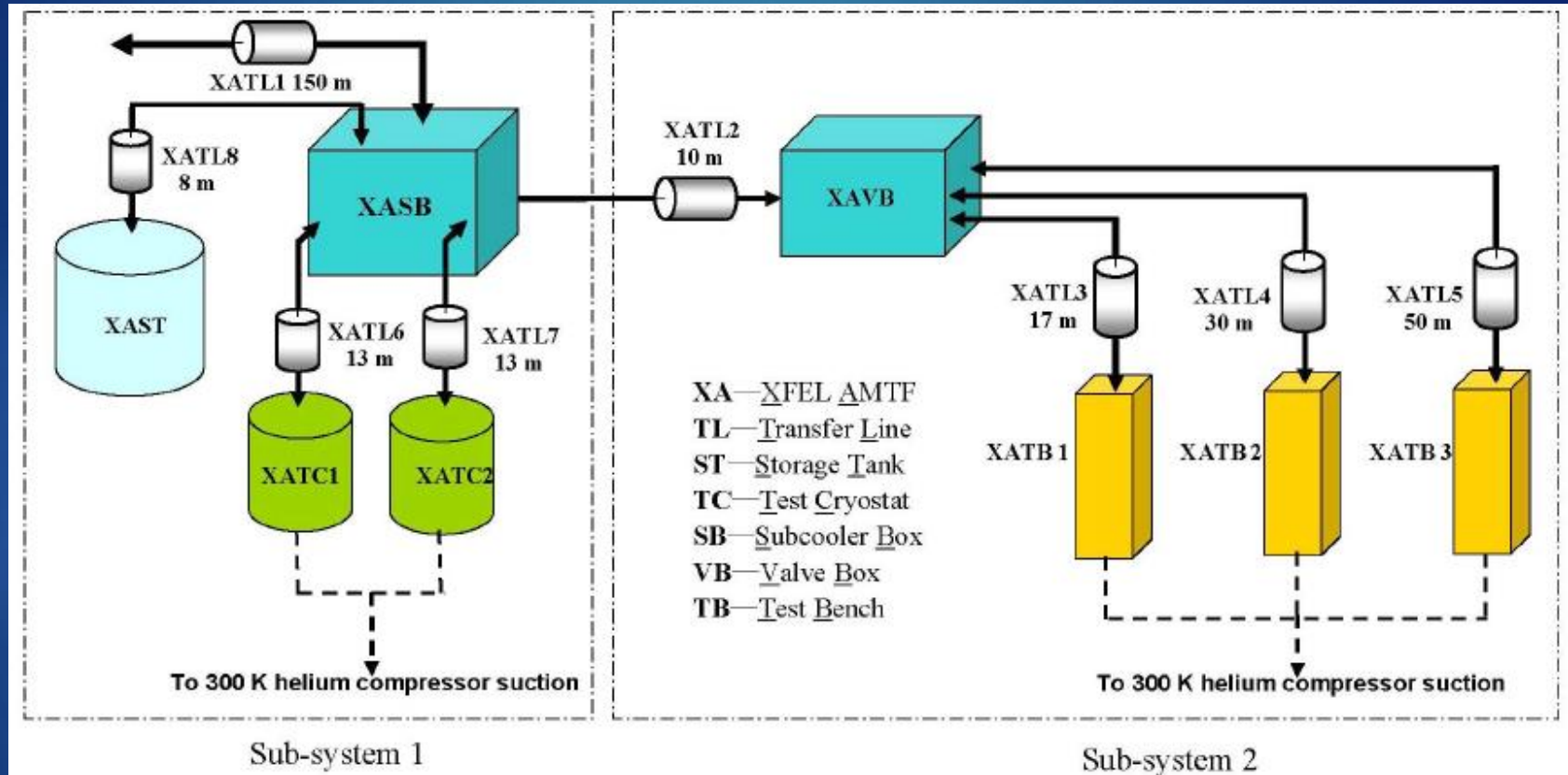
- ▶ Overview of AMTF hall cryogenic system
- ▶ Vertical test stands
- ▶ Cool down to 2K
- ▶ Warm up to 300K
- ▶ Liquid helium transfer between test stands and storage tank
- ▶ Automatization of the cryogenic procedures
- ▶ Control system
- ▶ Module test stands

Cryogenic system of the AMTF hall



Source: Jaroslaw Polinski, Pawel Duda "Vertical Dewars XATC: status of design and construction"

Cryogenic system of the AMTF hall



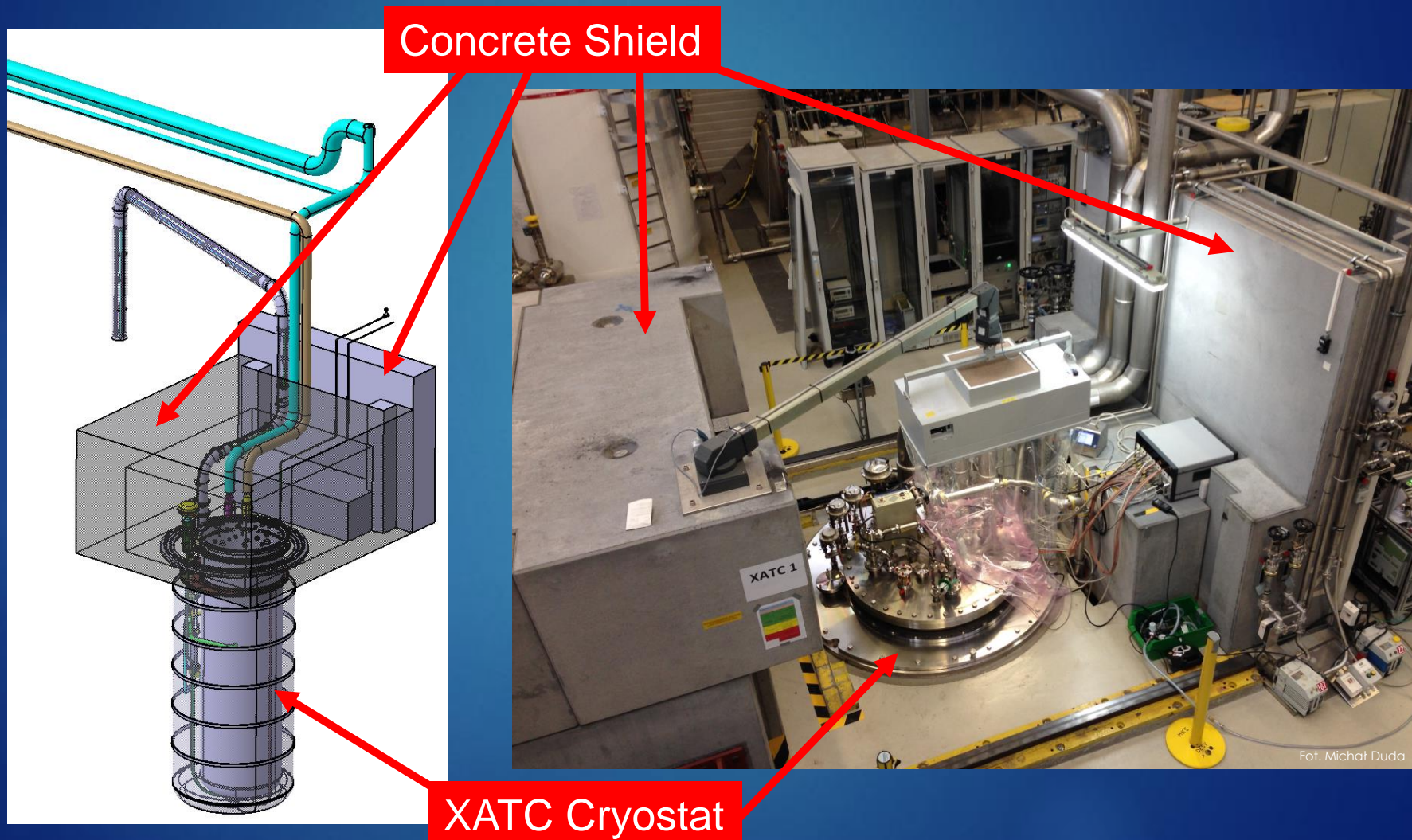
Source: Jaroslaw Polinski, Pawel Duda "Vertical Dewars XATC: status of design and construction"

Forward:

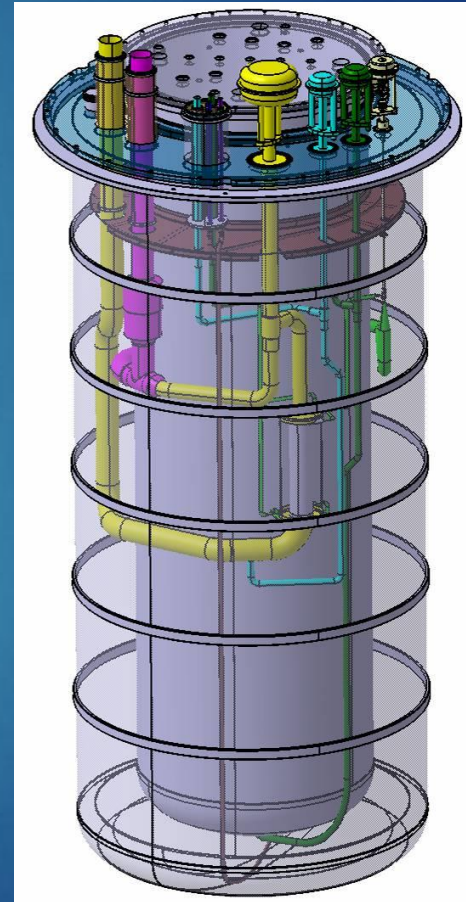
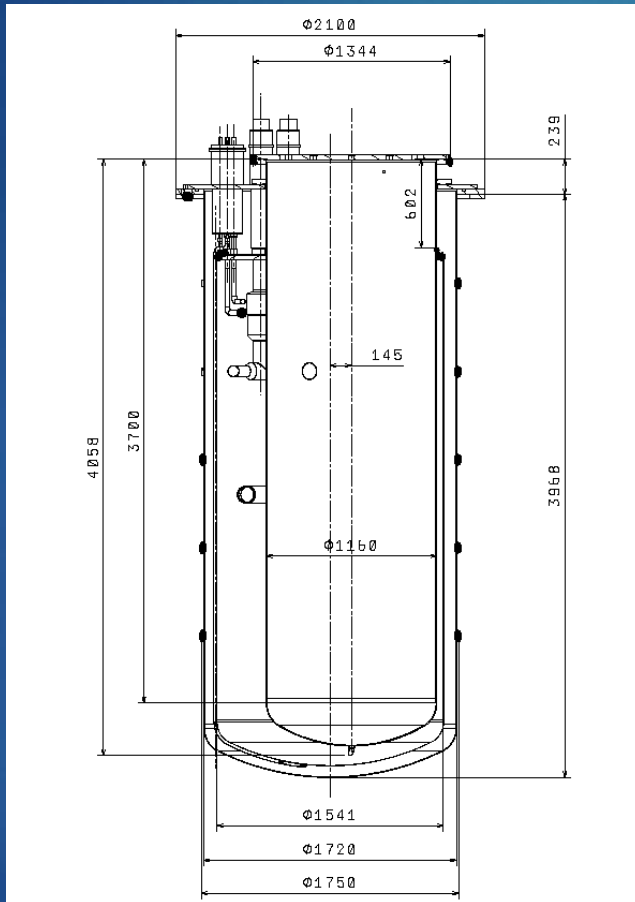
- ## Return:

-
- The screenshot displays the XASB control software interface. At the top, there is a menu bar with options: '1.Str.', '2.Str.', '3.Str.', 'GRAPHICS Exp', 'FACEPLATES', 'XASB', 'Transferleitung', and a date/time stamp 'DEC 04, 2014 12:35:44'. Below the menu, the main area shows a complex piping diagram with various components labeled with codes like VC, TTP, and TTC. The diagram is divided into several sections, each enclosed in a red box. The bottom status bar shows 'Heizer aus' and 'Heizer A'.

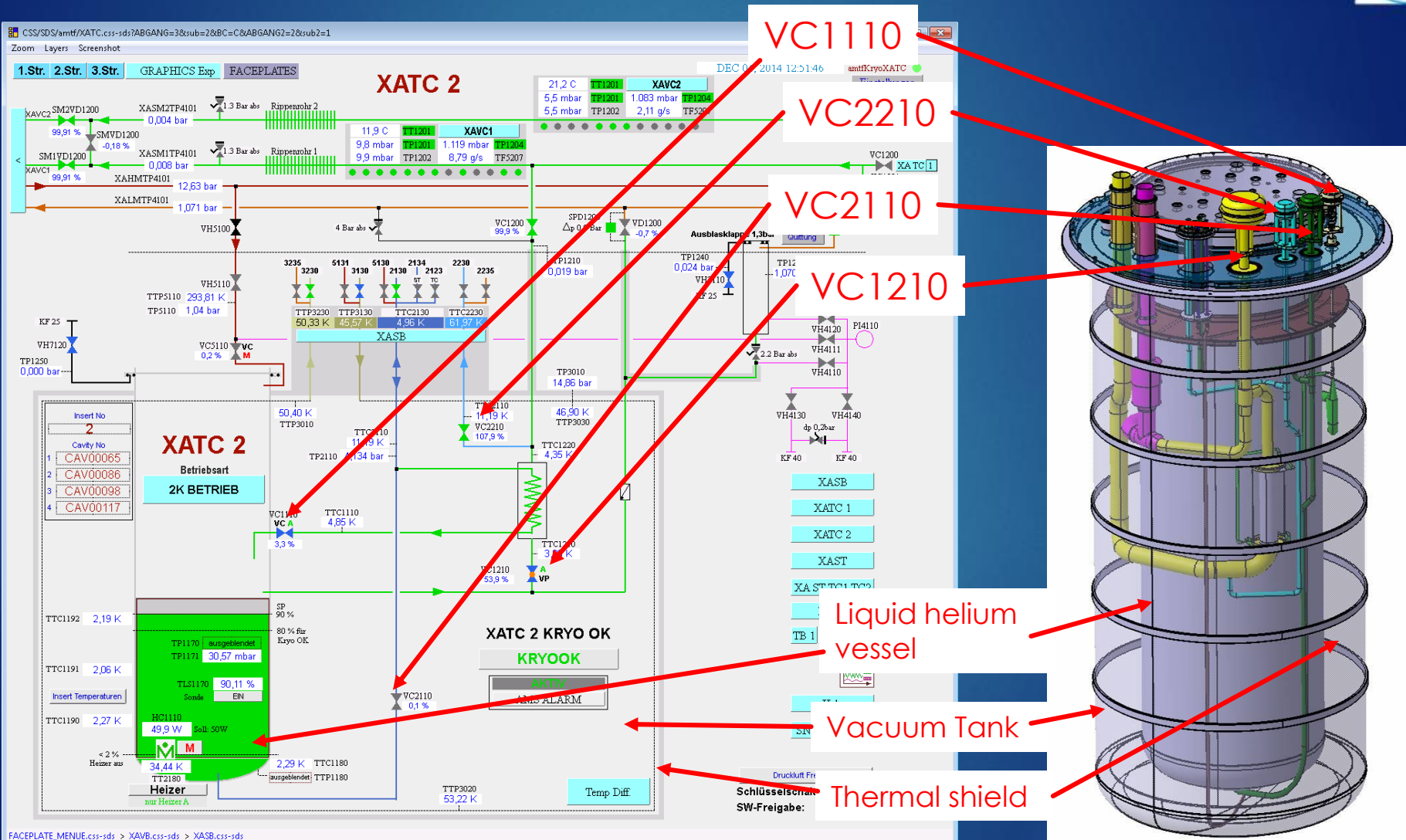
AMTF Test Hall vertical test stands

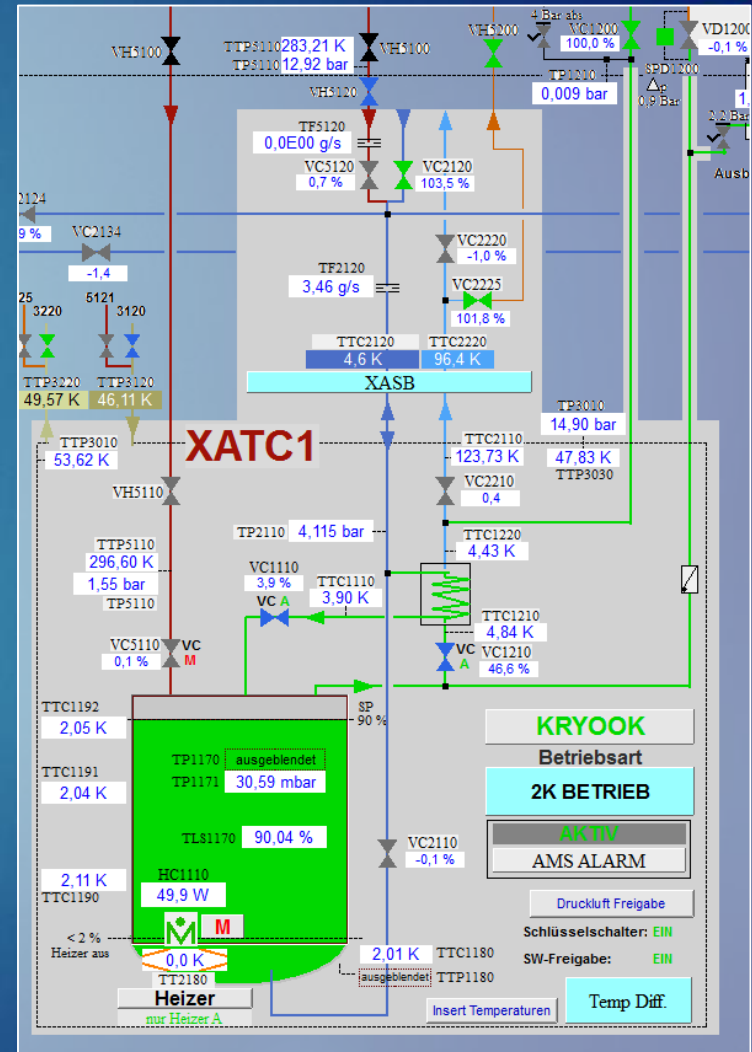


AMTF Test Hall vertical test stands

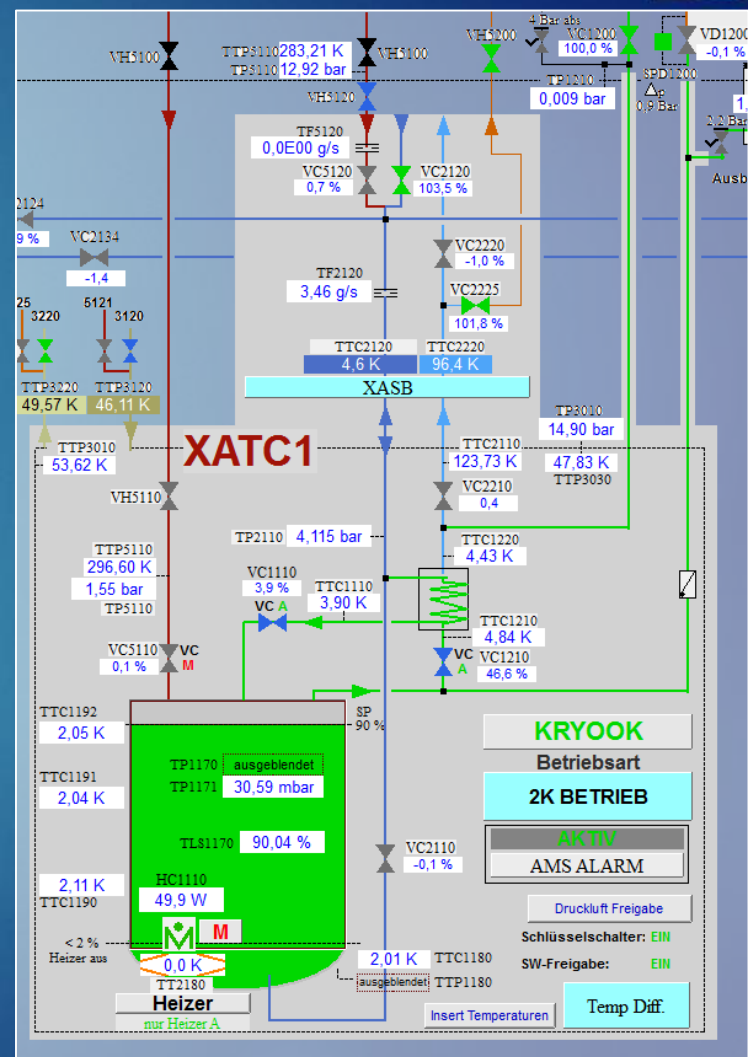
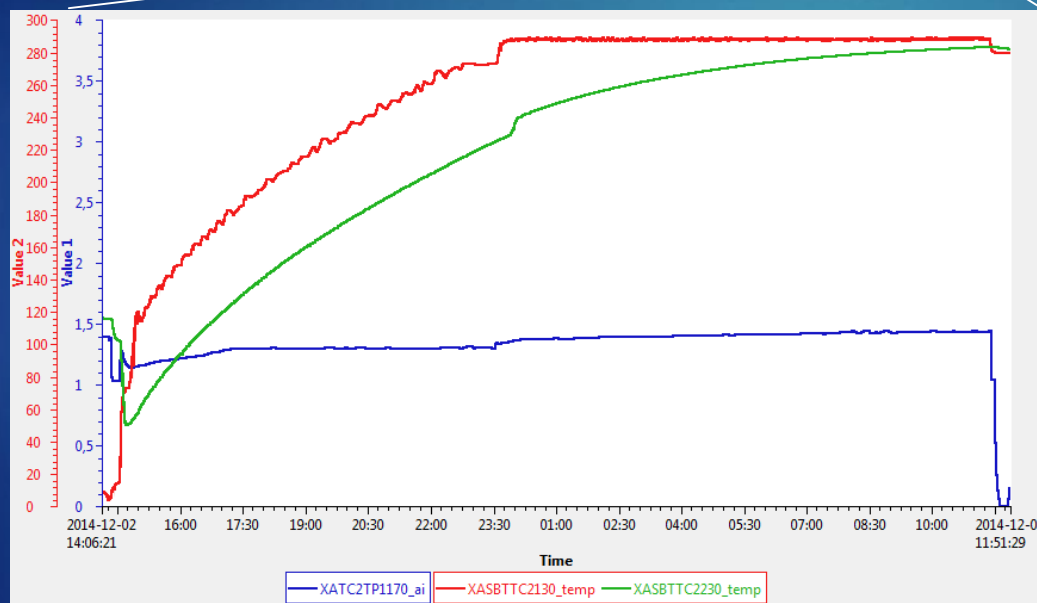
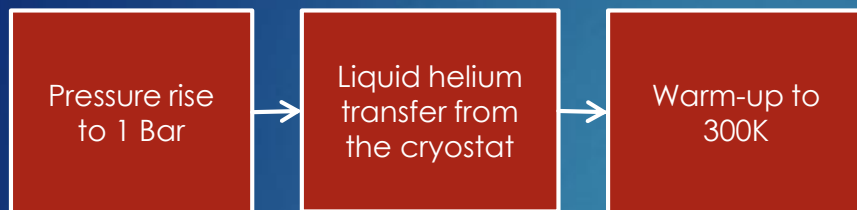


Test stands XATC1 and XATC2





Warm up to 300K

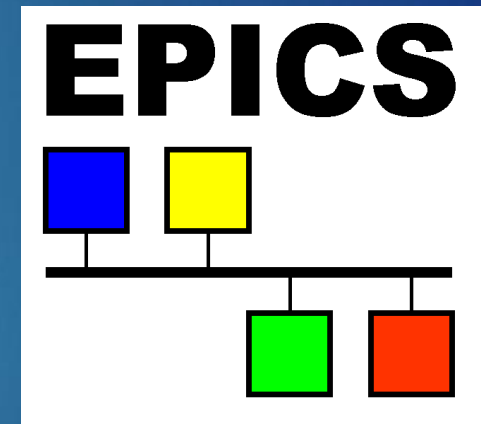




Control system

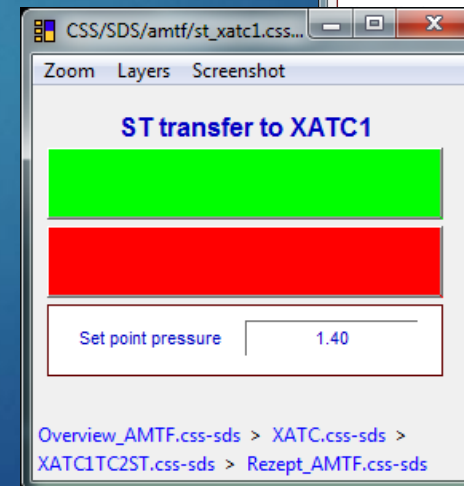
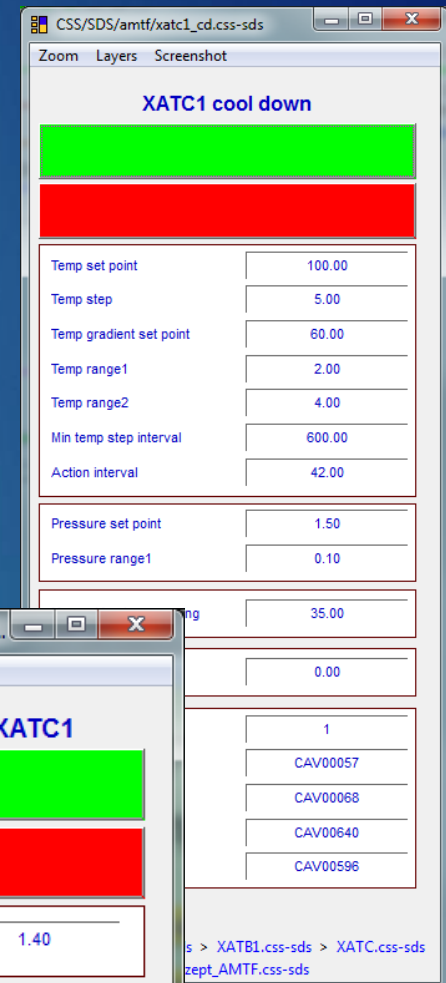
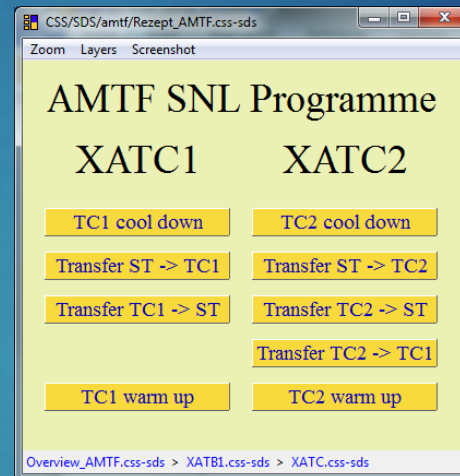
Cryogenic system is controlled by Distributed Control System based on EPICS providing following features:

- ▶ Supervisory Control And Data Acquisition (SCADA)
- ▶ Data archiver
- ▶ Process control automation

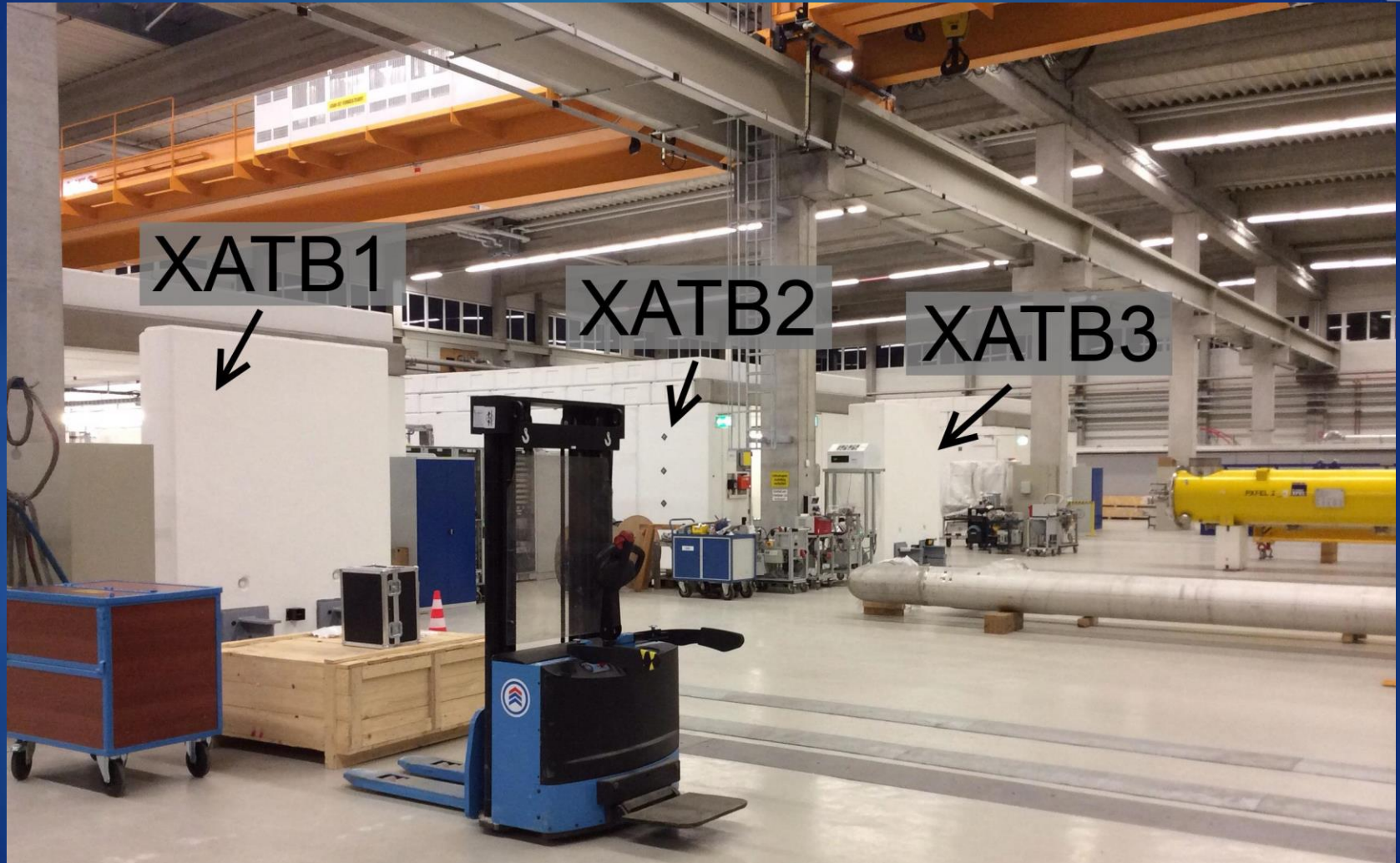


Automatization of the process

- ▶ Programs are executed from dedicated computer controller
- ▶ State machine model implemented in SNL language
- ▶ Separated programs for different process parts

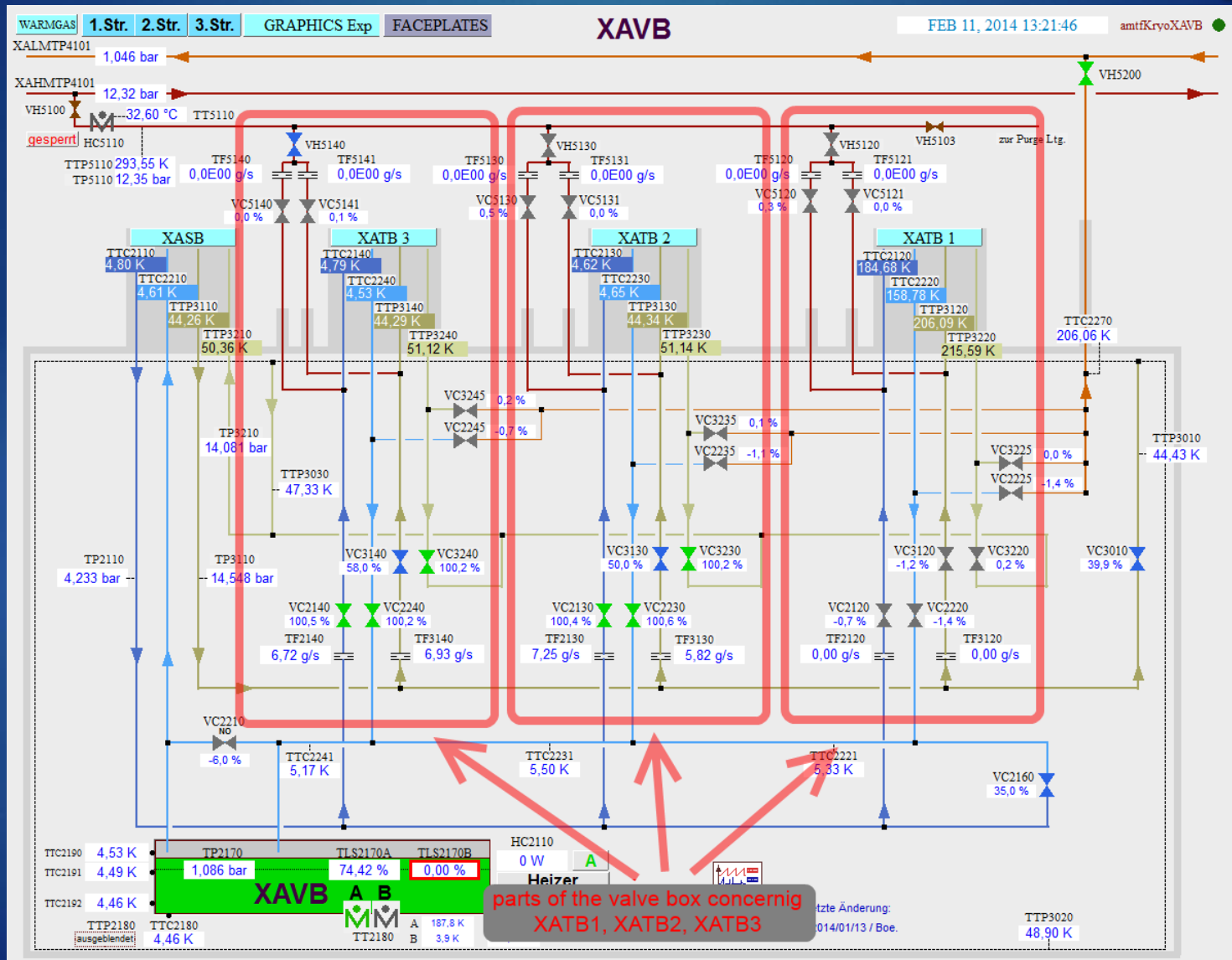


Module test stands





Module test stands



Module test stands

