



Phoebeus Overview

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24 April 2023

A Partnership of:

US/DOE

India/DAE

Italy/INFN

UK/UKRI-STFC

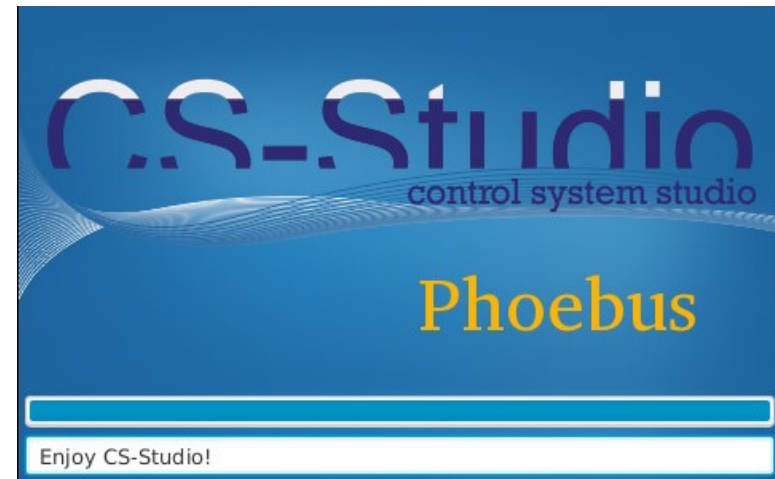
France/CEA, CNRS/IN2P3

Poland/WUST



Introduction

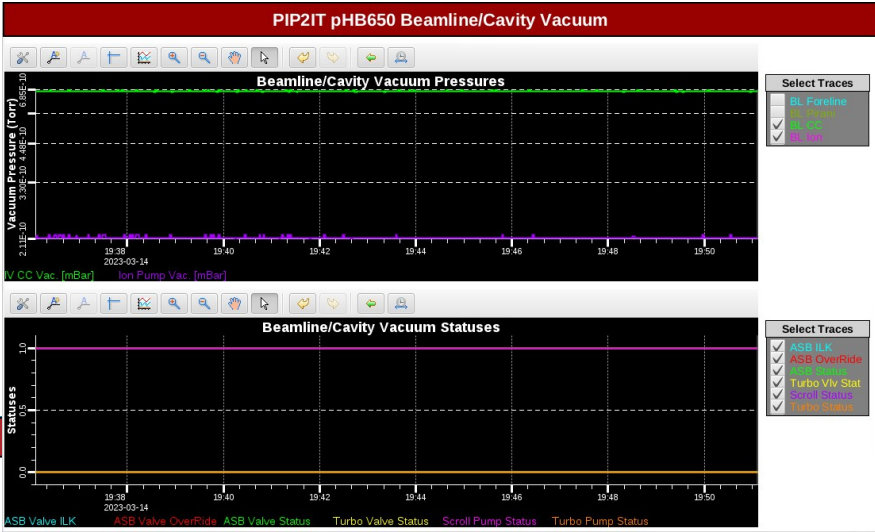
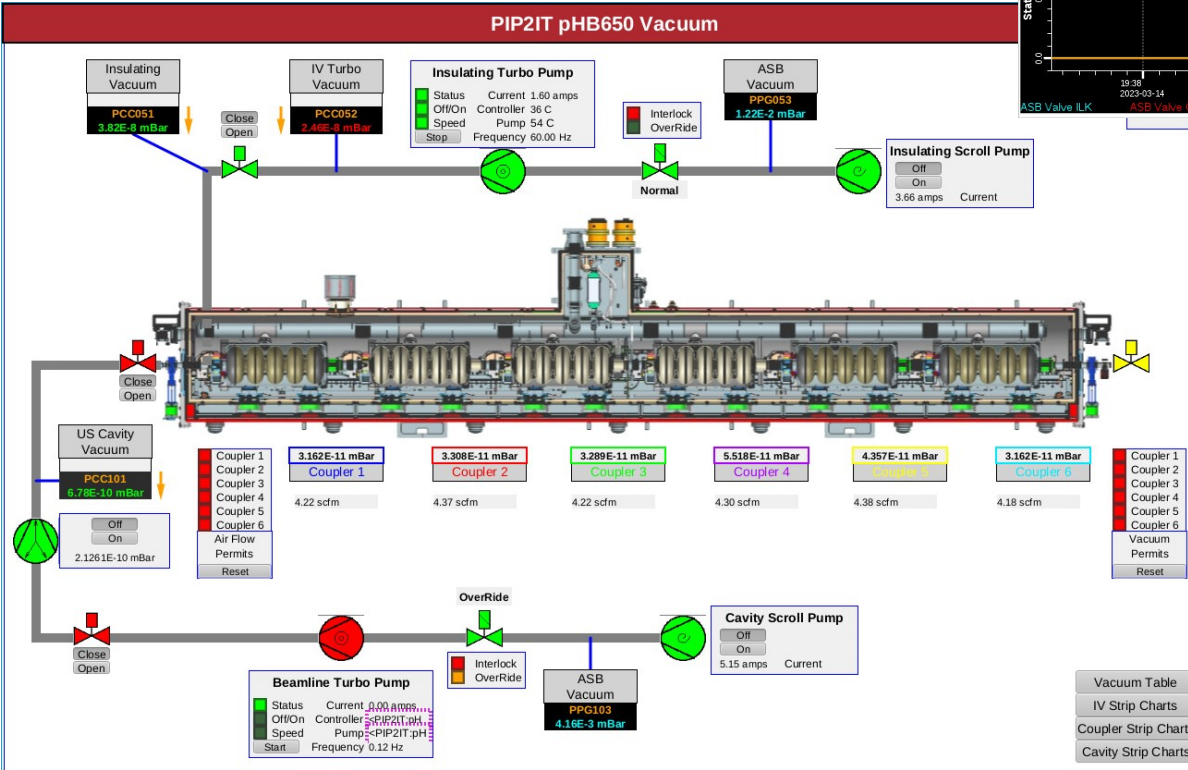
- PIP-II is using EPICS as its control system framework
- ACORN is evaluating EPICS, or components of EPICS, as a candidate for its work
- EPICS is a software framework with a full suite of tools for development of the most common aspects of control systems (front ends to back ends)
- EPICS is also an international community of users and developers
- Phoebus is presently used at PIP2IT as the user interface to the control system
- Phoebus user interface allows for integration of:
 - Code-less GUI/HMI development with drag-and-drop widgets – Display Builder
 - Alarms
 - Archiver
 - Strip Tool
 - Channel Finder
 - Electronic logbook
 - Save & Restore
 - Writing/invoking embedded java and/or python scripts



Fermilab's Deployment of Phoebus

- Phoebus is “a” technology which will be used at Fermilab
- See Beau Harrison’s section on Friday regarding other UI technologies
- A pre-built Fermilab version of Phoebus resides on our NSF host
- Presently Launch-able from PIP2IT (CMTF) control room on “clx” machines
- We are still studying techniques to push the displays to windows consoles
- New applications developed in Phoebus can be saved locally – xml files
- Scheme in place to push configuration files through CI/CD pipeline
- Brief show-and-tell

PIP2IT: pHB650 Vacuum



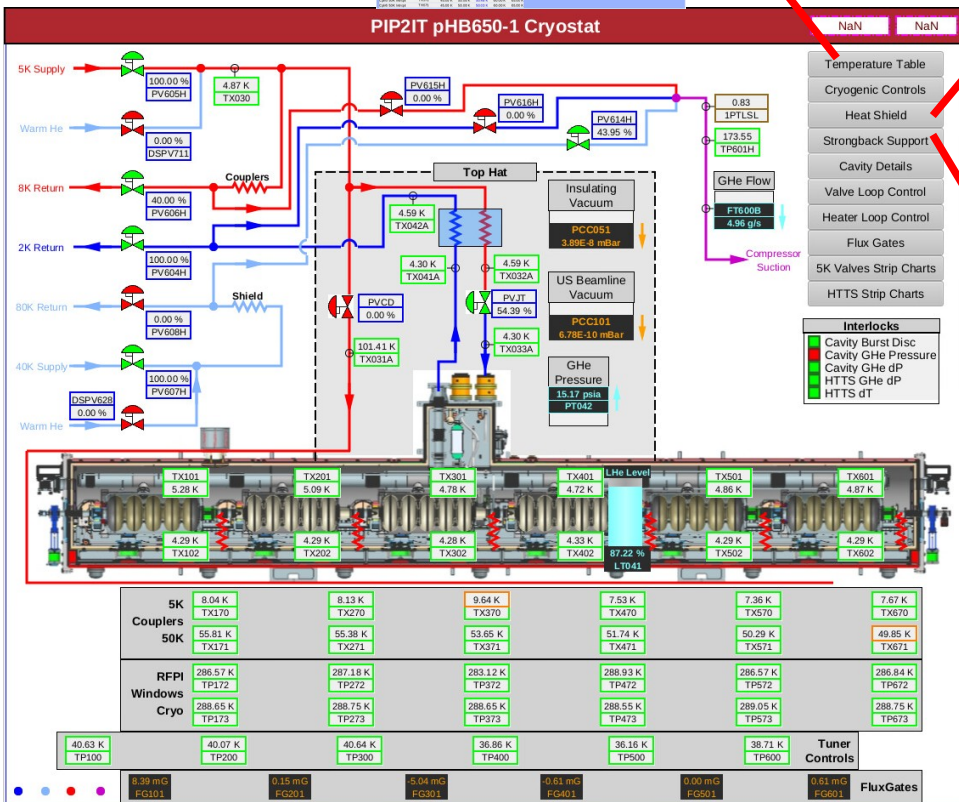
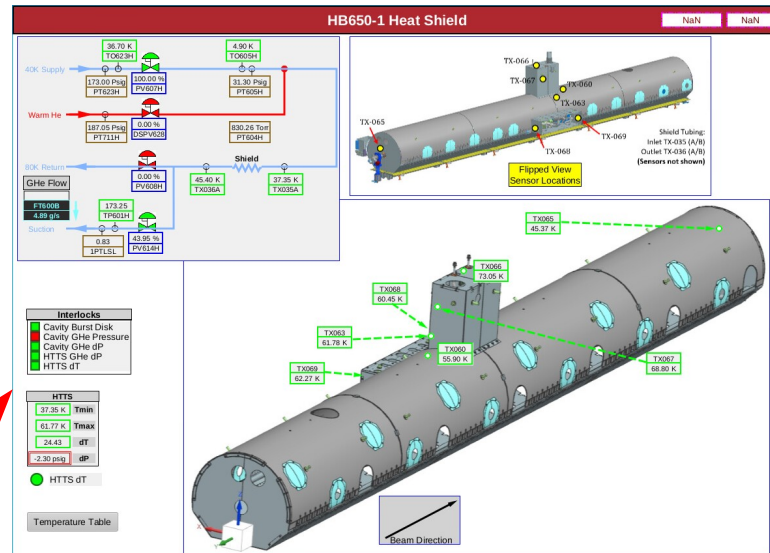
HB650-1 Cryomodule Vacuums						
Insulating Vacuum						
Description	Sensor	LOLO	LOW	Value	HIGH	HIHI
PPG053: VAC-INS A	PPG053	0.00E0	0.00E0	1.26E-2 mBar	0.00E0	0.00E0
PPG052: VAC-INS Tu	PPG052	1.00E-12	1.00E-11	3.28E-12 mBar	1.00E3	1.00E4
PCC052: VAC-INS Tu	PCC052	1.00E-12	1.00E-11	2.55E-8 mBar	1.00E3	1.00E4
PPG051: VAC-INS C	PPG051	1.00E-12	1.00E-11	1.68E-3 mBar	1.00E3	1.00E4
PCC051: VAC-INS C	PCC051	1.00E-12	1.00E-11	3.78E-8 mBar	1.00E3	1.00E4
Beamline/Cavity Vacuum						
Description	Sensor	LOLO	LOW	Value	HIGH	HIHI
PPG103: US VAC-BL	PPG103	0.00E0	0.00E0	4.16E-3 mBar	0.00E0	0.00E0
PPG101: US VAC-BL	PPG101	1.00E-12	1.00E-11	3.22E-12 mBar	1.00E3	1.00E4
PCC101: US VAC-BL	PCC101	1.00E-12	1.00E-11	6.78E-10 mBar	1.00E3	1.00E4
PII101: US VAC-BL lo	PII101	1.00E-12	1.00E-11	2.13E-10 mBar	1.00E3	1.00E4
Coupler Vacuum						
Description	Sensor	LOLO	LOW	Value	HIGH	HIHI
PCC171: VAC-Cplr1	PCC171	1.00E-12	1.00E-11	3.94E-11 mBar	1.00E3	1.00E4
PCC271: VAC-Cplr2	PCC271	1.00E-12	1.00E-11	3.16E-11 mBar	1.00E3	1.00E4
PCC371: VAC-Cplr3	PCC371	1.00E-12	1.00E-11	3.25E-11 mBar	1.00E3	1.00E4
PCC471: VAC-Cplr4	PCC471	1.00E-12	1.00E-11	3.46E-11 mBar	1.00E3	1.00E4
PCC571: VAC-Cplr5	PCC571	1.00E-12	1.00E-11	3.18E-11 mBar	1.00E3	1.00E4
PCC671: VAC-Cplr6	PCC671	1.00E-12	1.00E-11	3.66E-11 mBar	1.00E3	1.00E4



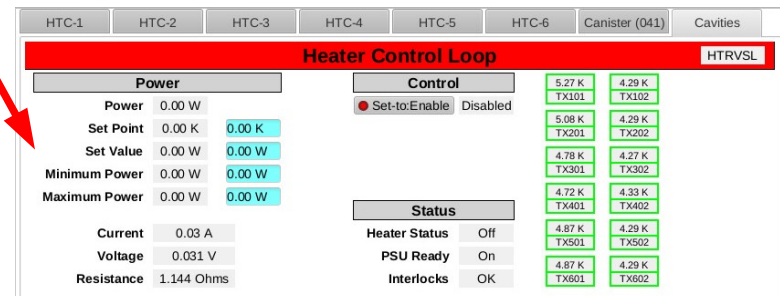
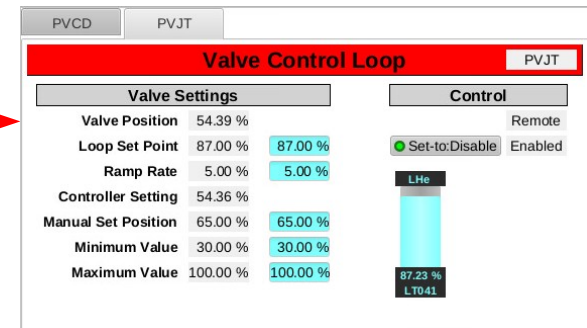
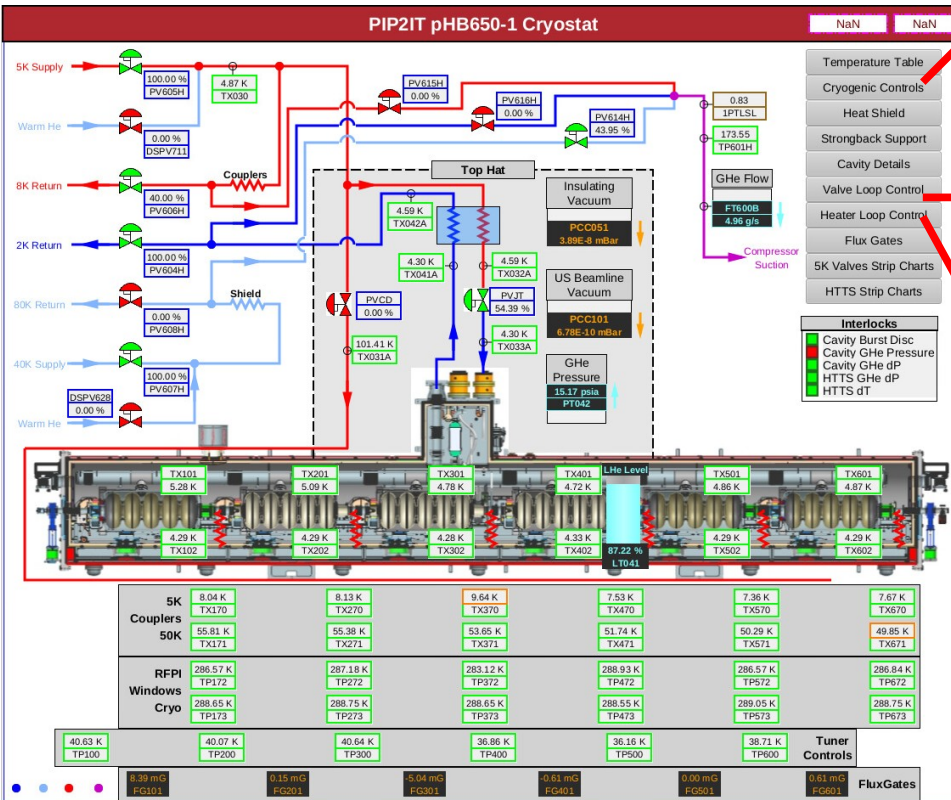
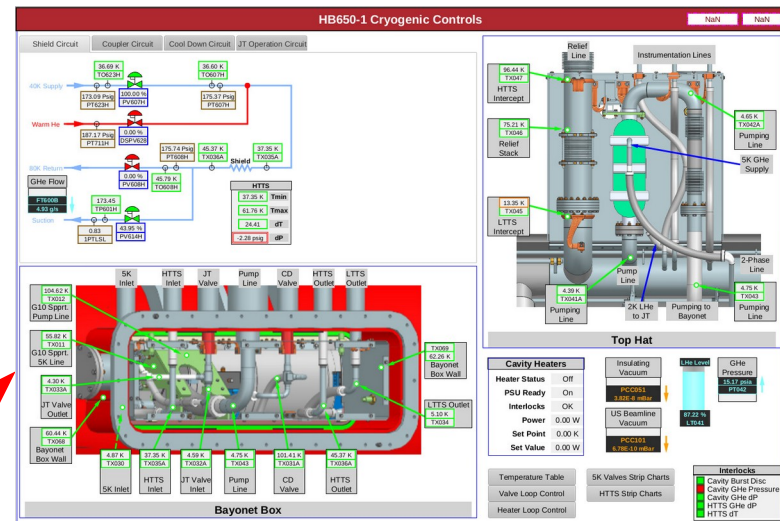
PIP2IT: pHB650 Cryostat

HB650-1 Cryostat Temperatures

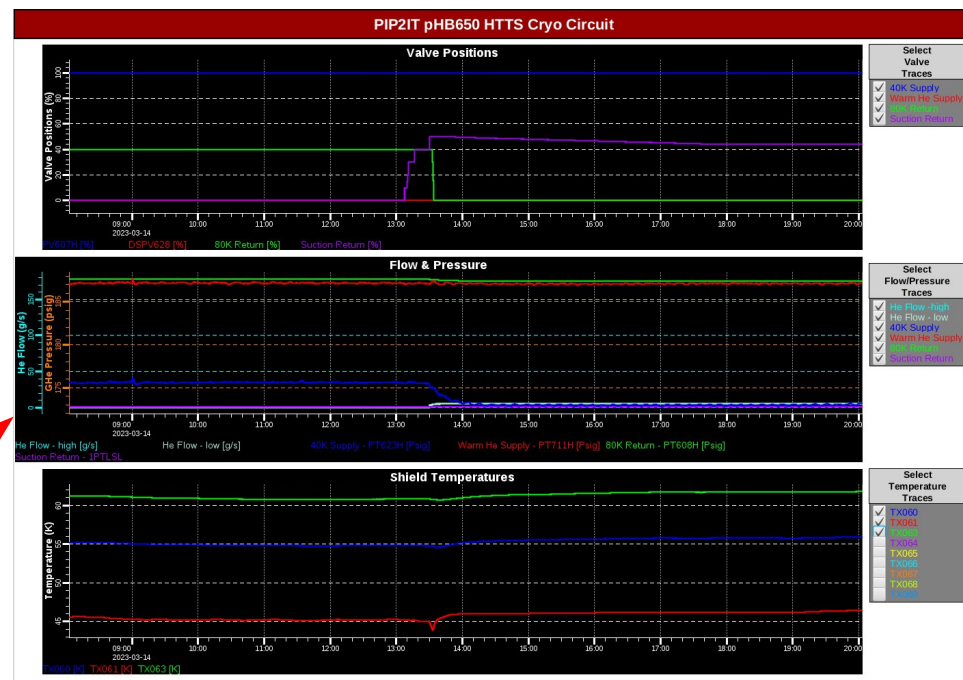
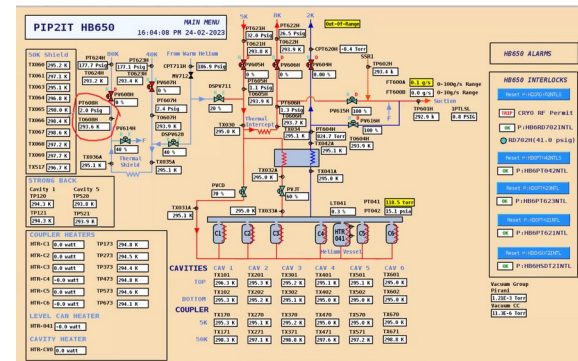
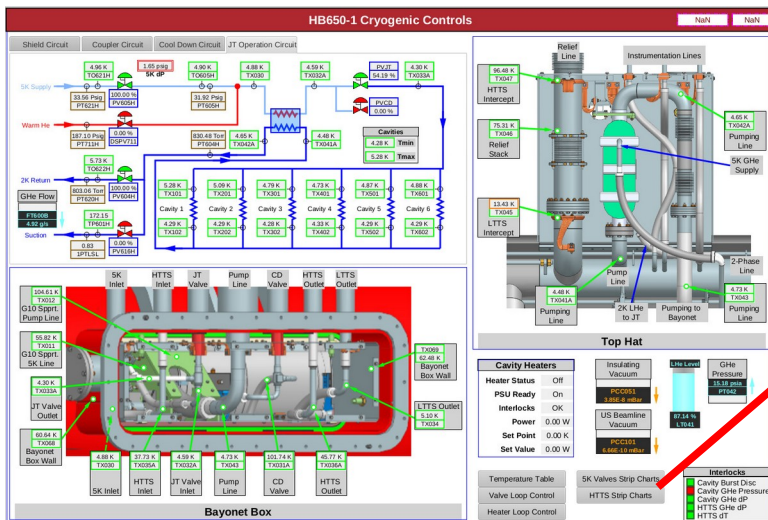
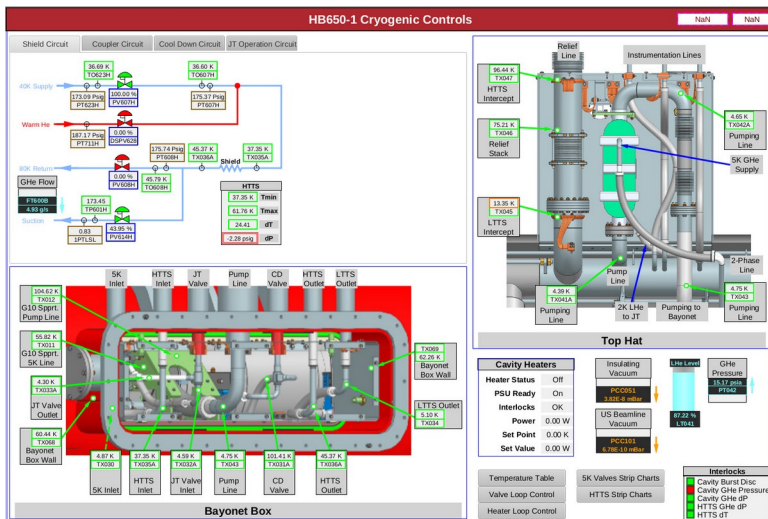
Location	Temperature (K)
TX001	4.87
TX002	4.87
TX003	4.87
TX004	4.87
TX005	4.87
TX006	4.87
TX007	4.87
TX008	4.87
TX009	4.87
TX010	4.87
TX011	4.87
TX012	4.87
TX013	4.87
TX014	4.87
TX015	4.87
TX016	4.87
TX017	4.87
TX018	4.87
TX019	4.87
TX020	4.87
TX021	4.87
TX022	4.87
TX023	4.87
TX024	4.87
TX025	4.87
TX026	4.87
TX027	4.87
TX028	4.87
TX029	4.87
TX030	4.87
TX031	4.87
TX032	4.87
TX033	4.87
TX034	4.87
TX035	4.87
TX036	4.87
TX037	4.87
TX038	4.87
TX039	4.87
TX040	4.87
TX041	4.87
TX042	4.87
TX043	4.87
TX044	4.87
TX045	4.87
TX046	4.87
TX047	4.87
TX048	4.87
TX049	4.87
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TX051	4.87
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TX066	4.87
TX067	4.87
TX068	4.87
TX069	4.87
TX070	4.87
TX071	4.87
TX072	4.87
TX073	4.87
TX074	4.87
TX075	4.87
TX076	4.87
TX077	4.87
TX078	4.87
TX079	4.87
TX080	4.87
TX081	4.87
TX082	4.87
TX083	4.87
TX084	4.87
TX085	4.87
TX086	4.87
TX087	4.87
TX088	4.87
TX089	4.87
TX090	4.87
TX091	4.87
TX092	4.87
TX093	4.87
TX094	4.87
TX095	4.87
TX096	4.87
TX097	4.87
TX098	4.87
TX099	4.87
TX100	4.87



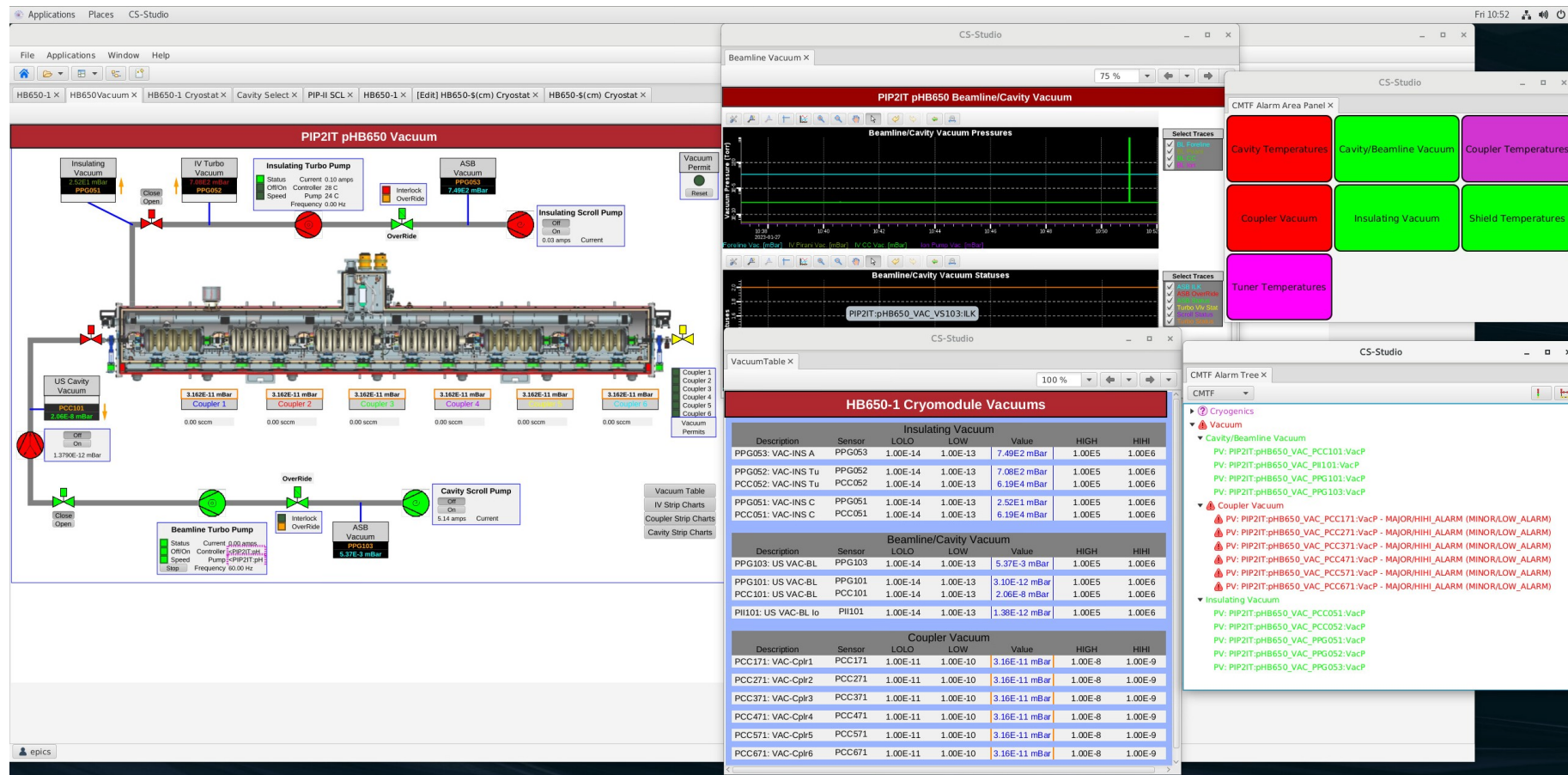
PIP2IT: pHB650 Cryostat



PIP2IT: pHB650 Cryo Control



PIP2IT: pHB650 Working Desktop



Fermilab Questions:

- Assuming running Phoebus local computer (laptop, desktop), alternate methods for deployment
- If running locally, how do you configure the network?
- How are displays accessed?
 - Lag when pushing displays
 - Pushing X11 – if so, what is your path forward?
 - Wayland
 - VNC
 - Xpra
 - NX webclient and Guacomole
- Weird errors such as mouse arrow too large
- Weird error causing right mouse button to not function – bad for making plots
- Authentication