

ID Cooling phase II

- experiences concerning DCS

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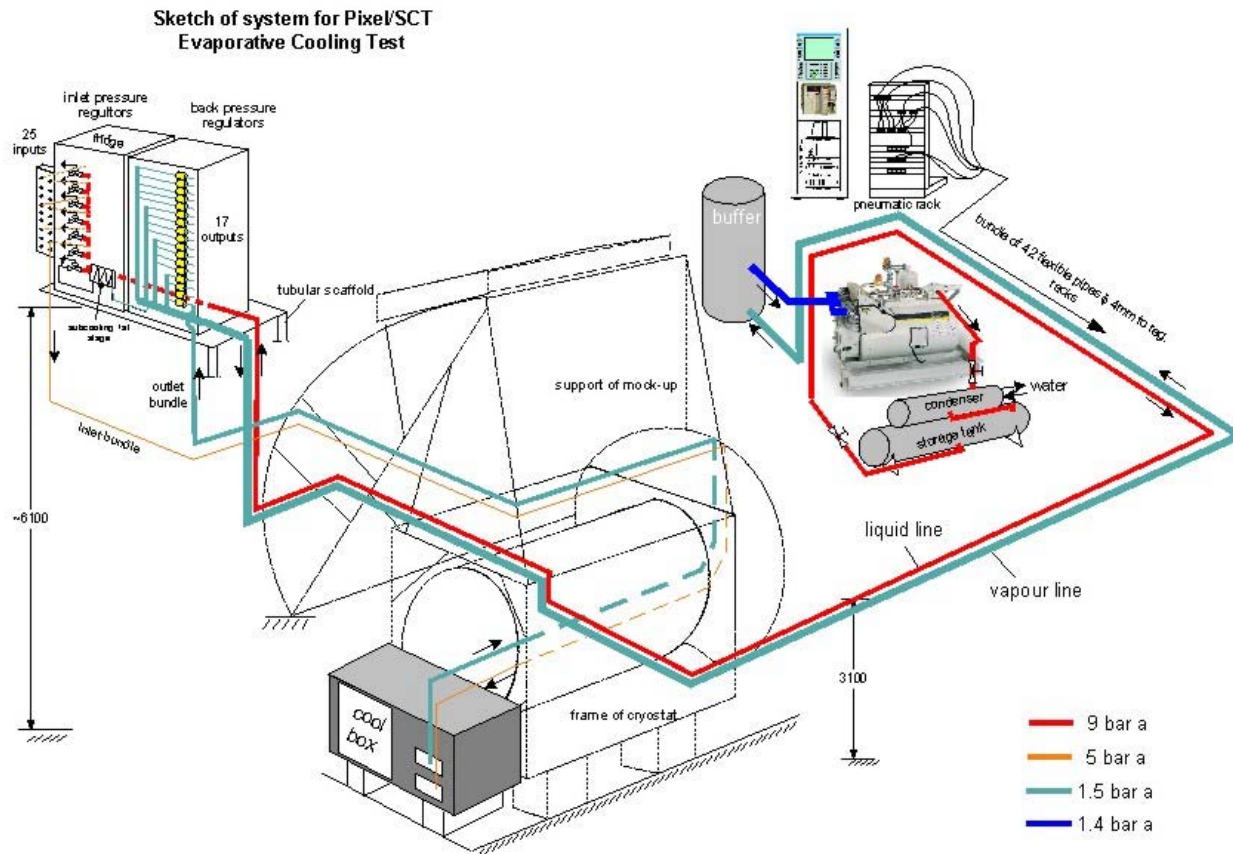
Content

- Introduction to the ID cooling system
- Components of DCS
- DCS user interface
- Problems and experiences

Goals of phase II tests

- Provide testing with realistic pressure drop and hydrostatic pressure.
- Parallel staves – different temperatures on different staves
- Test equipment
e.g. compressor, PLCs, I2P-converters
- Study failure modes
- Impact on silicon detector modules from startup and shutdown
- Test DCS (PVSS)

Setup

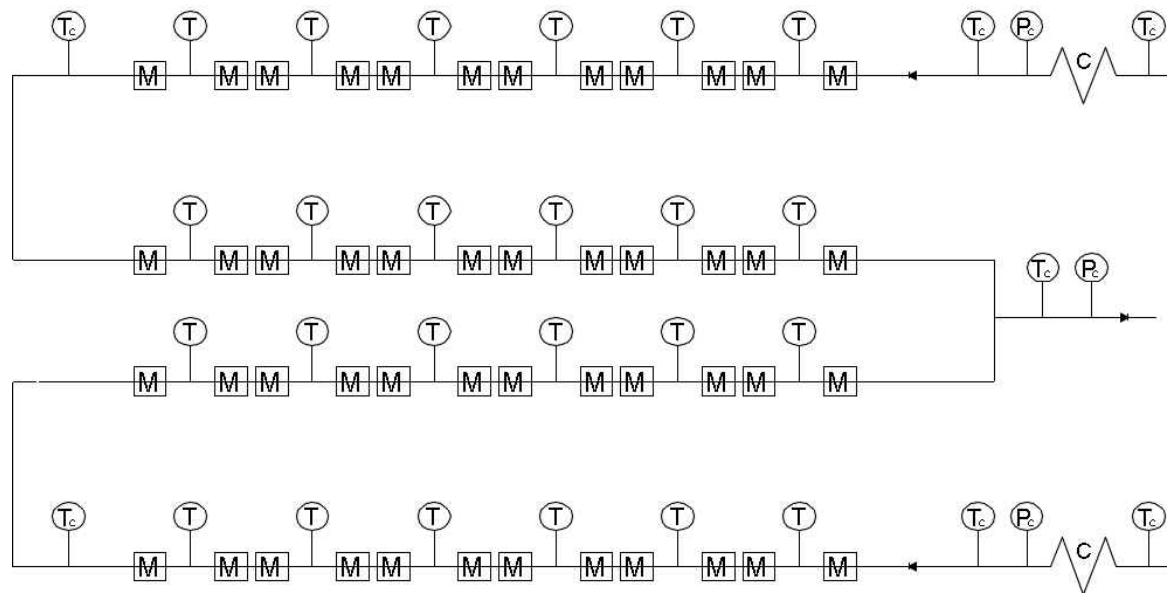


Mockup and coldbox



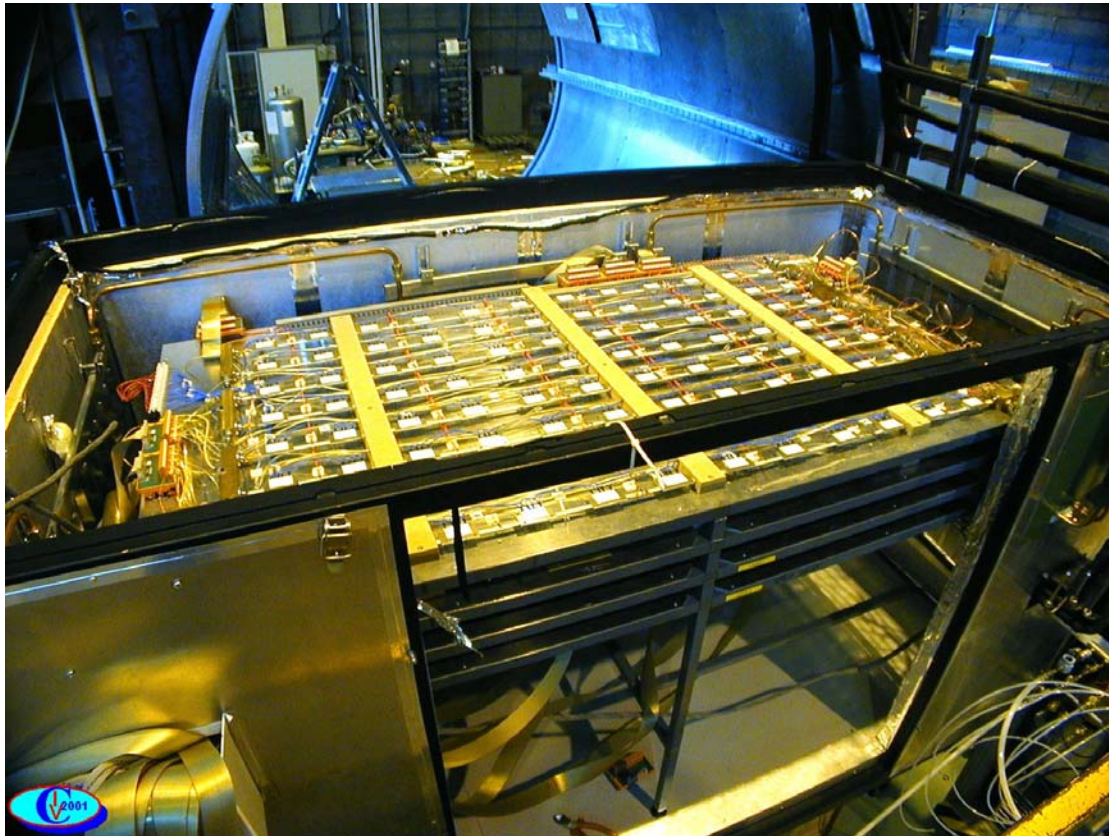
Cooling circuit

Circuit Cooling



M - Module
 T - Monitored temperature (PT1000)
 T_c - Temperature sent to DCS (NTC)
 T_p - Temperature sent to PLC (NTC)
 P_c - Pressure sent to DCS
 C - Capillaries

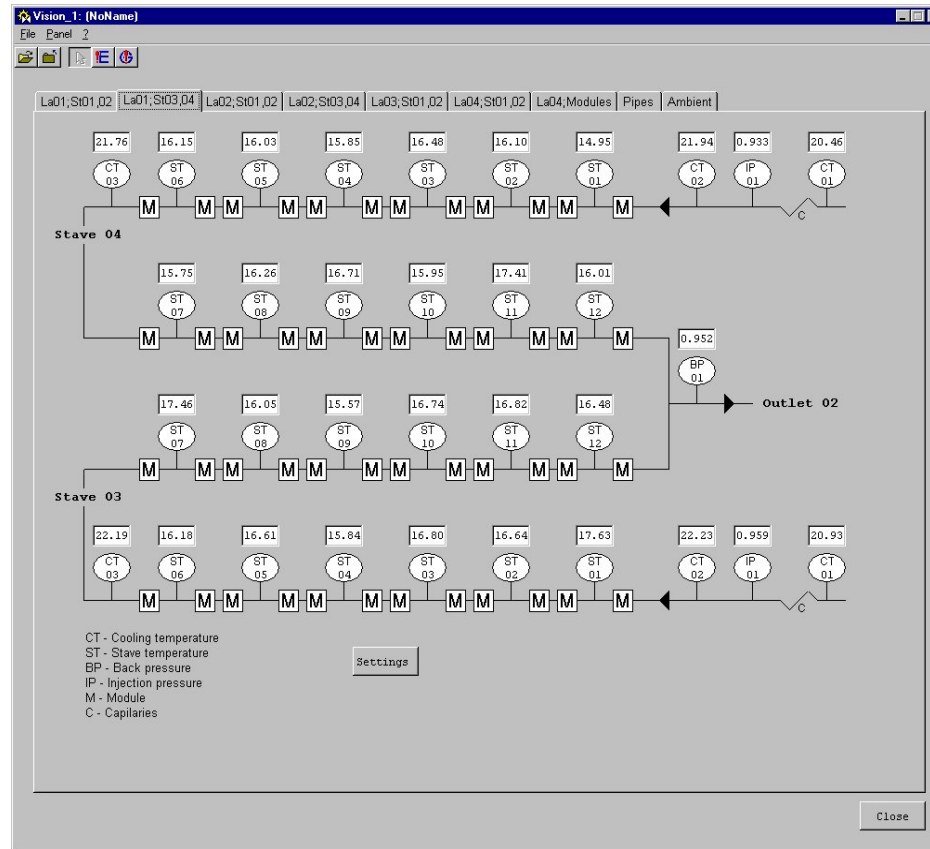
Layers in coldbox



DCS components

- PVSS
- OPC server
- CANbus
- 6 ELMBs for SCT layers, 3 to be added for pixel
- 265 sensors
 - 200 PT1000
 - 50 NTC
 - 15 Pressure sensors
 - Sensors for pixel to be added
- PLCs for flow control with sensors for monitoring and actuators (I2P-converters)

Main panel of control system



Configuring the ELMBs

ELMB Settings

ELMB settings

Status **ADC** Adapters Channelseensors Free channels

Conversion Rate (Hz)	Gain (mV)	Type of Measurement
<input type="radio"/> 1.88	<input type="radio"/> 25	<input checked="" type="radio"/> Unipolar
<input type="radio"/> 3.76	<input type="radio"/> 55	<input type="radio"/> Bipolar
<input type="radio"/> 7.51	<input checked="" type="radio"/> 100	
<input checked="" type="radio"/> 15.00	<input type="radio"/> 1000	
<input type="radio"/> 30.00	<input type="radio"/> 2500	
<input type="radio"/> 61.60	<input type="radio"/> 5000	
<input type="radio"/> 84.50		
<input type="radio"/> 101.1		

Elmb:

PVSS II

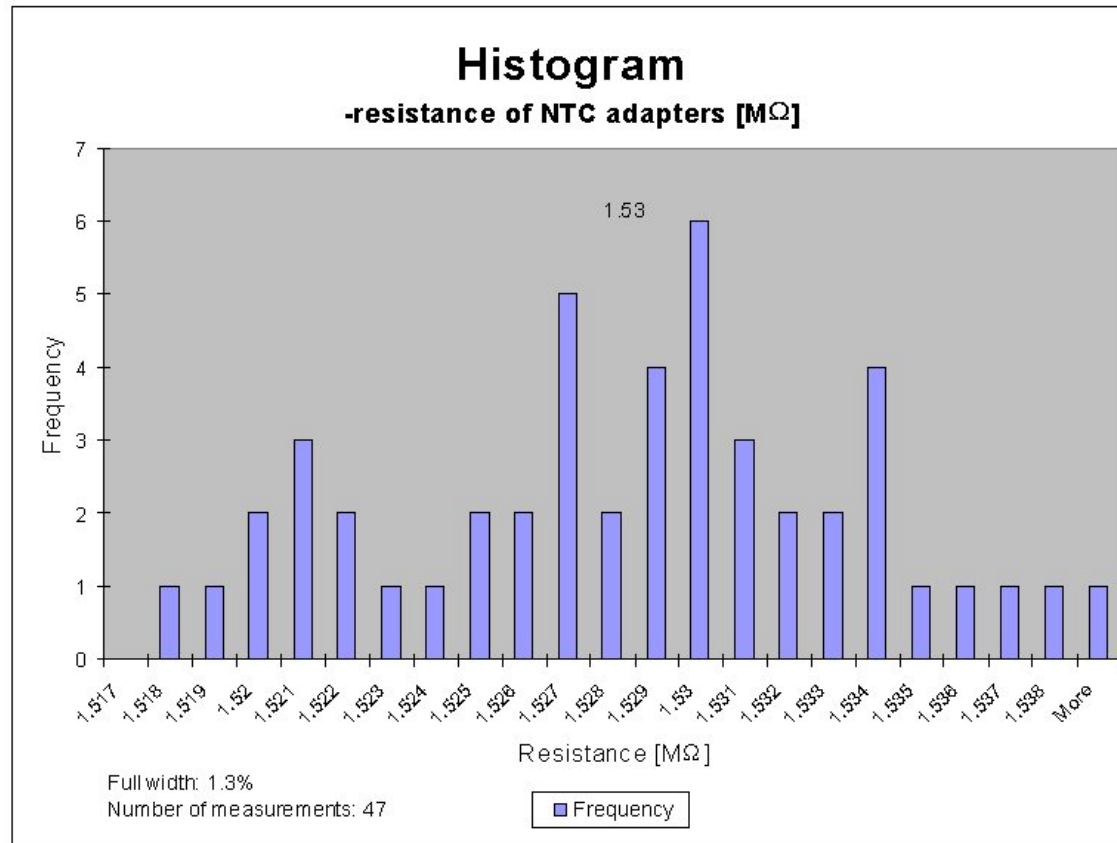
- Channel numbering in ElmbDemo project 1-64
- A few crashes
Stability better in steady state of running
- Slow
- Lacking histogramming capabilities

OPC server

- Error handling for CANbus and ELMBs
 - has been implemented
 - slow
- Not shutdown properly
- Possible OPC server problem: Not being able to communicate with ELMBs via PVSS panel

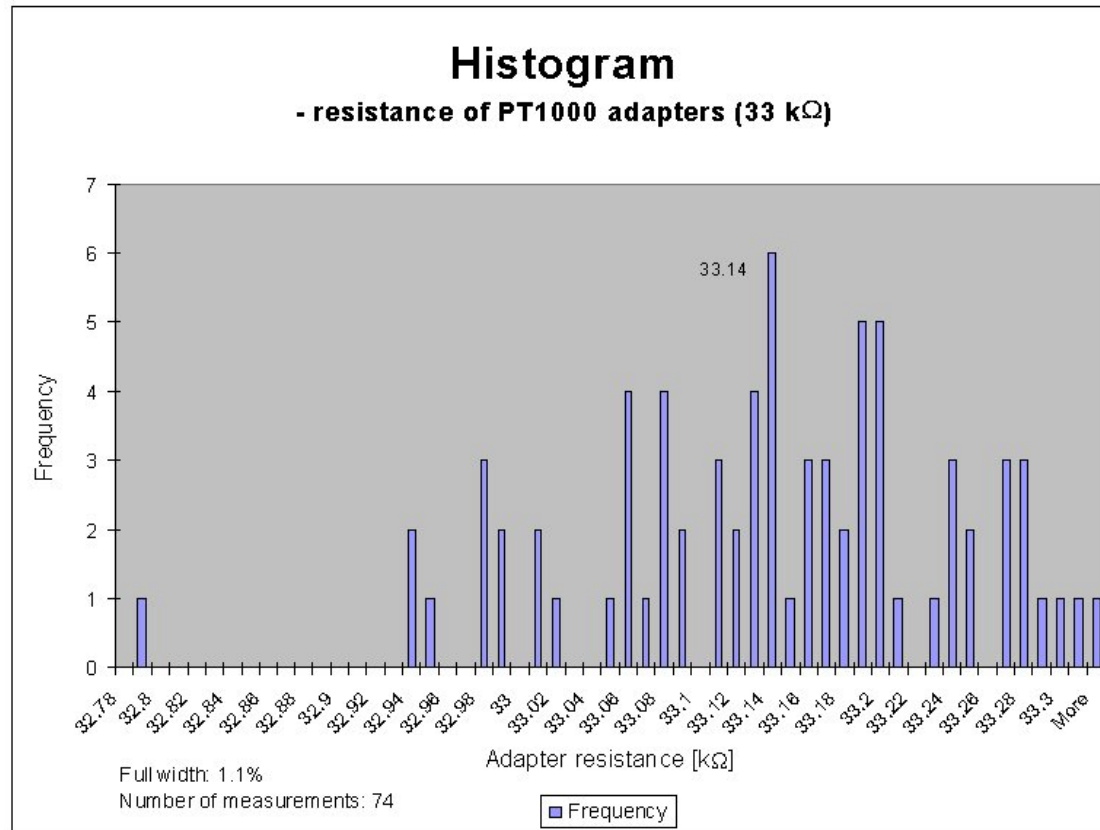
Resistance distribution

- NTC adapters



Resistance distribution

- PT1000 adapters



Stability problems

- 2 out of 6 ELMBs

- Faulty conversions on 4 out of 16 channels
 - The converted values are "jumping".
 - ATLAS DCS group not able to reproduce the error
- 4 out of 16 channels show 0 counts
 - Channels work correctly for a short while when swapping adapters or ELMBs.
 - ATLAS DCS group not able to reproduce the error

Present and future

- Continuous operation and adjustments of cooling system
- Plan to ship the system to Oxford for SCT barrel assembly spring 2002
- Implement flow control in ELMB?