

“ISIS Pulsed Neutron and Muon Source Cryogenic Moderators Systems”

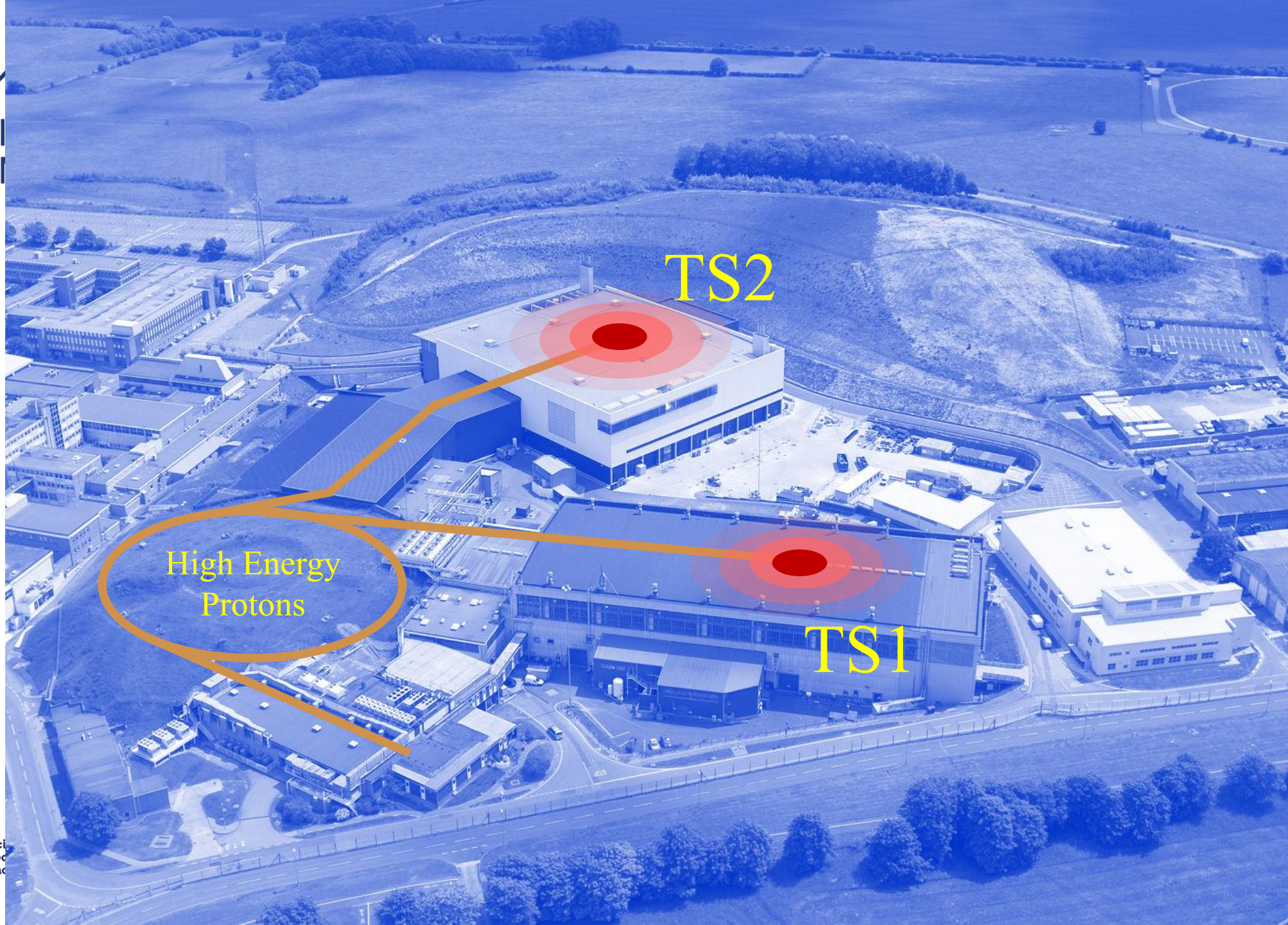
Justin Miles

ISIS Target Operations



ISIS Facility





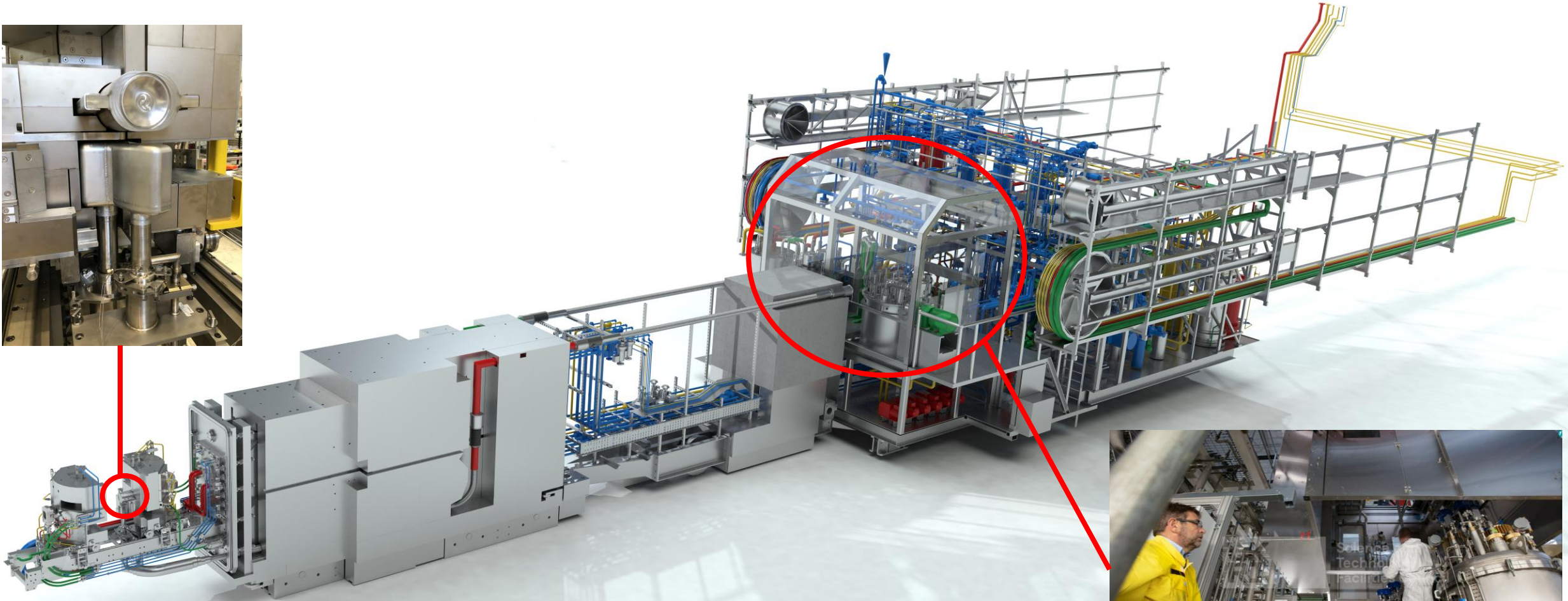
TS2

High Energy
Protons

TS1



TS-1 Systems

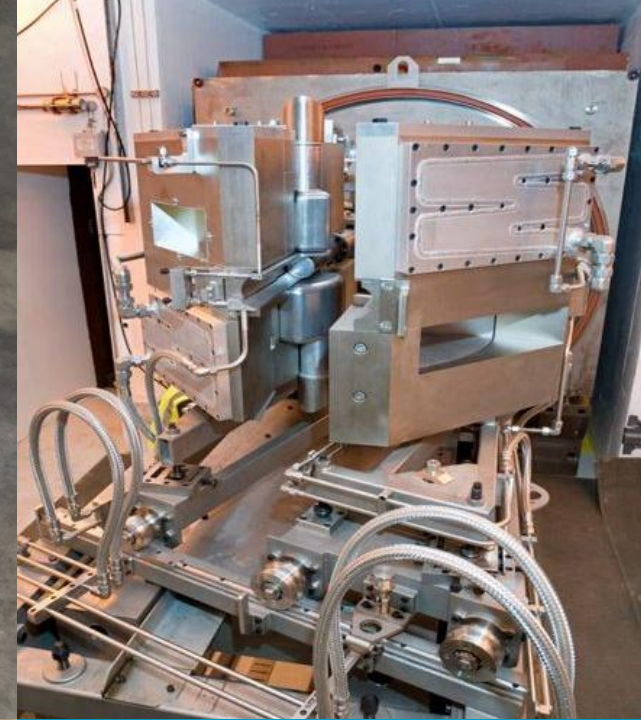




ISIS Neutron and
Muon Source

Overview

- ISIS Target Station 1 (TS1)
 - Two cryogenic moderators
 - One liquid methane at ~110K
 - One liquid hydrogen at ~20K
- ISIS Target Station 2 (TS2)
 - Two cryogenic moderators
 - One solid methane at ~40K
 - One liquid hydrogen at ~17K



Equipment TS1

Methane

Stirling Cryogenerator
(bespoke)

AS Scientific cold box

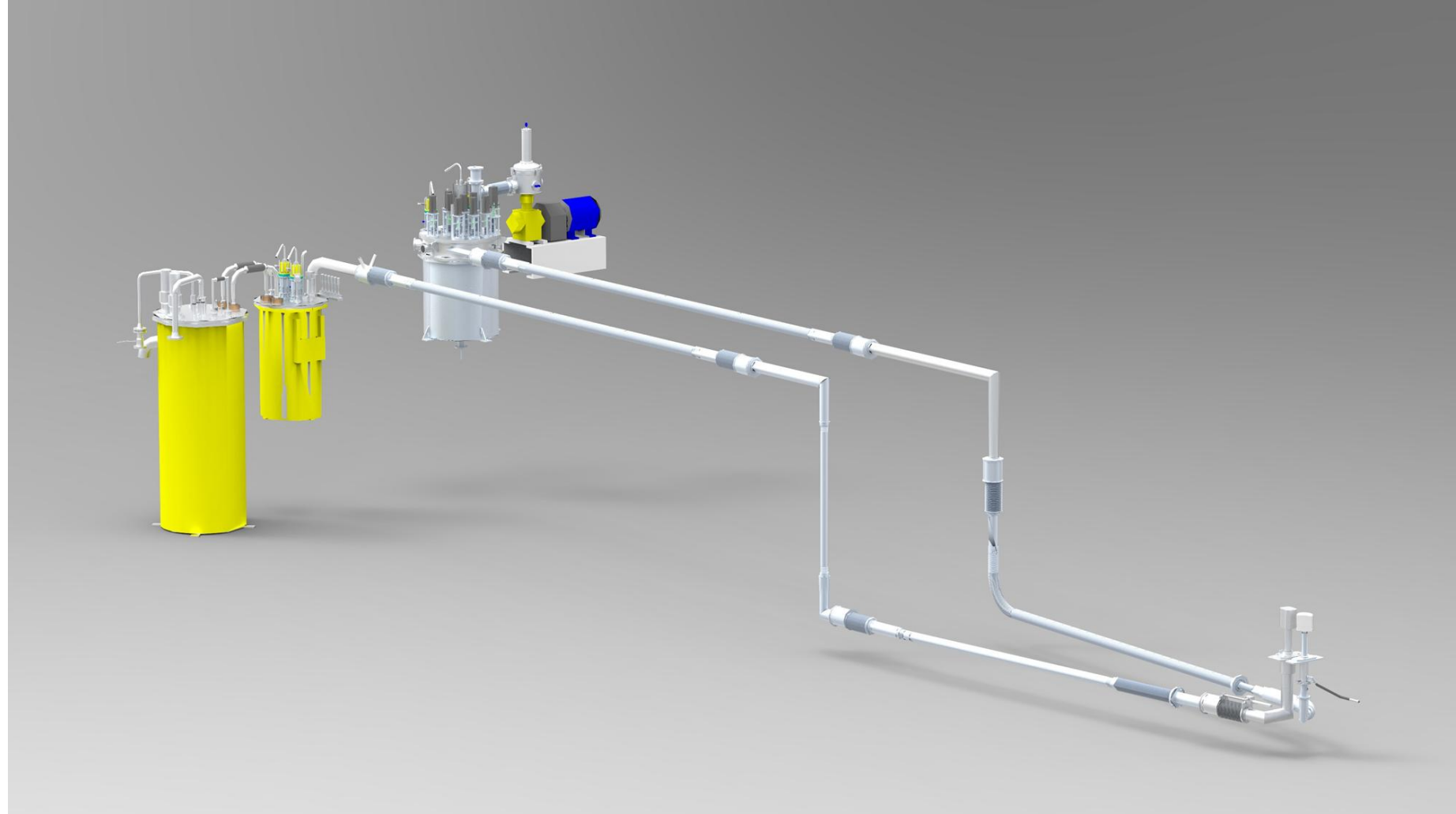
Hydrogen

Kaiser compressor (He)

Linde cold box

AS Scientific cold box

15M Circulator to Moderator



Equipment TS2

Kaiser compressor (He)

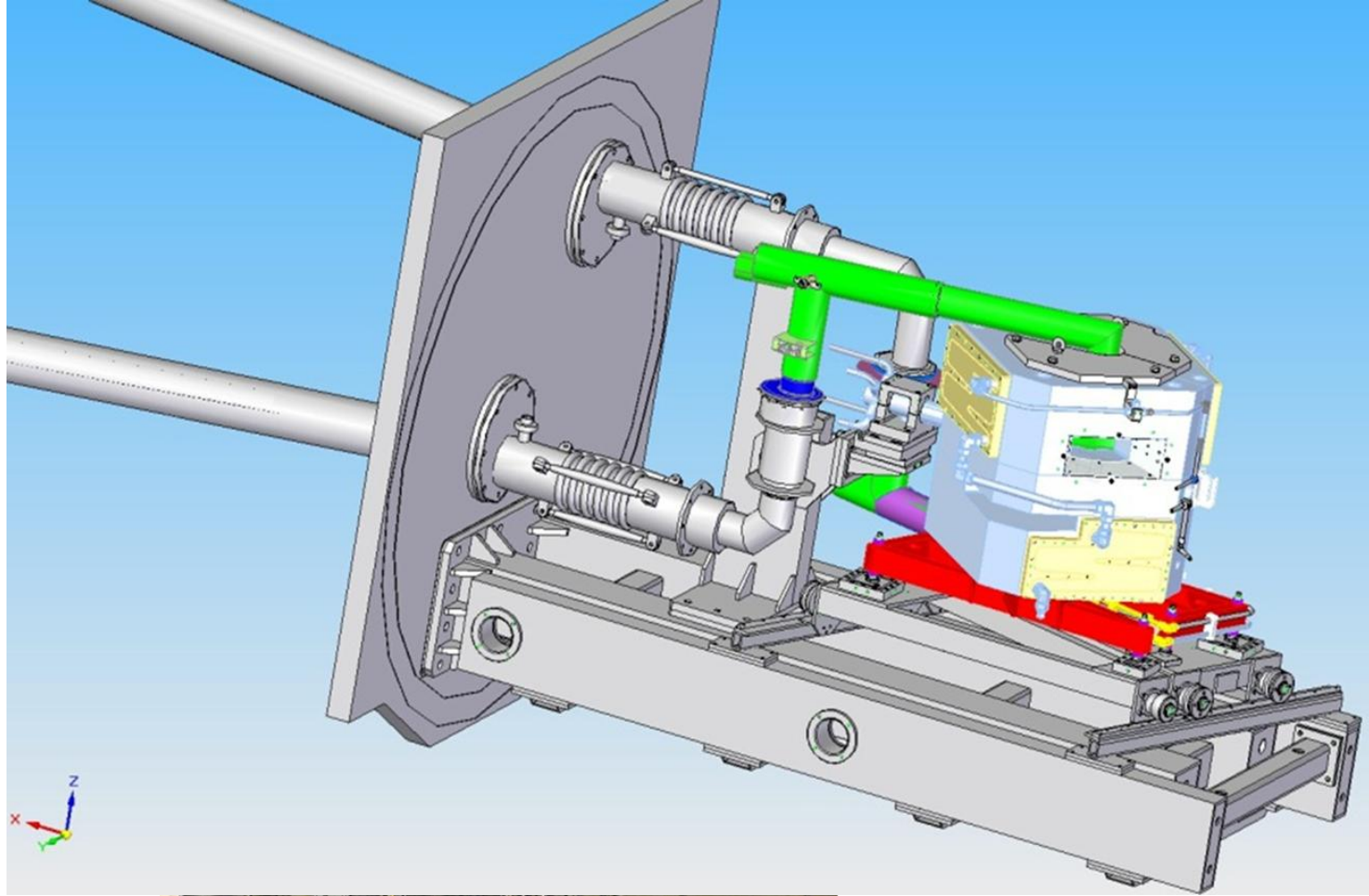
Methane

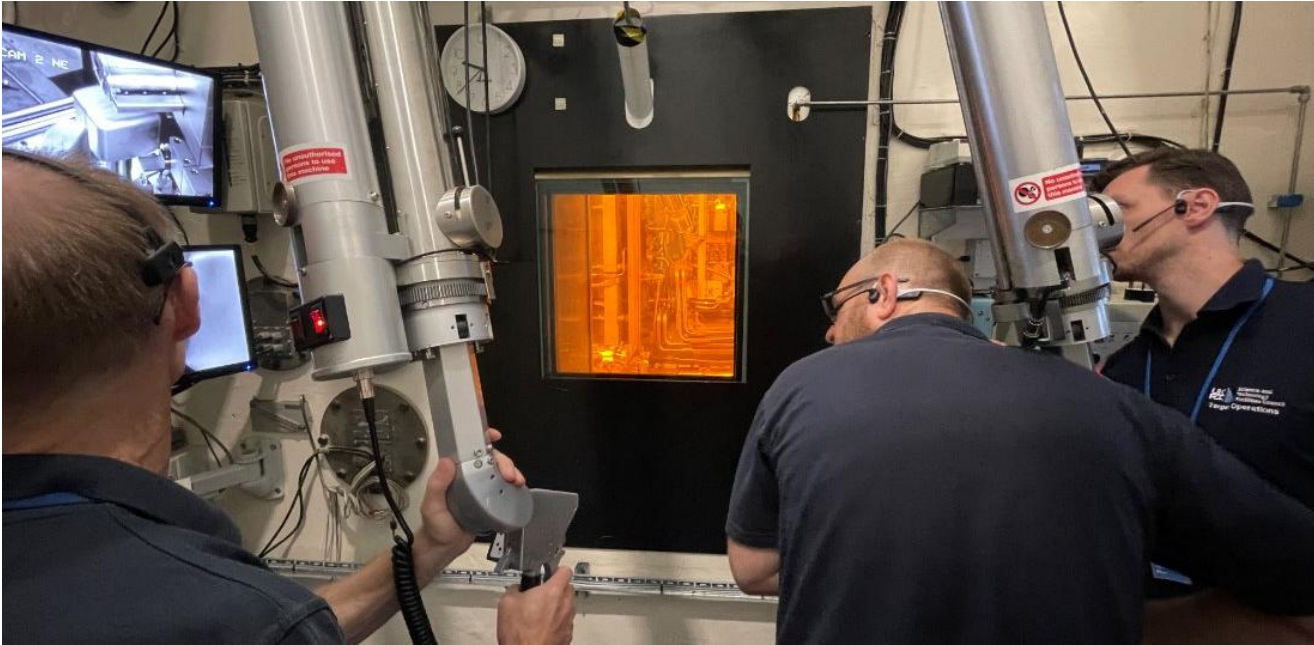
Air Liquide cold box He

Hydrogen

Air Liquide cold box He

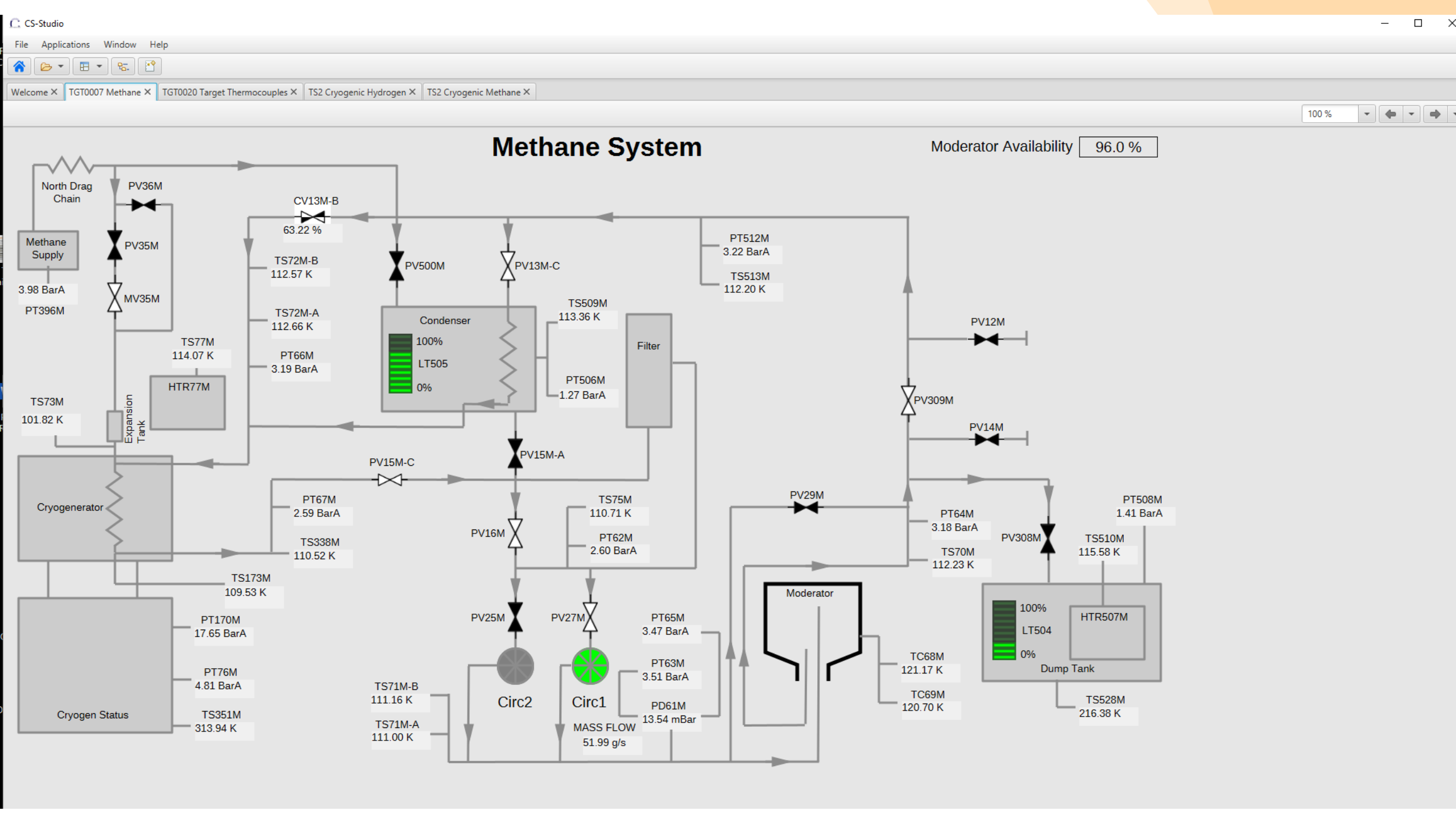
Air Liquide cold box H₂



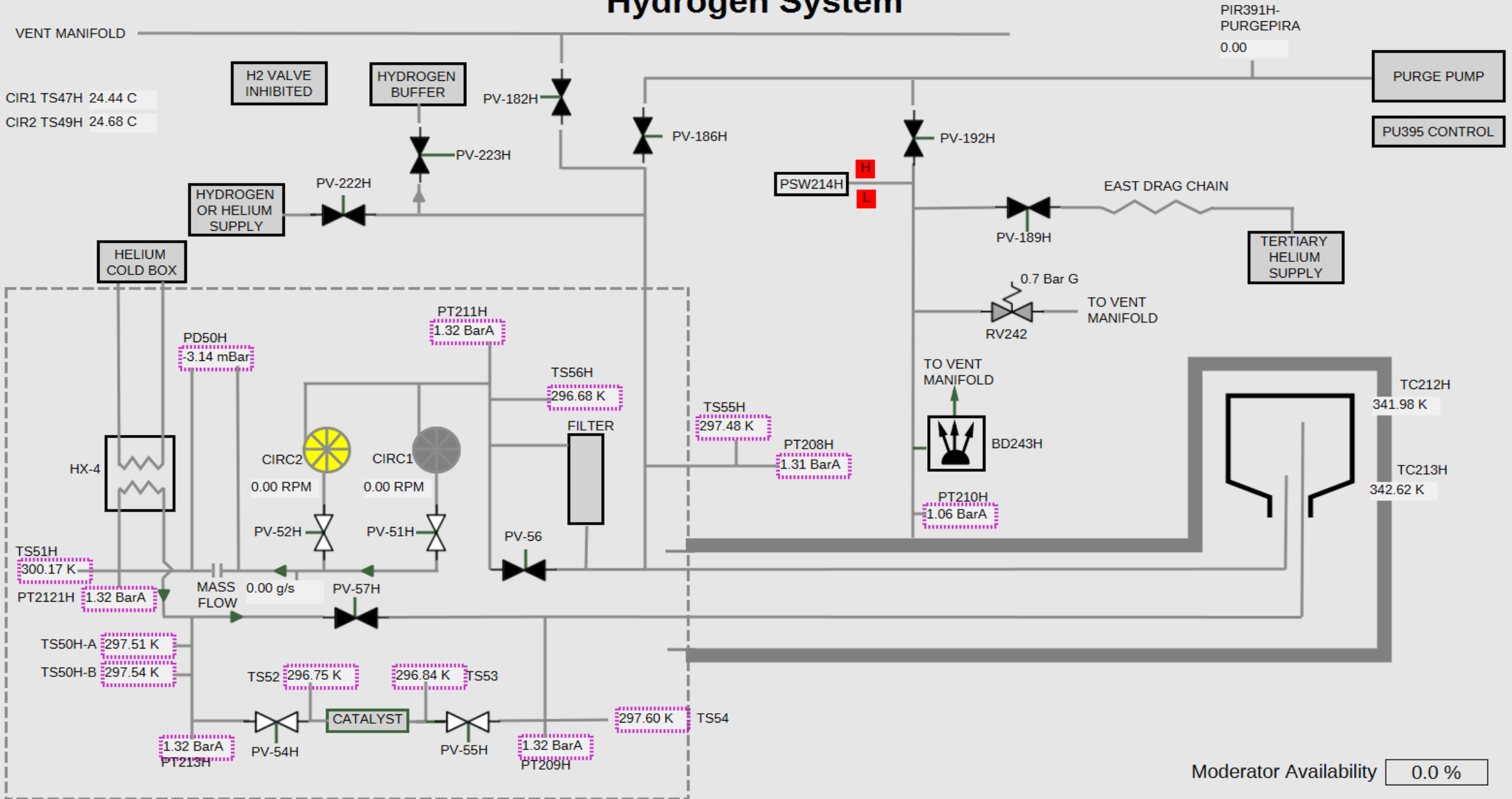


Remote Handling

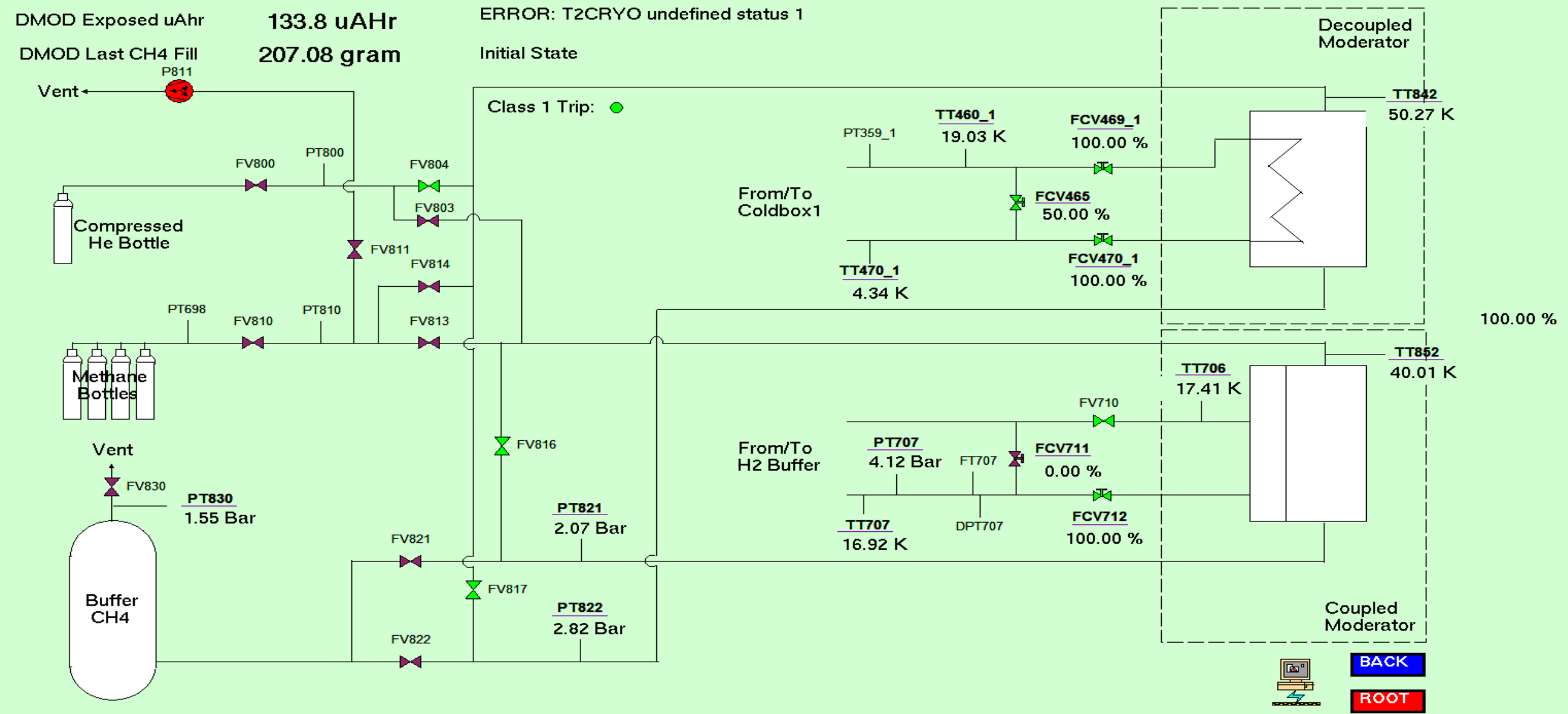




Hydrogen System

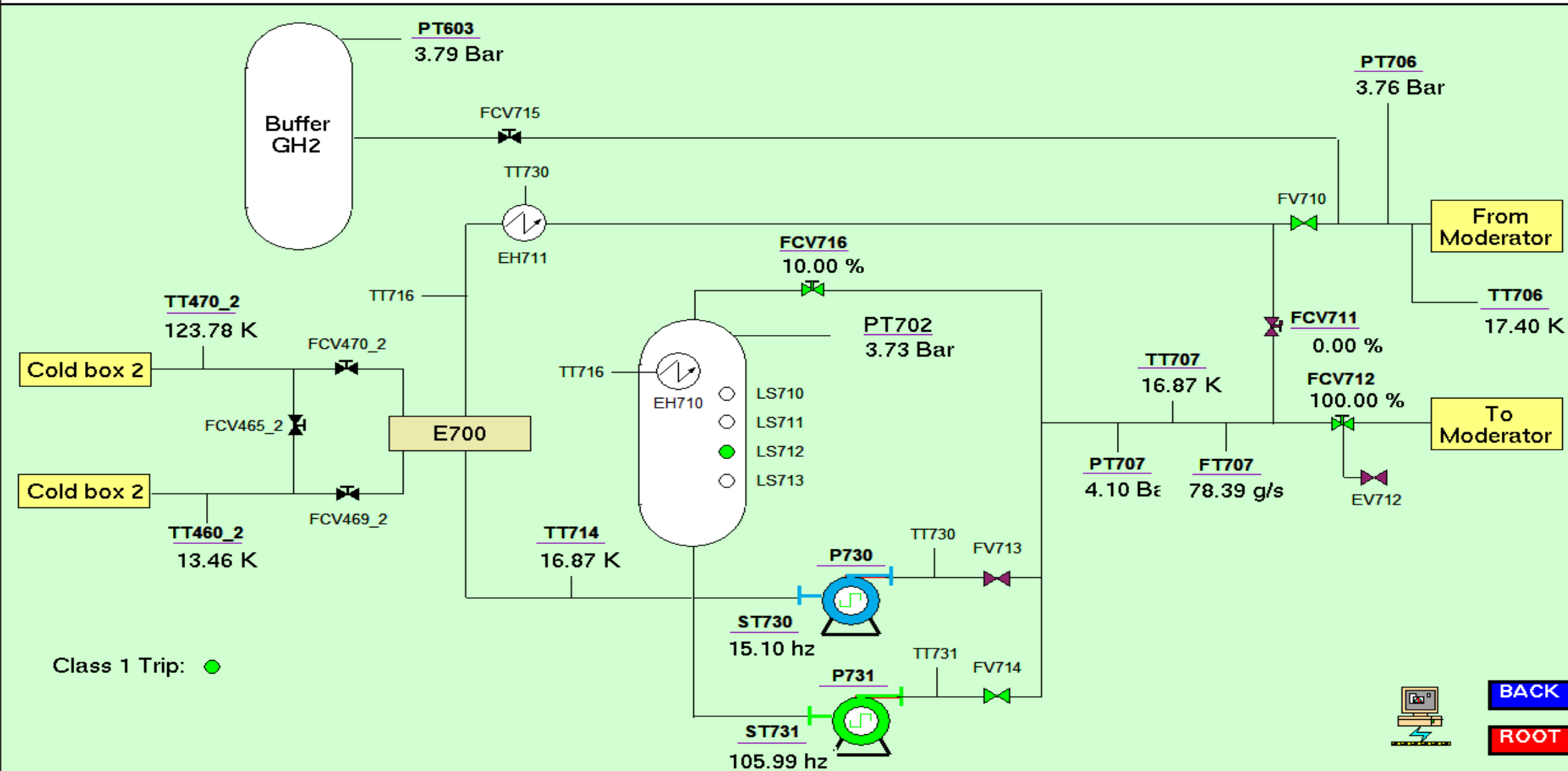


Moderator Availability 0.0 %



BACK

ROOT



BACK

ROOT

Failure modes

Vacuum

Leaks – Relief valves

Water cooling – Tower and Instrument

Compressed Air

Interlocks – Temperature – TBT

Circulators

Pumps

Compressors

Moisture - Contamination

Heat exchangers

Power cuts

Radiation alarms - Tritium

Ventilation

DSEAR

Weather

Shutdowns – Void vessel - Trolley

