

# Infrastructure H6B for new cold box

15<sup>th</sup> November 2024

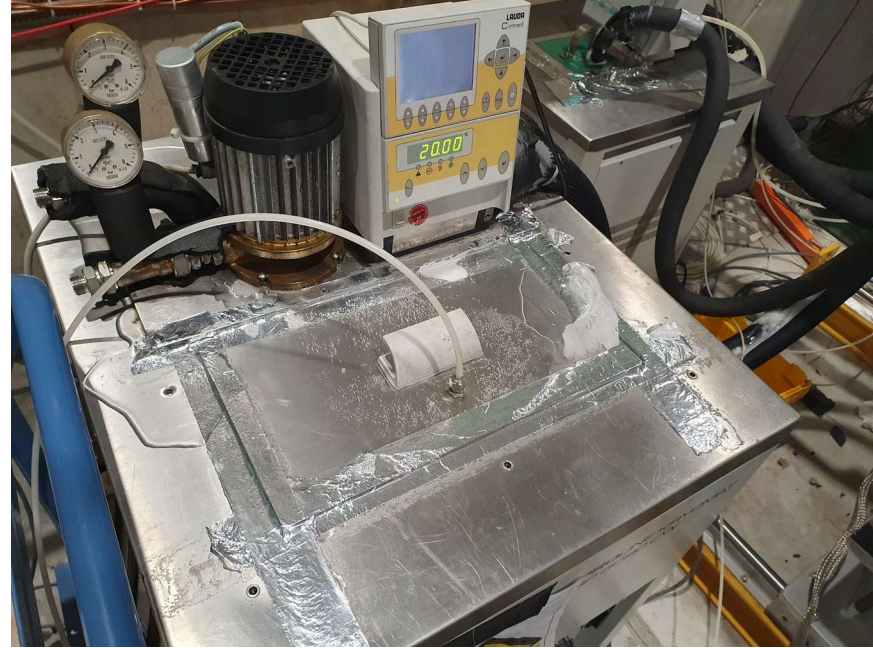
André Rummler

# Overview

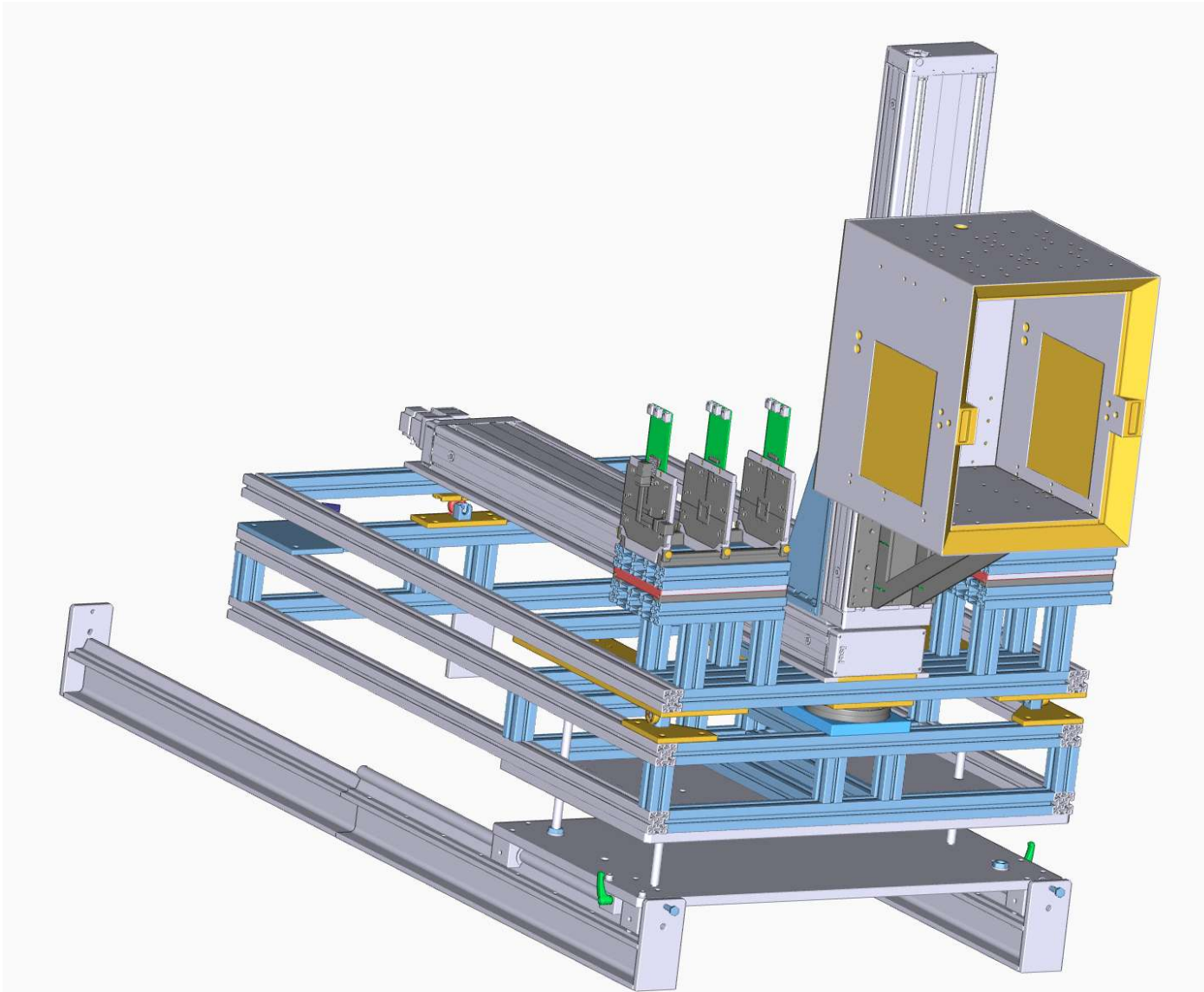
- Disposal of currently accumulated chemicals
- Operation of H6A ACONITE cold box
- Cold box project H6B
  - Demineralised water
  - 400V power
  - Telescope support
  - Area integration
  - Nitrogen
- Safety
  - Ethanol storage
  - Ethanol in circuit
  - RCD/leakage current
  - Mechanical stages
- New freezer for irradiated material

# H6A

- 4 chillers
- 2 chillers running with ethanol:
  - Lauda Kryomat 3090CW
    - Bath flushed with nitrogen
    - ca. 50l
    - In warm state the bath content is gone after ca. 2 days (flushing)
    - Slight water contamination visible
  - Julabo FP-89 HL
    - Used for secondary cooling circuit and nitrogen pre-cooling
    - ca. 15l
    - Needed to replace after 1.5 years due to water contamination



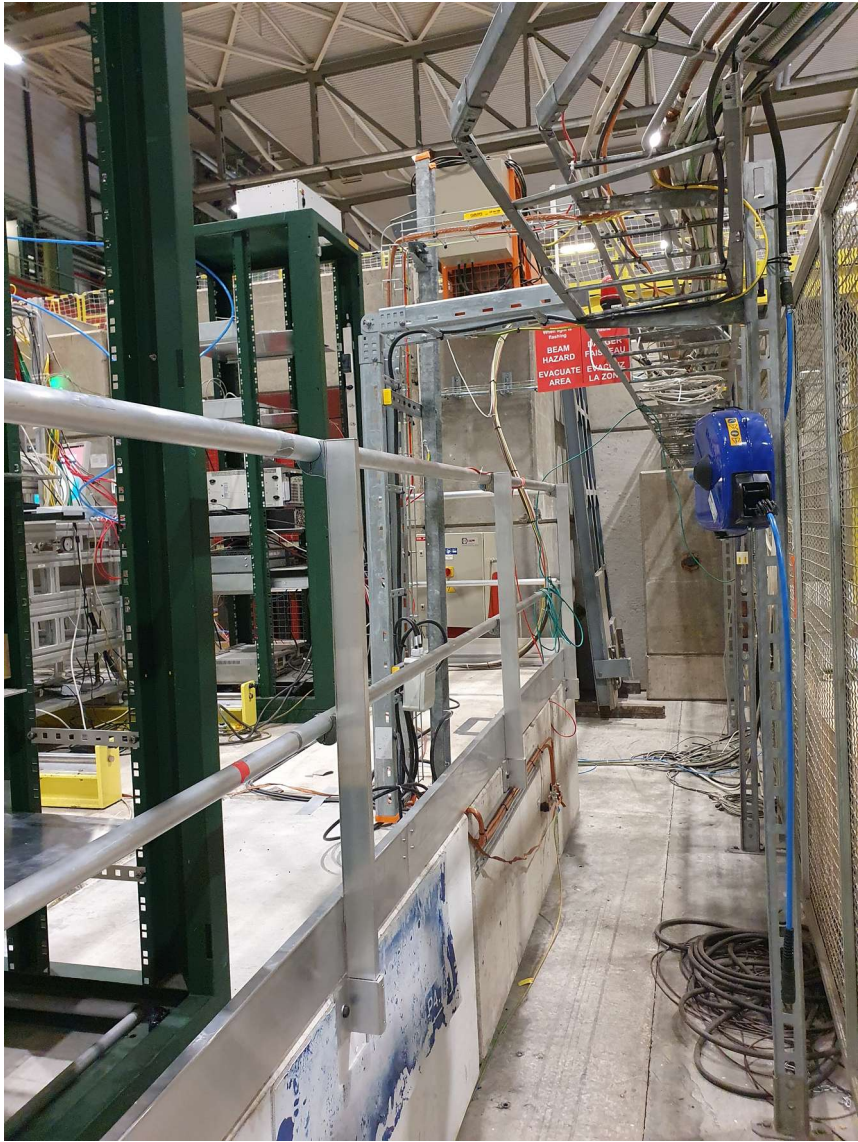
# H6B Cold Box Project Overview (AIDAInnova)



# H6B: current situation



# H6B: current situation



# H6B: mixed water for chiller

- New chiller Huber P815W is water cooled
- Currently located in b180
- Connection either on fence or platform
- Should have ball valves. Standard connection?  
Saw quick connects but can take also G1, G1/2....  
Extra output pair as reserve?
- EN-CV installation? Self made?
- Can provide own flow regulator or can take one from EN-CV.
- Can purchase own flexibles (usually use steel clad EPDM) for final connection
- Plan to install own temperature/flow/pressure monitoring to be integrated in DCS
- Is any monitoring / alarm connection advisable for safety reasons?
- Is any option (inert gas, level monitoring) advisable from safety point of view?



Cooling water connection

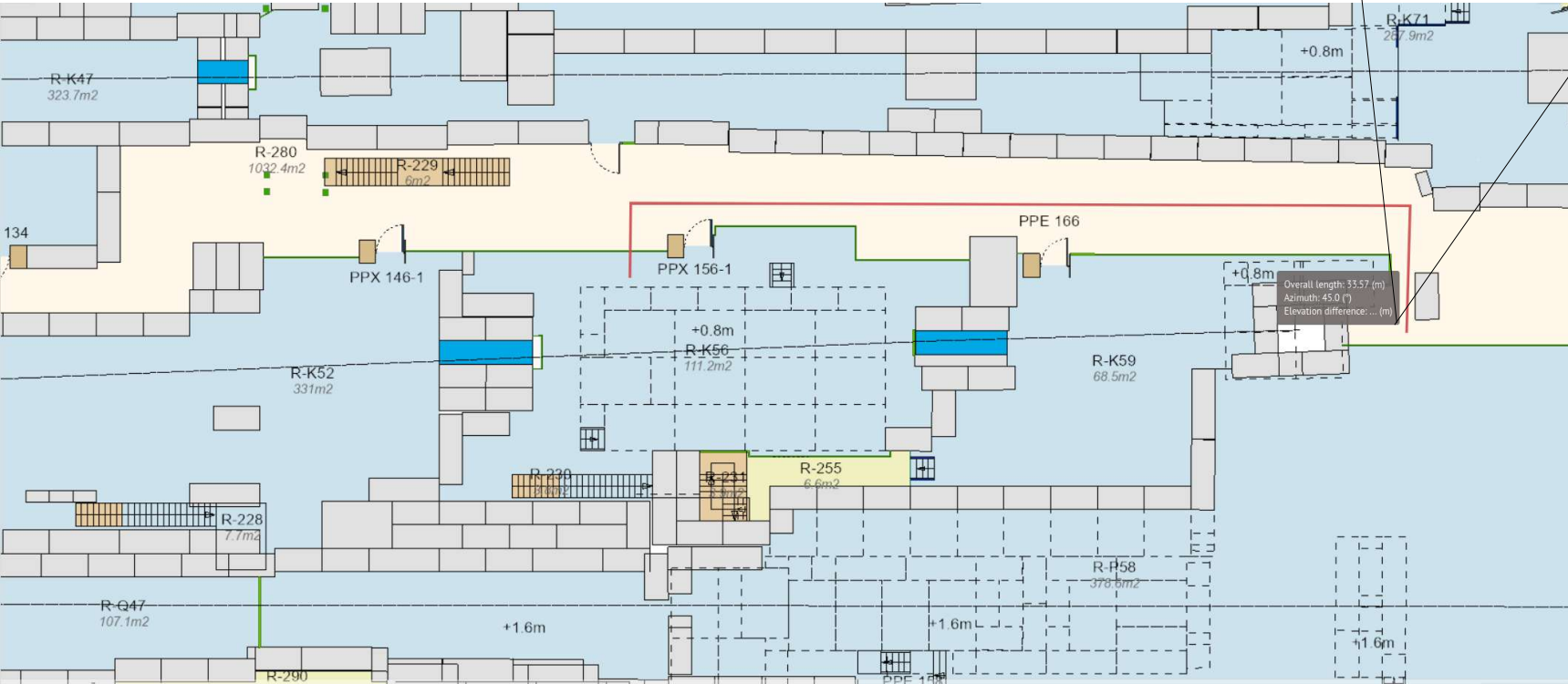
Consumption at water 15°C, flow 0°C  
min. cooling water differential pressure  
max. cooling water pressure

G1/2 male  
130 l/h  
1 bar  
6 bar

Output data valid for: Room temperature 20°C, cooling water inlet 15°C and 1 bar differential pressure between cooling water inlet and outlet. This temperature control unit has been designed to operate with cooling water up to 20°C. As the cooling water temperature increases, drop in the cooling power should be expected, and also an increased cooling water flow rate possible. Materials used in the cooling water circuit include; copper, Stainless steel 1.4401, MS, PA, PPE, PTFE and EPDM. Please use suitable cooling water.

# H6B: mixed water for chiller

- Under discussion: demineralised water circuit used for magnets
- Ca. 40m to the gallery entrance
- Cable trays are existing

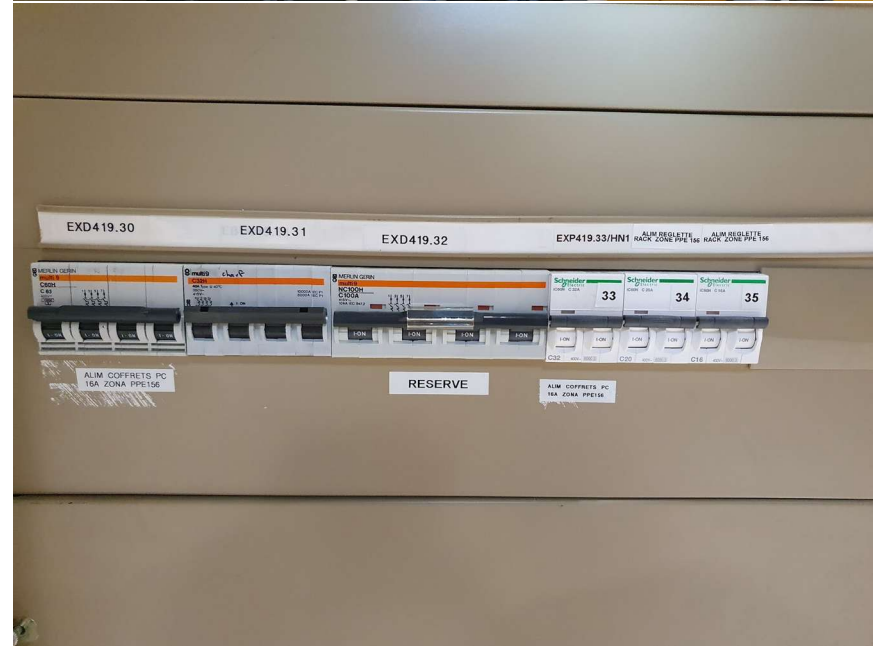




# H6B Power

- Currently only 2 reglettes C13 sockets with local breaker/RCD from 1 phase, breaker 35, EXD419/HN1
- In area:
  - 3 wall boxes from EXD419.33 (C32 1p)
  - 1 wall box from EXD419.30 (C16 3p)
  - EP-RDET: EOD419.05 and EXD419.34
- Need:
  - 16A 3p for chiller
  - Probably separate 16A 1p for stage / general power up
  - Consider: chiller and stage controller both >3.5mA ground leakage and mandatory separate grounding (safety?)
  - Thinking about UPS and/or diesel at least for stage as it has a motor break, probably also equipment
    - Several reserve breakers:  
EXD419.32 C100A 3p and EXD419.31 C32A 3p  
EOD419/HN1  
EAD8/HN1 (from dismantled ATLAS installation)

# H6B Power



# Waste/Disposal

- Condensate water will likely be an ongoing issue in both(?) areas
- In case of cleaning/water contamination: ethanol disposal



# Mechanical Integration

- Cable trays potentially in the way
- Concrete block / fence?



# Safety

- Ethanol storage → Cabinet? Where? Together with freezer?
- Power
  - Special compensated RCD / ground leakage monitoring?
  - AUL?
- Emergency stop buttons for stages?
  - Heavy duty CNC stages
- Ethanol in circuit
  - Monitoring?
  - Gas sensor?

