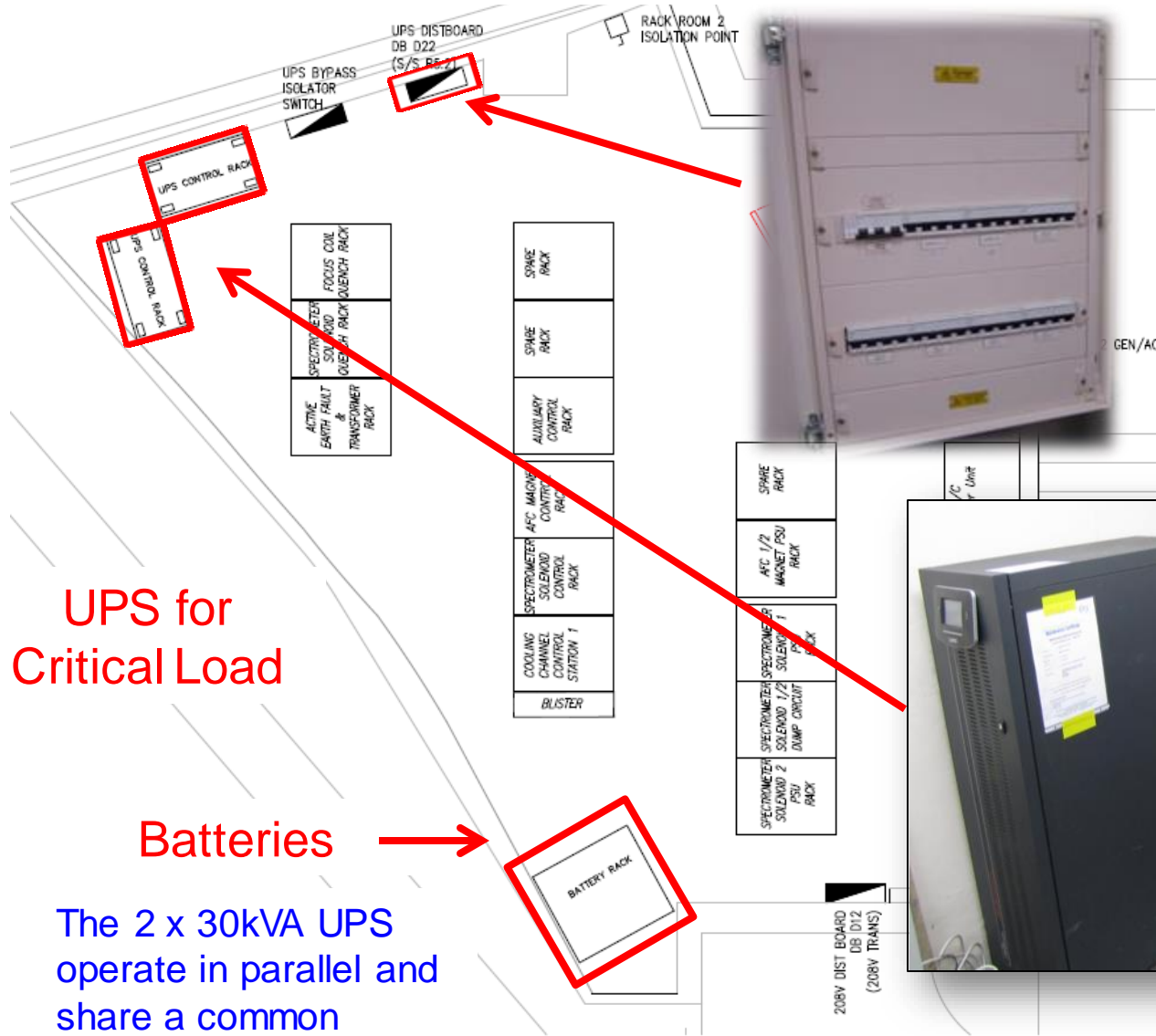


Electrical & Control

Rack Room 2 - UPS Inverter and Batteries



Two 30kVA UPS (inverter) have been installed and support Control, Power Supplies, Vacuum and Instrumentation in RR2.



The 2 x 30kVA UPS operate in parallel and share a common battery pack.

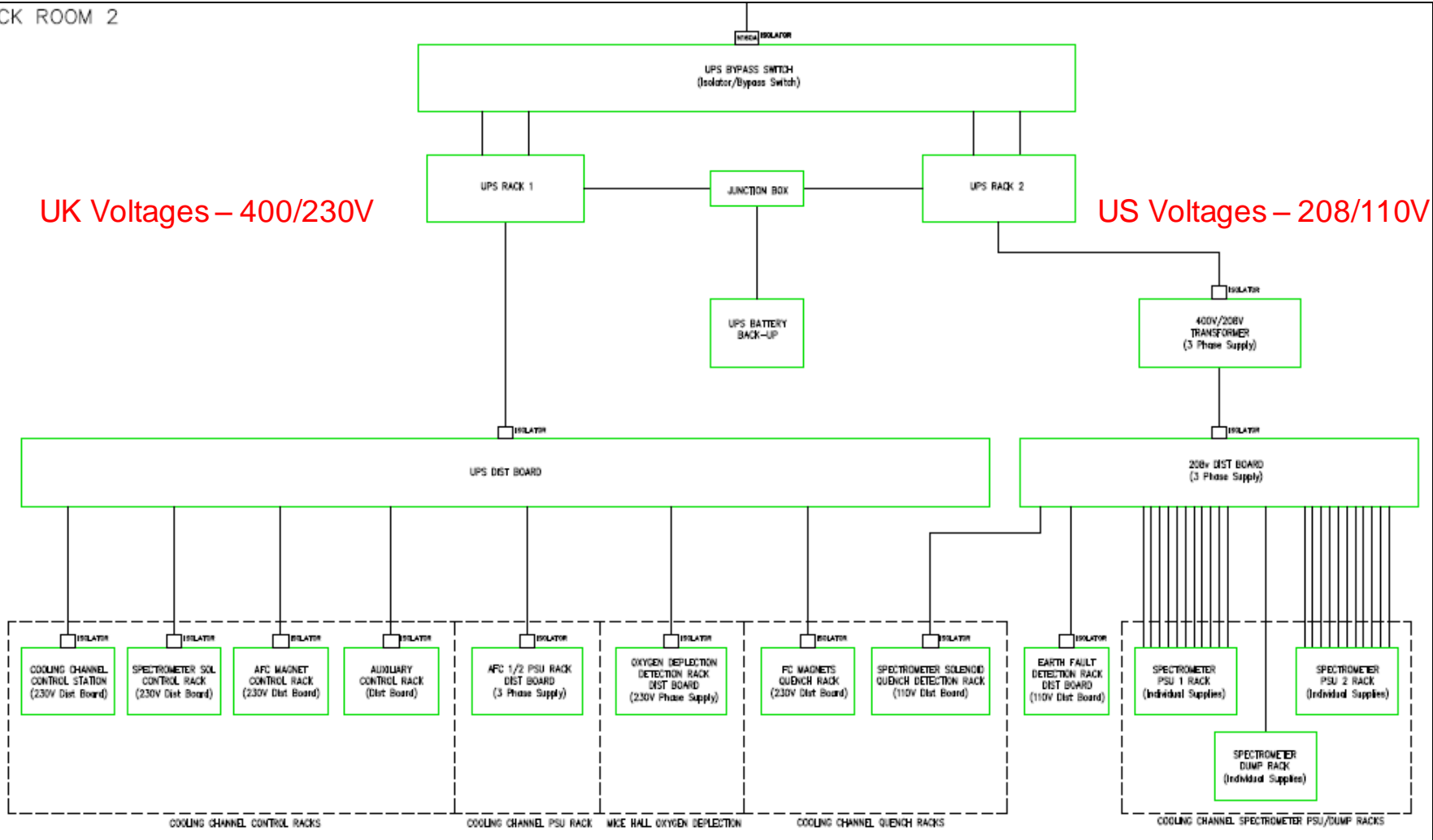
Rack Room 2 – UPS Configuration



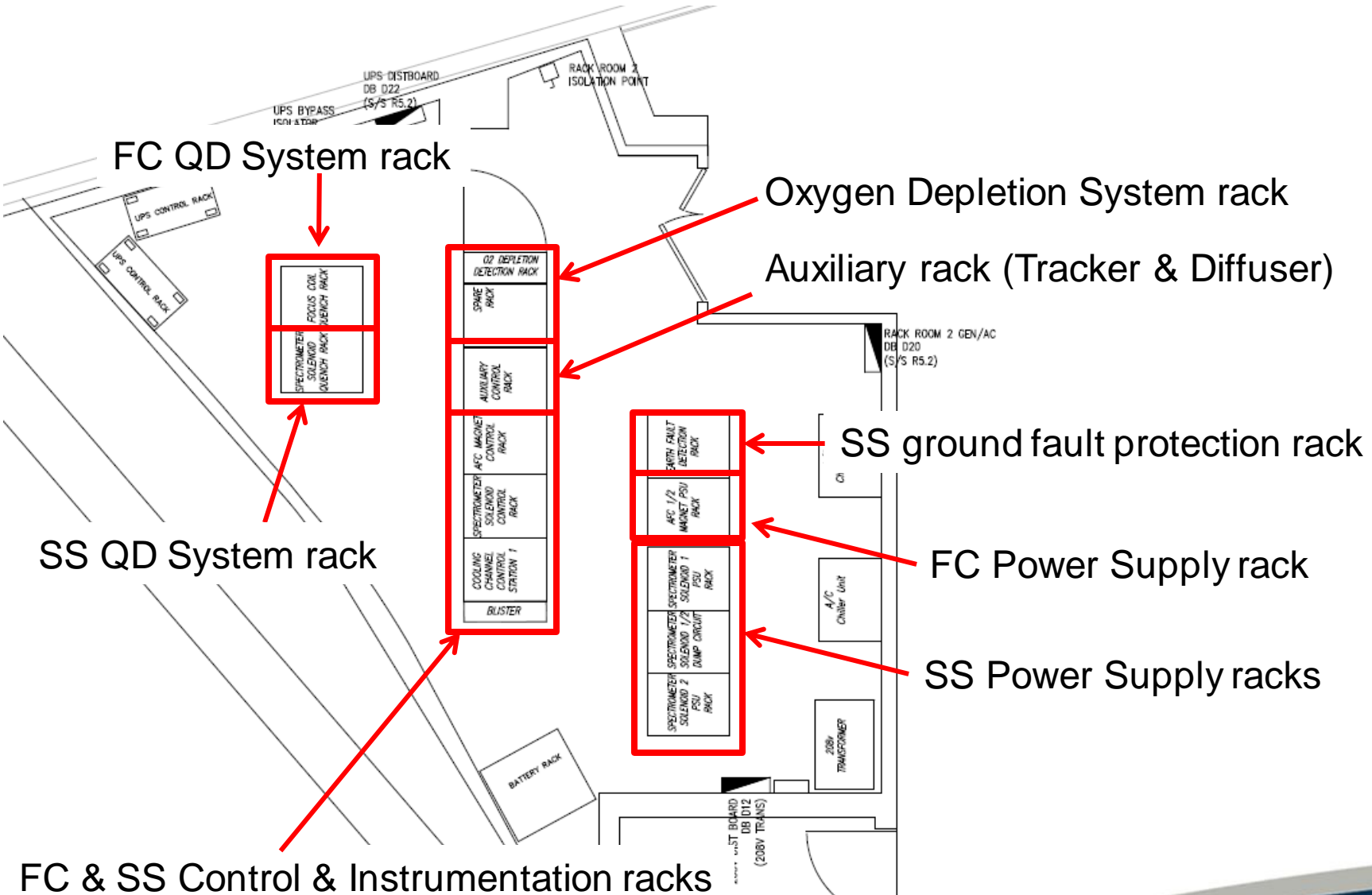
RACK ROOM 2

UK Voltages – 400/230V

US Voltages – 208/110V



RR2 Layout – Rack allocation



FC & SS Instrumentation & Control Racks

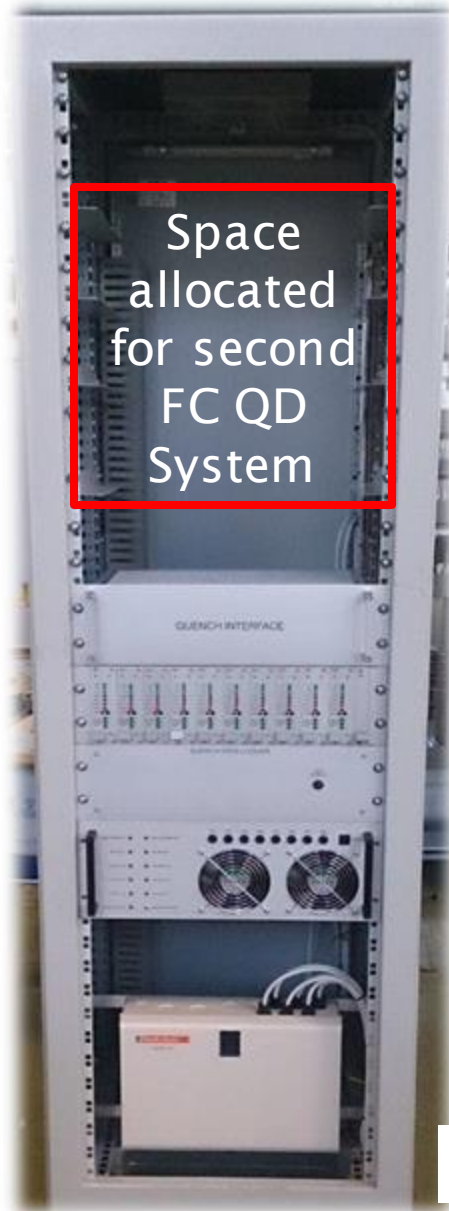


Racks installed in RR2

- All known Instrumentation cables have been installed and terminated
- Commissioning of instrumentation is well advanced.
- All magnet temperature sensors checked, some sensor issues have been identified on the SS magnets.
- Temperature curves programmed for FC.
- Temperature curves for SS still to be finalised – re-location of cold heads has caused delays (hopefully done this week).
- Helium level sensors measured and checked for SS and FC.
- Anti-icing heater commissioned for FC.
- Fans for anti-icing on SS need to be fitted on magnet and terminated.
- Pressure heaters commissioned for FC.
- Pre-cool heaters for SS need to be commissioned?
- Main pressure vessel regulation heaters needs commissioning.



QD System & Ground Fault Protection Racks



- Ground fault protection (GFP) rack is being assembled and will be installed this week.
- FermiLab are providing the Ground fault protection crates – delivery to be confirmed.
- GFP will only be used on the SS magnets as it is not compatible with the FC configuration.
- Interlock cables for GFP will be installed this week.
- SS QD system rack has been installed in RR2.
- FC QD system rack will be installed this week.
- Interlock cables between SS QD system and controls rack will be installed this week.
- SS QD system voltage tap cables need to be installed between magnet and RR2, only one set of cables currently available.
- FC QD system voltage tap cable is installed but needs terminating.
- A full systems check is required on both QD systems before powering magnets.

FC - QD system rack

FC & SS Power Converter Racks

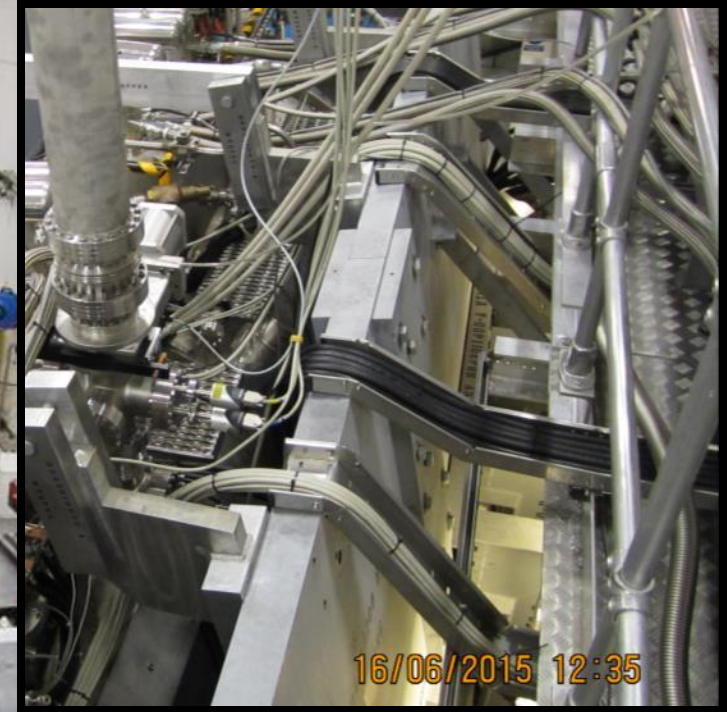


- All DC magnet cables installed and terminated in racks / DC link boxes (FC connection details to be confirmed).
- All controls cables are installed and terminated.
- Water cooling pipes have been installed for absorbers.
- A fault with the Chiller / air blast unit on roof will open solenoid valves to switch feed to towns water. (valves need to be fitted)
- An interlock cable from the roof chiller to control system needs to be installed and terminated.
- SS power supplies have been commissioned with control system into short circuits in link boxes.
- SS racks checked for thermal stability with full heat run over 24 hours.
- It is planned to commission the FC power supply this week.
- There is a faulty diode(s) in an SS absorber tray – currently sourcing replacement diodes.



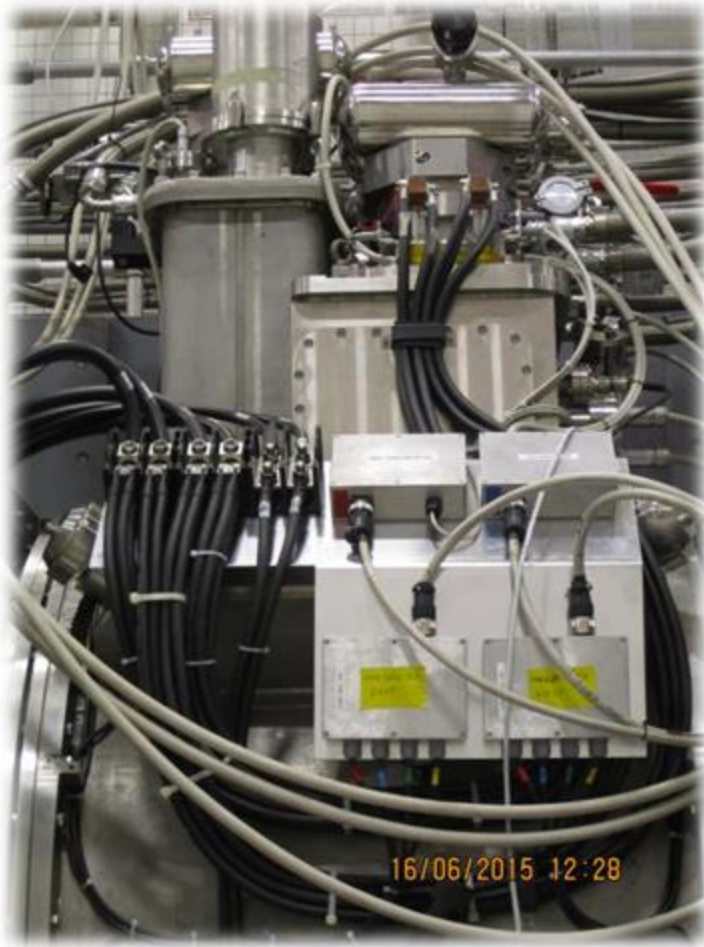
Racks installed in RR2

DC and Instrumentation cables



All DC magnet cables and instrumentation cables have been installed. Cable management and strain relief has been carefully implemented. Additional strain relief required for cold head terminations.

DC magnet and Control Cables for SS & FC



- 5 DC link boxes have been installed in MICE Hall.
- 240mm² and 70mm² cables have been installed from RR2 to link boxes.
- 95mm² and 70mm² cables have been installed between DC link boxes and magnet local termination point.
- DC link boxes will enable the FC and SS to be changed from Solenoid to Flip mode and vice versa.
- All control interfaces for FC have been relocated to the top of the North side for convenient access.
- Cables have been installed and terminated for the FC Load cells and will be commissioned this week.
- 70mm² earth cables have been installed between each magnet and the main earth busbar located on South wall.
- Only the FC has a local earth connection – an earth is terminated in the dump resistors.

FC – DC magnet and instrumentation cables

Auxiliary (Diffuser and Tracker) Control Rack



- The tracker control rack has been installed in RR2 to allow ease of access and a short link to the main control rack. (Canbus)
- 2 Control crates have been manufactured for housing in RR2 rack and containing the Canbus modules.
 - 1 crate is finished, tested and in position in RR2.
 - The other needs a few small modifications, but can only be completed once tracker rack in Hall is switch off.
- There are some cable terminations still required in Hall.
- Rack modification required to control AC power to the WIENER cryostat – fit contactors.
- Commission full system and verify tracker can be controlled from RR2.

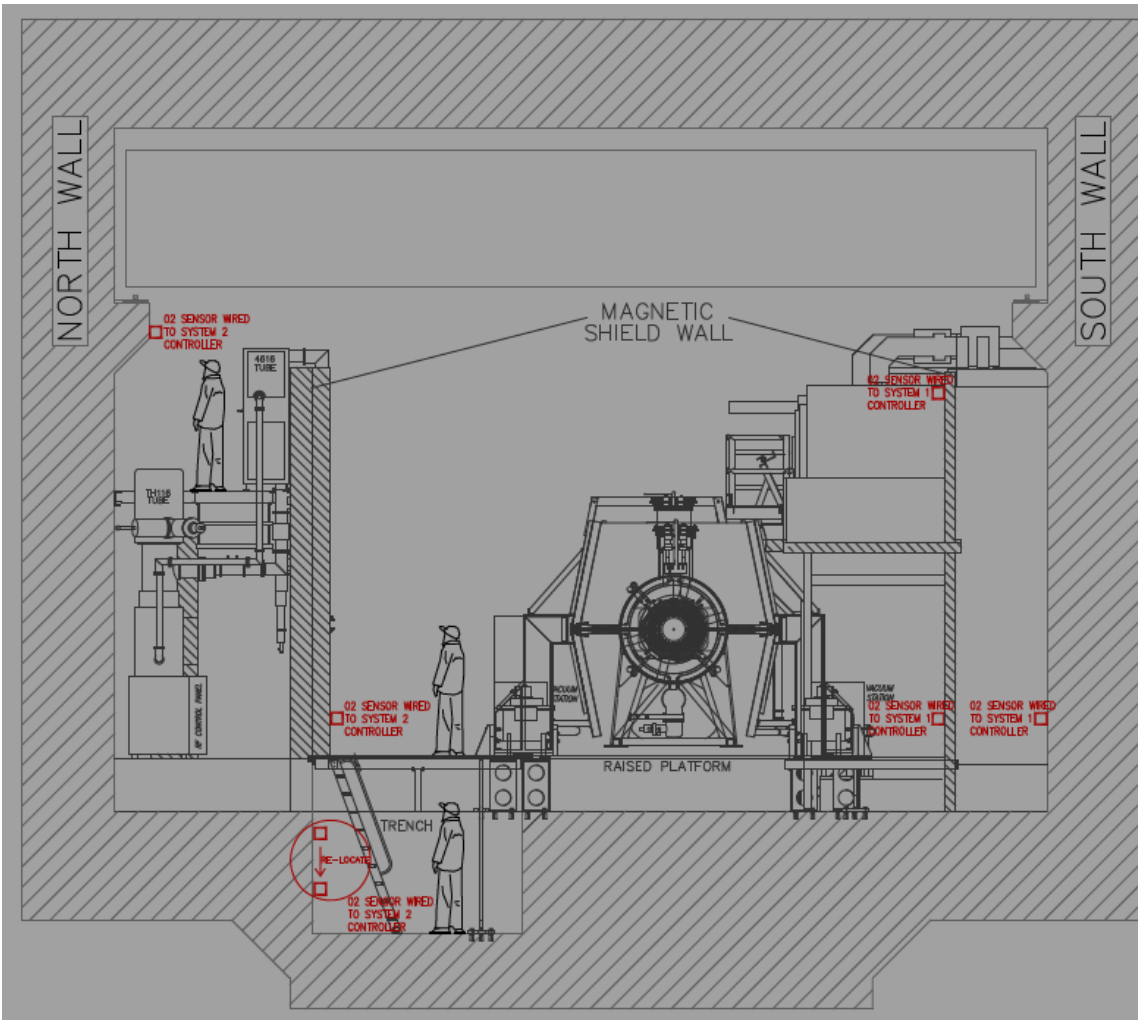
Compressor and Vacuum Rack



- Vacuum / compressor rack has been installed and commissioned in North / West corner
- Extra shut off valves have been requested for the SS turbo pumps and will need to be controlled.
- Control philosophy for backing line scroll pumps to be updated.
- Hard wired vacuum status taken to RR2, installed, but needs final terminations and commissioning.
- RS232 controls interface currently being commissioned.



Oxygen Depletion System



- Additional O₂ sensors are to be installed at agreed locations.
- A second controller is being installed to interface with additional sensors.
- All equipment has been purchased and delivered.
- System upgrade has been delayed due to low priority.
- Cable management in MICE hall is being installed, cables installation will hopefully be completed before August 2015.
- ODS rack under construction, will be available for installation in 2 weeks.
- System will then need commissioning and sign off.

Position of new and existing O₂ sensors

Questions?