



# Electrical & Control CM40 Daresbury Laboratory





# CM40 Electrical Infrastructure Update

## RRM2 Latest

- Latest on Installation Progress
- Rack Allocations

## Racks Under Construction/Test

- FC Controls/ Mag PSU Rack Install
- SS Mag Power Supply Racks
- SS Dump Tray Rack

## Mice Hall Infrastructure

- Magnet Cable Termination Boxes
- Main Cable tray Install
- Tracker & Diffuser
- Compressor Electrical Services
- Vacuum
- PPS System / ODD system



# Rack Room 2 - UPS Inverter and Batteries

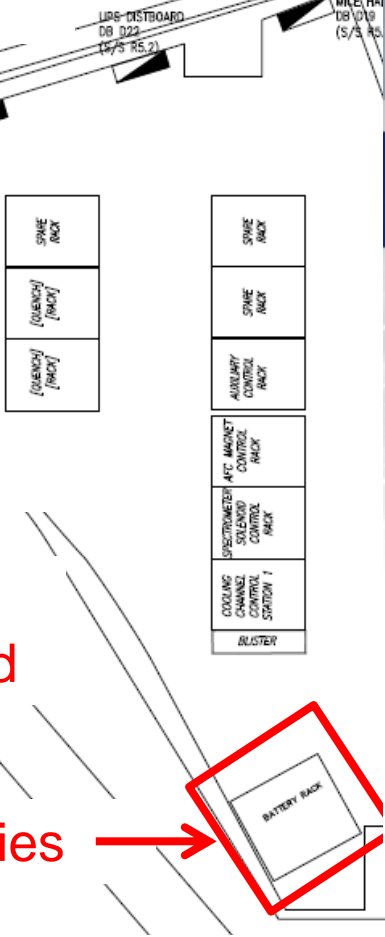


Inverter 1

Inverter 2

UPS for  
Critical Load

Batteries



Same batteries will be used for both UPS.  
Autonomy approx. 30 mins

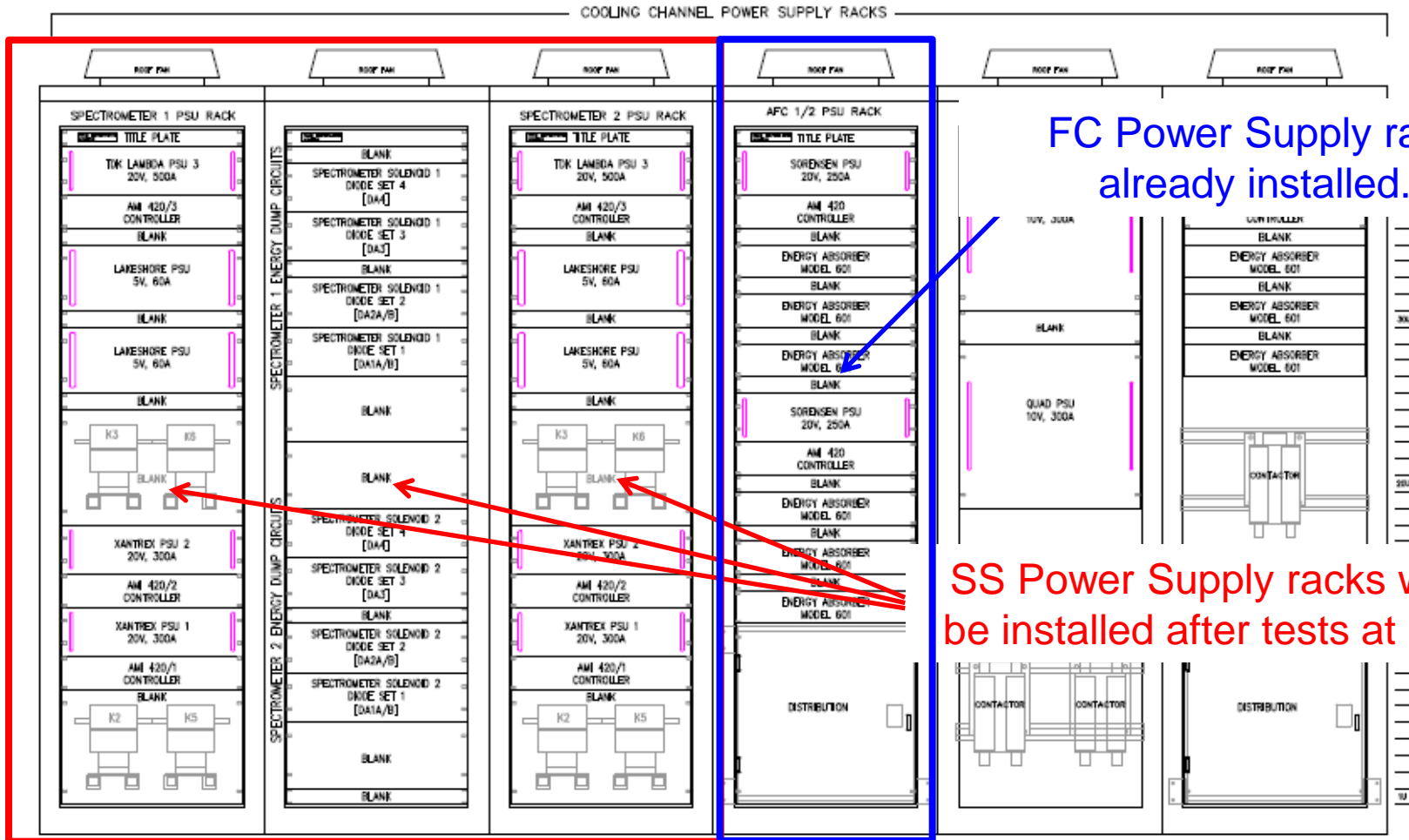


A second UPS (inverter) will be procured to support the SS racks  
A position has been allocated and a quote received





# FC & SS Power Converter Rack



# FC & SS Power Converter Rack



FC Power Supply rack  
already installed.

- The Cooling channel controls rack will be installed early Nov.
- Inter-connecting controls cables can then be installed / terminated
- This rack has already been fully tested at DL.
- Instrumentation cables need to be installed between RR2 and FC magnet.

# FC Power Converter Rack



FC instrumentation rack  
already installed.



- The Cooling channel controls rack will be installed early Nov.
- Inter-connecting controls cables can then be installed / terminated
- This rack has already been fully tested at DL.
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# SS Power Supply Racks

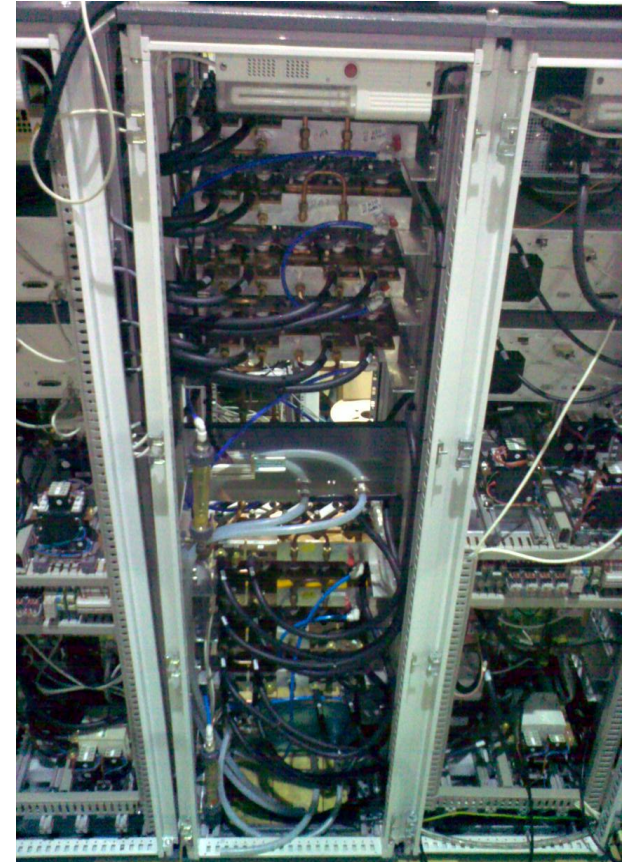


- Thermal testing to be completed at DL this week
- Installed in RR2 by end of October
- AC supplies and water cooling required in RR2
- Cable interconnections – need to be installed and terminated

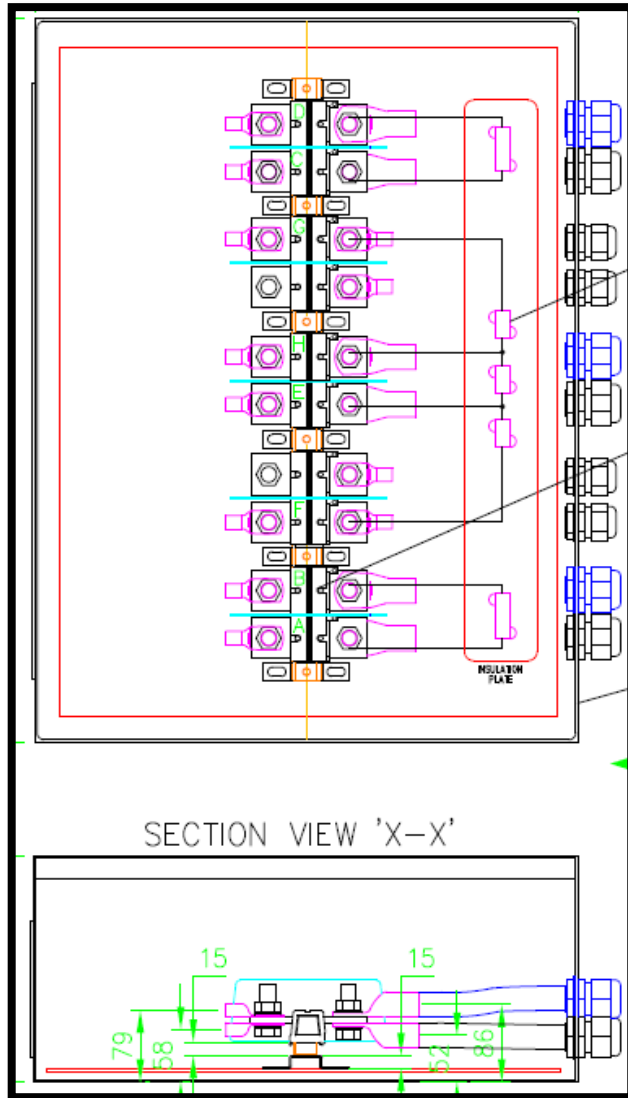
# SS Energy Absorber Rack



- Water connections changed from imperial to metric
- Insulation enhanced - maintaining thermal conductivity and electrical isolation
- Each diode module tested thermally to ensure optimum torque applied
- Water cooling arrangements agreed and installation initiated in RR2
- The water cooling will be maintained for a minimum of 1 hour during a loss of supply
- This will ensure the energy stored in the super conducting magnets is safely discharged.



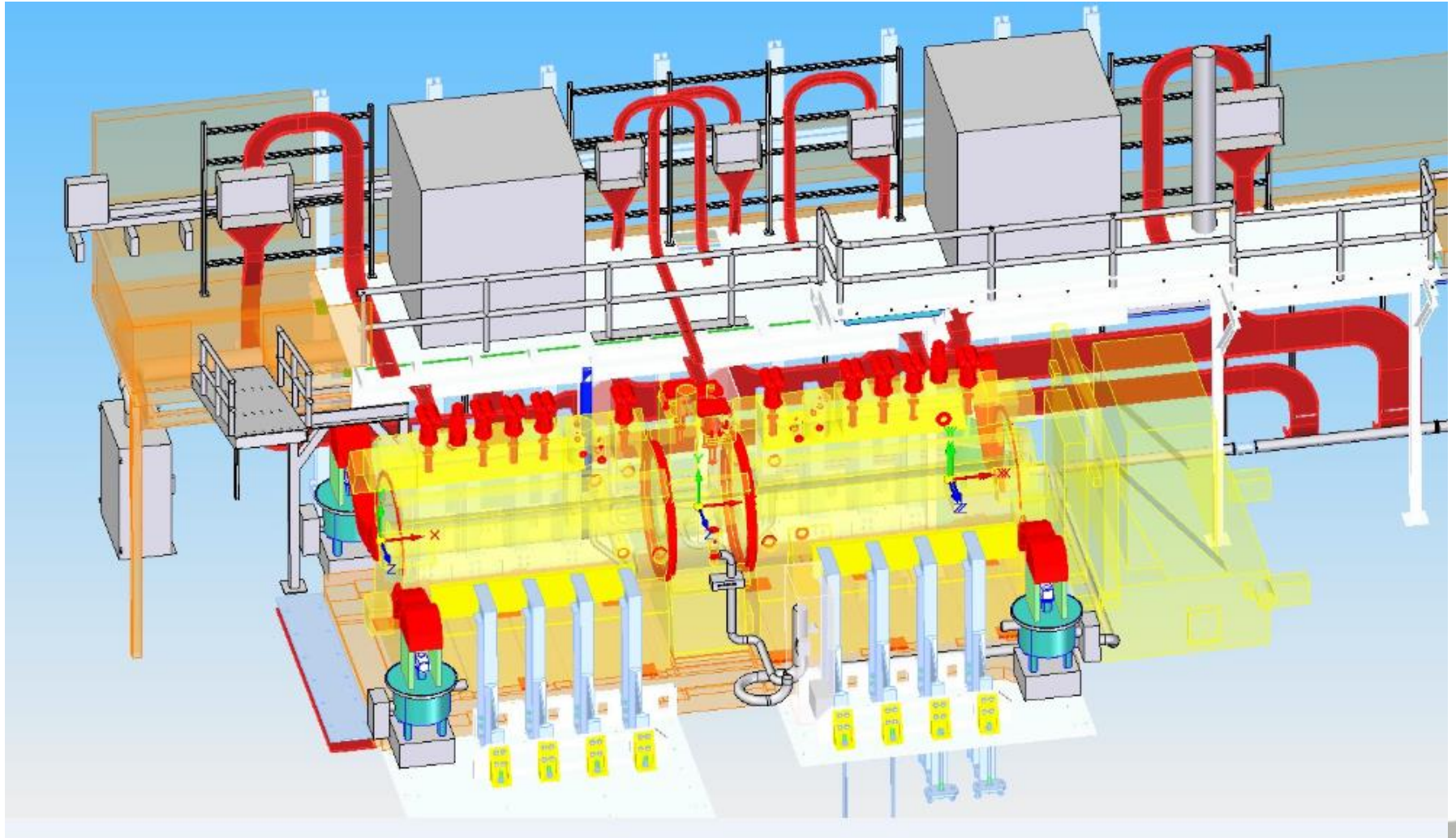
# DC magnet and Control Cables for SS & FC



DC Link Box

- DC link boxes designed and delivered to RAL.
- Currently installing DC link boxes / cable management on upper South mezzanine.
- There are 14 x 240mm<sup>2</sup> and 4 x 70mm<sup>2</sup> cables from RR2 to link boxes to install.
- DC cable installation will require 4 staff due to length and weight. Possibly completed before January.
- Controls cabling needs to be installed from RR2 to magnets - approx. 40 multicore cables with connectors.
- Estimated to be completion including terminations by end of February.
- Final dressing of cable / cable management installation after PRY installed is approx. 3 weeks.

# Cable management for DC cables and link boxes for SS & FC







# Tracker Install For November

Tracker 1 Rack to be Re-Used, expanded to cover two Cryostats 1 & 2

Tracker 2 Rack Installed in Hall, but will use Tracker control crate destined for RRM2.

All control will be via VME interface in temporary rack as for single Cryostat tests.

All Cryostat interlocks will be cabled locally in the Mice Hall & available for tests, as envisaged for final install.

After Hall tests on all four Cryostats, control crates will be relocated to RRM2.

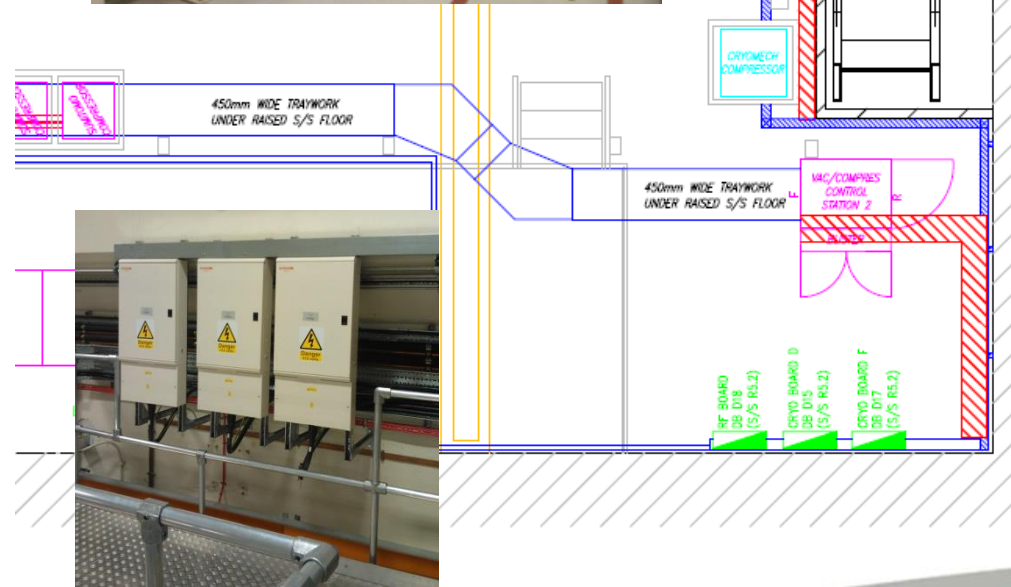
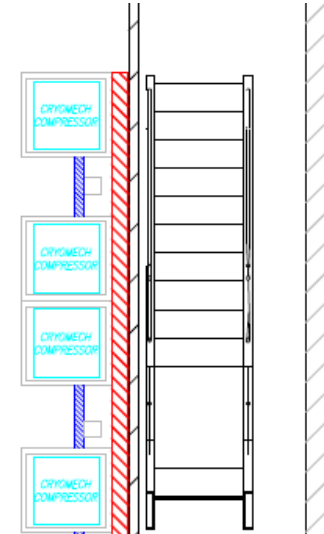
It will include Vacuum control for Turbo & Roughing pump.

Working closely with Craig for planned tests.

# Compressor and Vacuum Rack



- Vacuum / compressor rack positioned as shown.
- Sumitomo compressors relocated and some cable management installed.
- Cryomech compressors powered and control cables installed, but need terminating.



## Compressor and Vacuum Rack

- Vacuum Specification has been finalised.
- Rack design should be completed within next 4 weeks.
- Rack hardware has already been assembled.
- Rack wiring will take a further 4 weeks.
- Electrical commissioning expected in January.
- Delivered to RAL by the end of January.
- Install vacuum cables and terminate in Hall – some work completed prior to rack delivery?
- Commission Vacuum and compressor systems.





# EMR Rack



EMR Rack

## Personnel Safety / ODD system



Two new light curtains installed to cover West Mezzanine link and bride from end of South Mezzanine.

Move of Search point and BOB button.

ODD (Oxygen Depletion Detection) system will be installed and trench system linked in.



# Summary

- Control & Magnet PSU's racks are progressing well, currently under test at DL.
- Cable management is well underway in the Mice Hall.
- Compressor power requirements are covered, controls to complete.
- Tracker testing in the hall is currently being finalised, with local/remote monitoring.
- Main cable install will commence when Magnet termination boxes are sited.
- Instrumentation cabling will follow, any last minute requirements please.
- Should be on program target, but a lot to do!!
- Questions!!

