



Electrical & Control Power Supplies

Trevor Hartnett

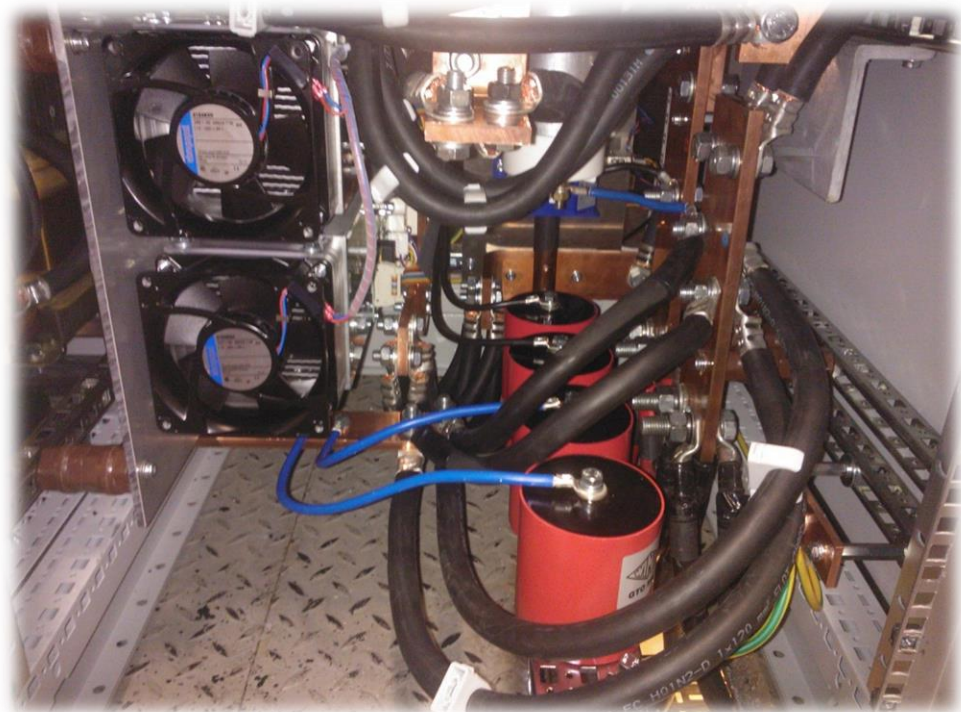
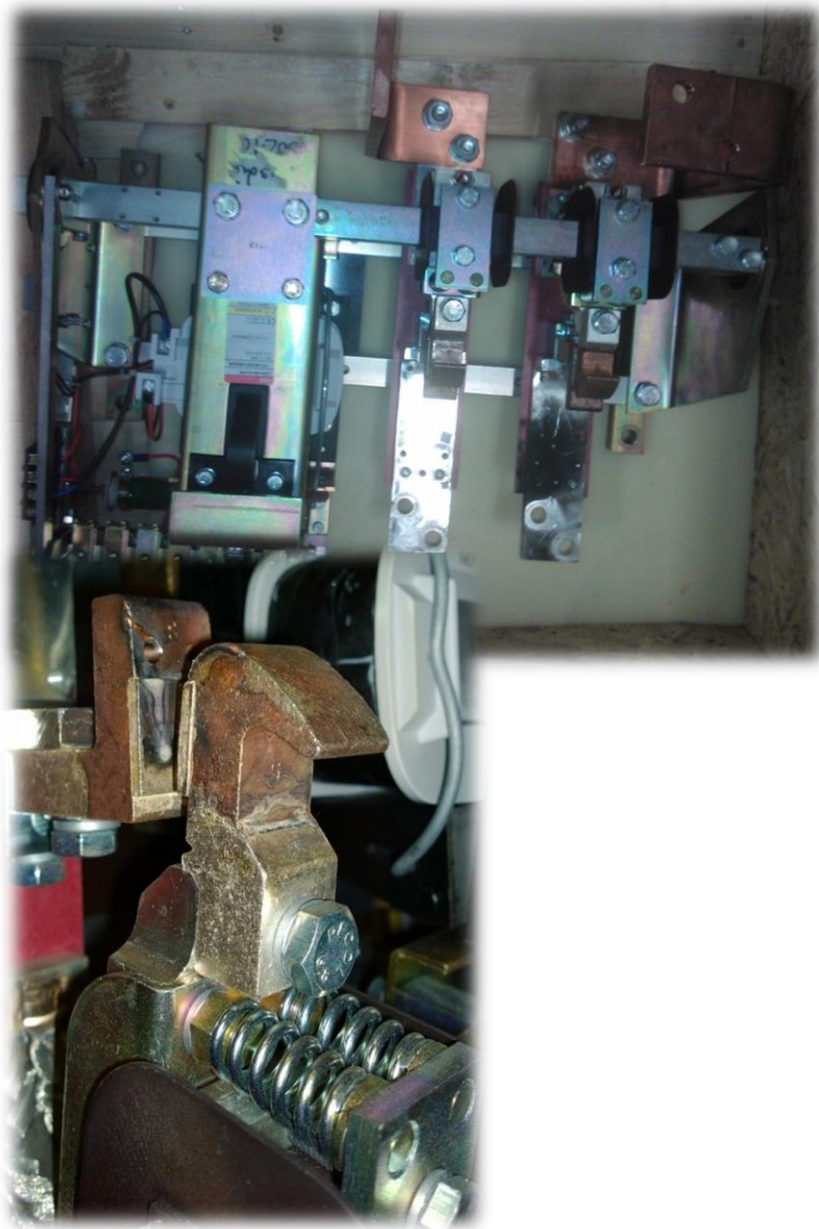


Decay Solenoid Power Supply - Installation

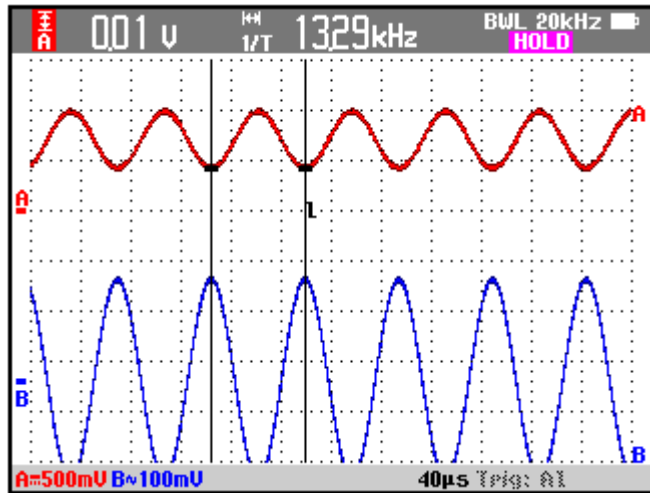


- Installed and commissioned, DC contactor replaced with Solid state switch.
- Solution found for Instabilities.
- Performance optimisation still required.
- Remote control to be implemented in November.
- Cryo plant can then be shutdown until approx. March.

Decay Solenoid Power Supply - Commissioning

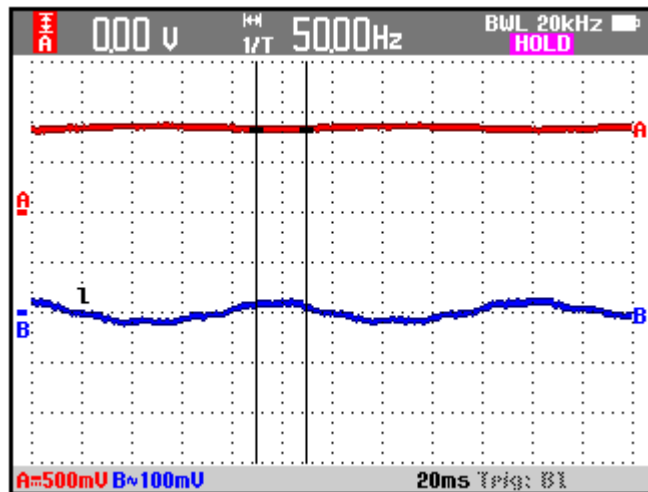


Decay Solenoid Power Supply - Commissioning



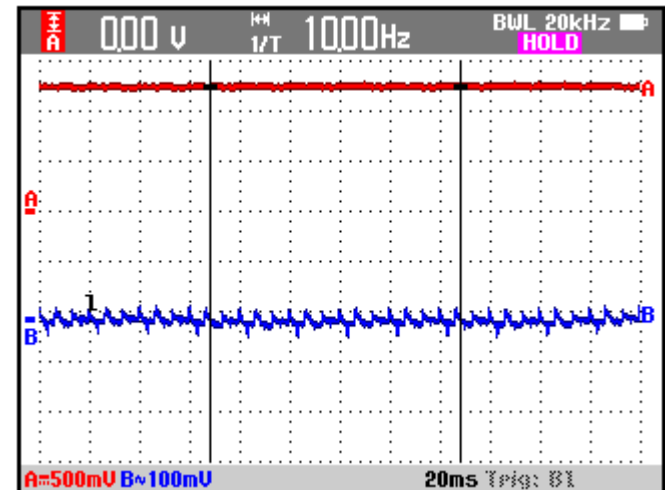
Instabilities measured on the output voltage at 13kHz

Ramping up to 50A



Ramping up to 100A

Ramping from 680A to 870A



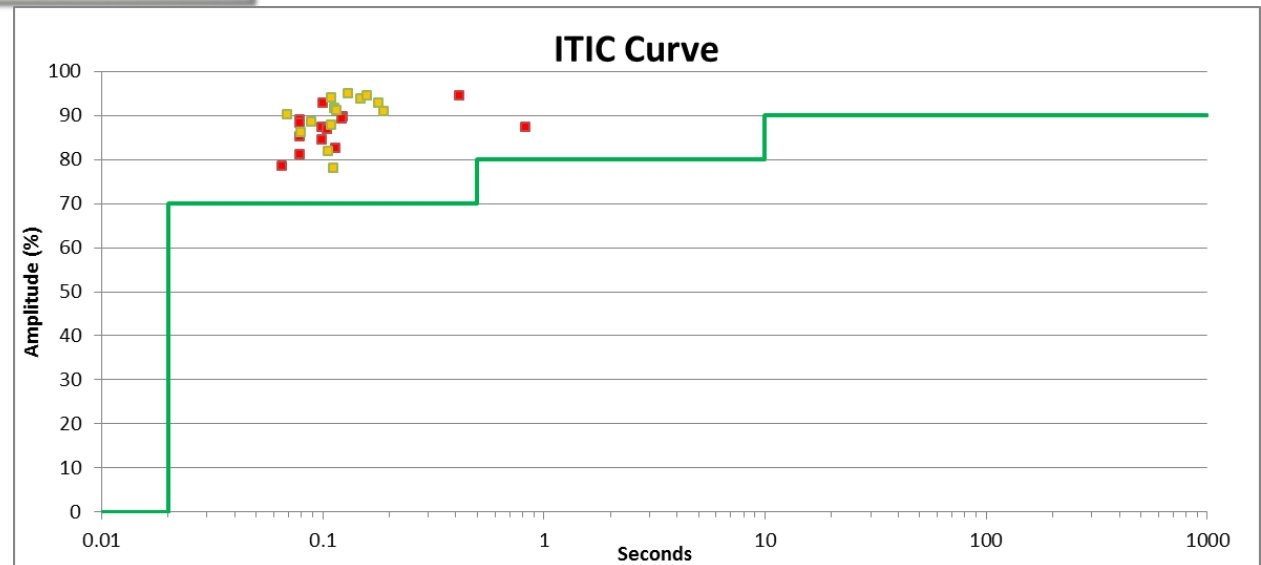
Instabilities significantly reduced after modifying regulation.

Power supply successfully ramped up and down to maximum operating current of 870A.

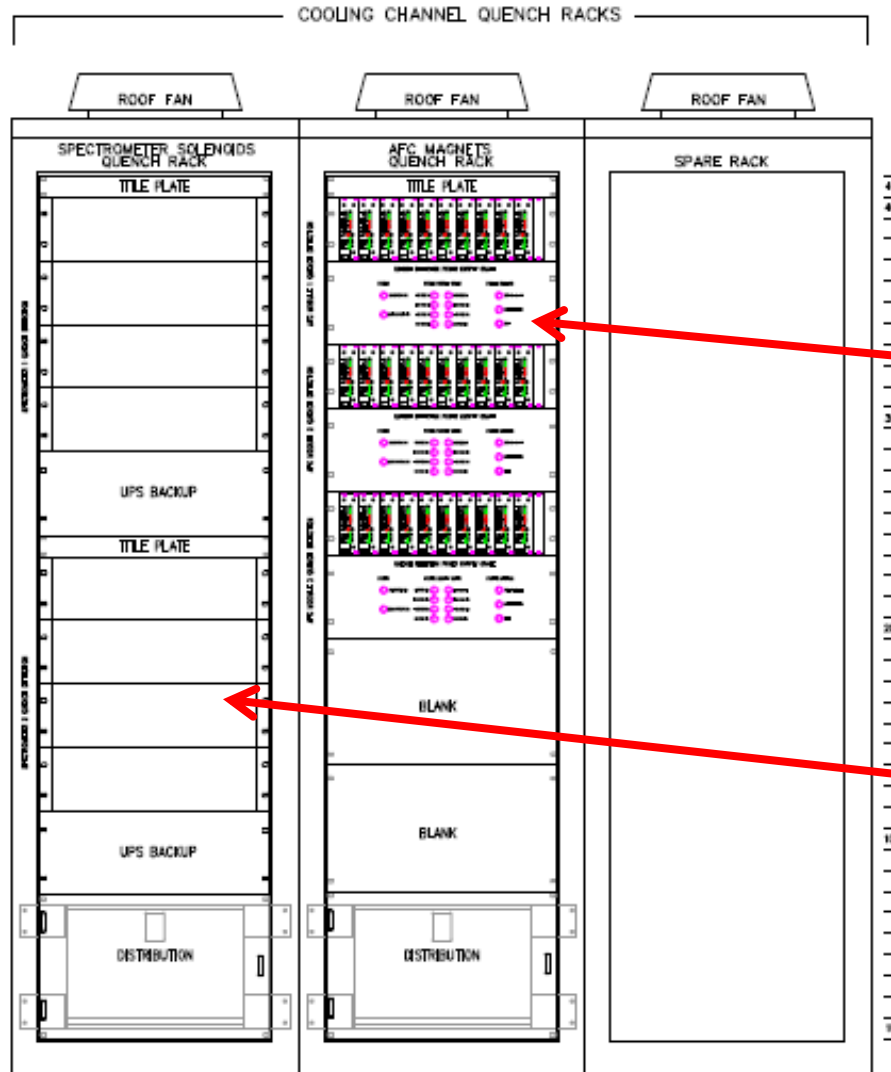
Power Quality Measurement



- Sub.net power quality measurement system has been built and tested in the MICE hall
- Awaiting full commissioning of the system
- ISIS have used the same system to monitor disturbances since February 2014
- 28 events have been logged, 50% of which resulted in beam loss.



Quench Detection System Racks



2 QD systems installed in 1 rack for FC 1 & 2

2 QD systems installed in 1 rack for SS up & down stream

Quench Detection System Racks

FC QD System

- Separate racks required for FC and SS.
- Basic rack details known for FC but assembly not started.
- 2 QD systems have been verified with FC 1 & 2.

Data Logger

- The data logger has been verified with FC 1 & 2.
- Minor modification required to converter into operation unit.
- Needs to be integrated into control system and synchronise with SS data logger.

SS QD System

- No details available for SS system.
- A full set of electrical drawings has been requested for SS.
- Including cable and termination details.
- A schedule of deliverables has also been requested.
- A rack housing AC distribution, roof fan and runners has been requested for delivery to USA
- USA to supply earth leakage protection for FC & SS.

RF Systems (1)



RF System in Plant Room 1



TH116 Amplifier
installed in MICE Hall
at RAL



20 kV Power Supply
& Aux. Rack

RF Systems (2)



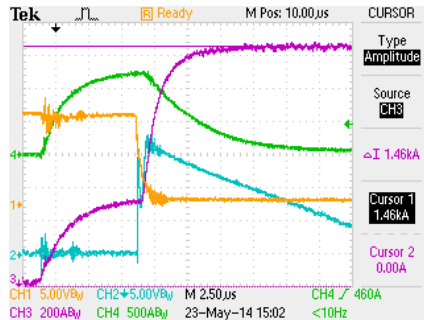
Old Crowbar Switch
(Thyratron)



New Crowbar Switch
(Thyristor stack)



Water panel for RF in MICE Hall



Testing new crowbar Switch



Cathode Modulator:
TH116 Tube
On/Off Control



TH116 Tube

RF Systems (3)

Further work:

- **Recommission system #1 at DL with new crowbar switches**
- **Build second set of power supplies and control racks**
- **Build electrical parts of amplifiers for System #2**
- **Develop control systems for remote operation**
- **Test all systems into dummy loads at DL**
- **Move to RAL & install in MICE Hall**
- **Commission & deliver 4 MW to RF cavity by March 2017**