Slice test preparation and Services status

Saleh Muhammad and Ian

On behalf of

GEM Collaboration

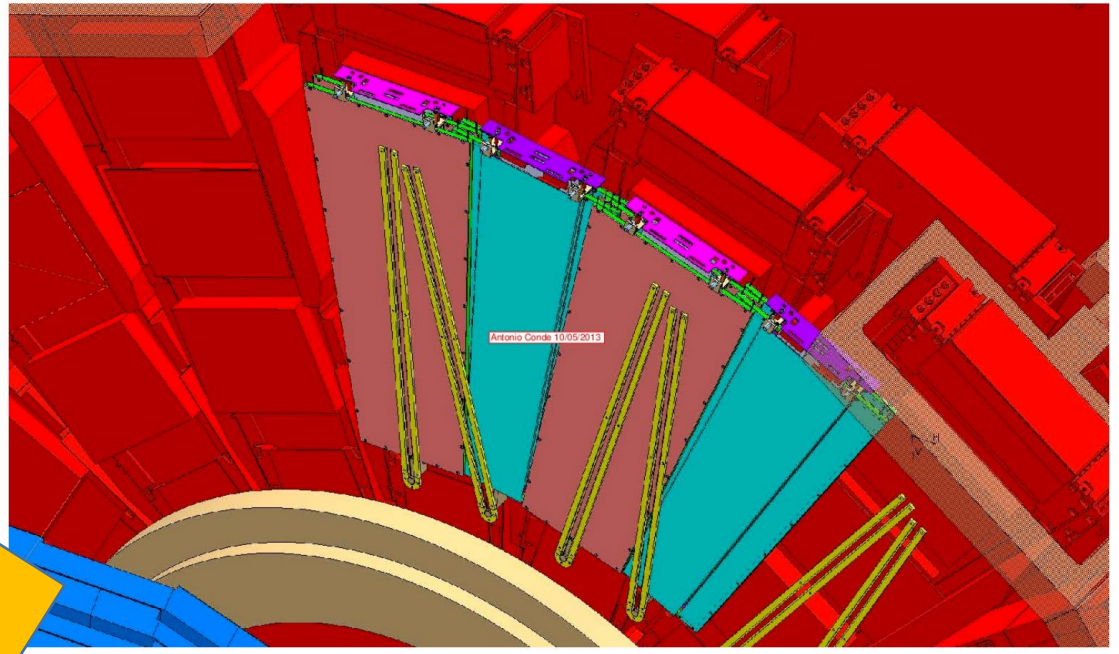
Outline of Services Plan for GE1 / Slice Test

- Slice test location
- Cables routing plan
- Low Voltage system
- High Voltage system and cables
- Gas system status
- Cooling
- GE1/1 mock-up installation and removal

GE1/1 Slice test

- 40°
- 4 super chambers
- 8 chambers total

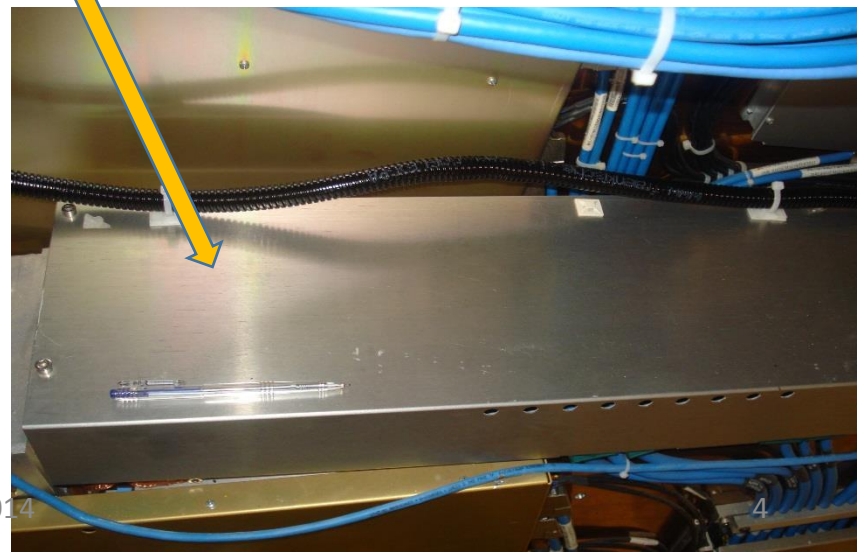
Negative End



1,2,35,36

Cabling routing

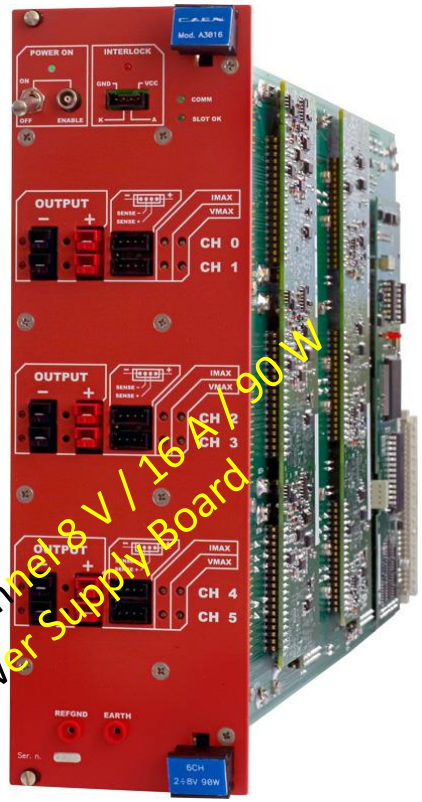
- LV cables and optical fibers are not in place (racks to GE1/1 position)
- HV cables are there from PP to chamber. One cable for two super chamber with two lines inside. But depends which solution we use.
- 16 Optical fibres each one diameter ~ 2.5mm will be routed from GE1/1 to USC and 4 towards the CSCs.

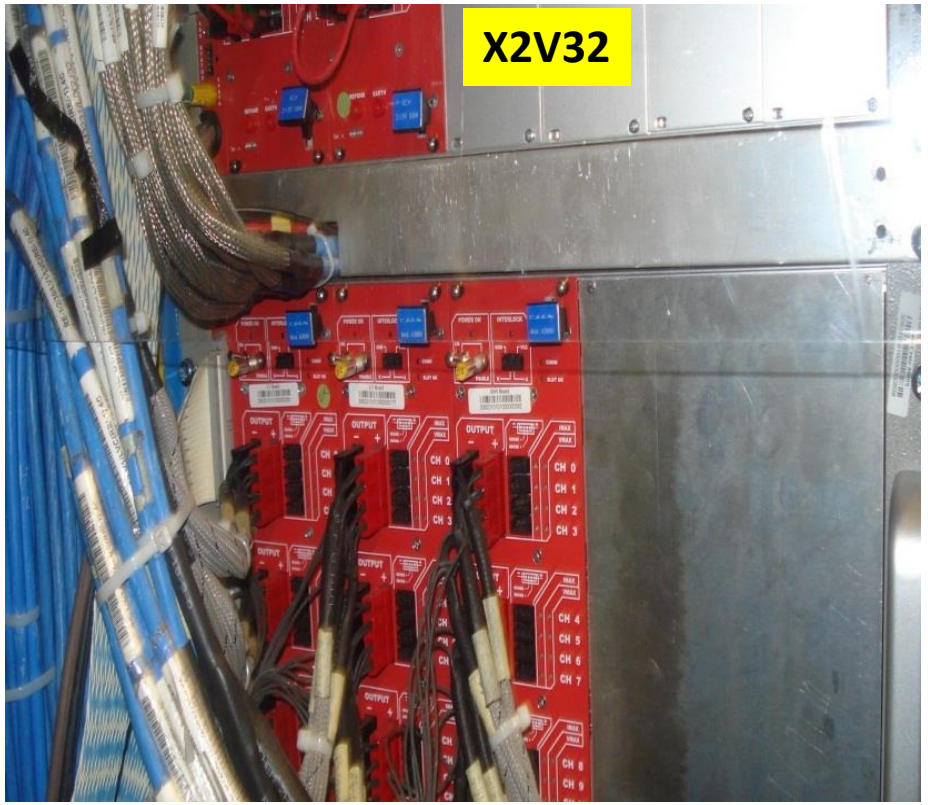


Slice test LV system (details)

Four super chambers, 8 GEMs and 8 LV channels

- **Two LV Modules A3016 each has 6 channels.**
- **It can be installed in the FEBs OR LLBs EASY crates of RPCs. Because 8 and 12 slots are available for FEBs and LBBs respectively.**
- **No problem of mapping A3016 with A3009 in same EASY3000S.**
- **48volt will also work**
- **2kW MAO channel will be enough for each EASY Crate where we will install the GE1/1, Two modules**





For a separate LV system an empty rack X2V33 exists, needed additional 1 EASY crate, Fan unit, 1MAO, 1BC and cables of 48V and DCS from USC to UXC But Still Mainframe will be shared.

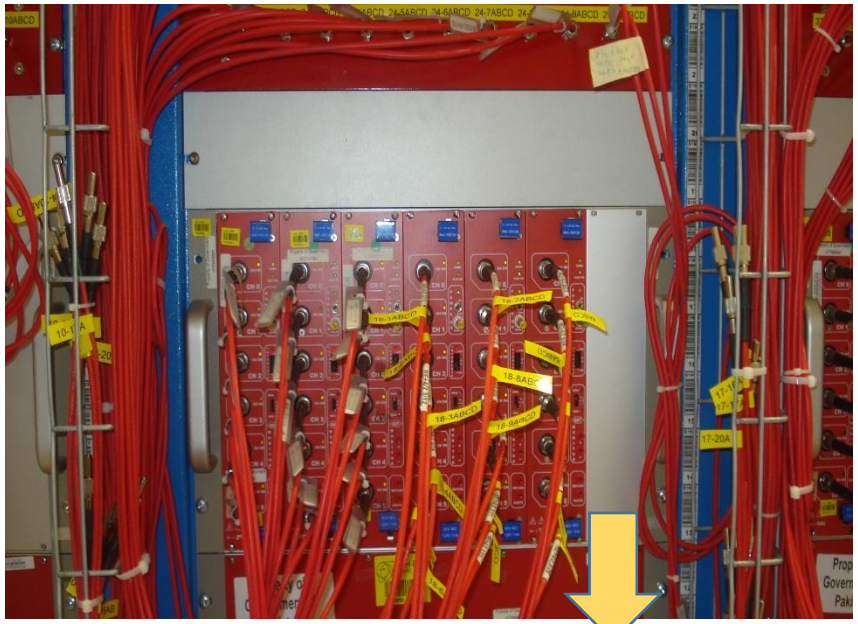
HV System for Slice test (Details)

HV in USC

4 Super chambers, 8 HV channels

Six 12kV/1mA channels

magnetic field and radiation tolerant



What exists w.r.t. space:

- 3 slots are available in each of the 08 EASY Crates to install one HV module. So total 08 modules can be installed in existing RPCs HV setup.

Required:

- 2 HV boards (3512) in use will be only 8 channels

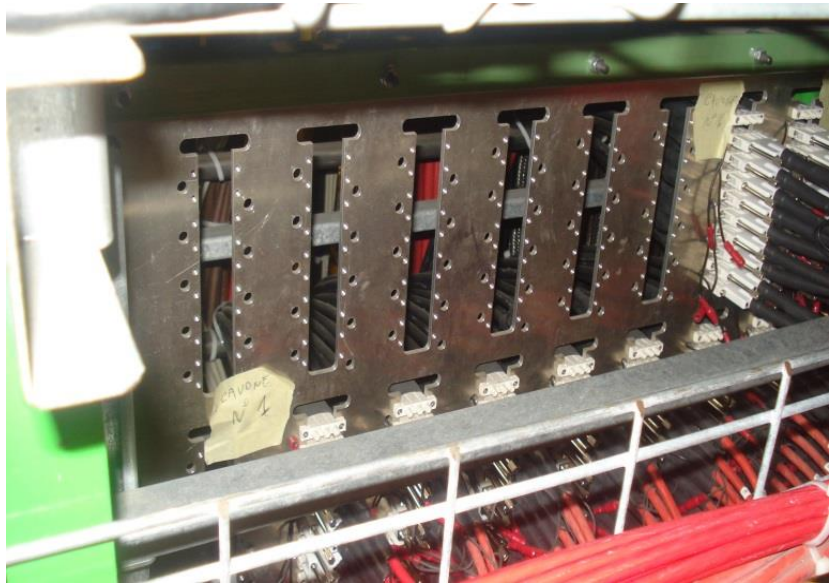
HV Cables

- 36 cables exits for one GE1/1 station PP to chamber.
- Both sides are connectorized with tripolar connectors.
- In CASE of GE1/1 SC two separate cables are needed. Here we have two options.

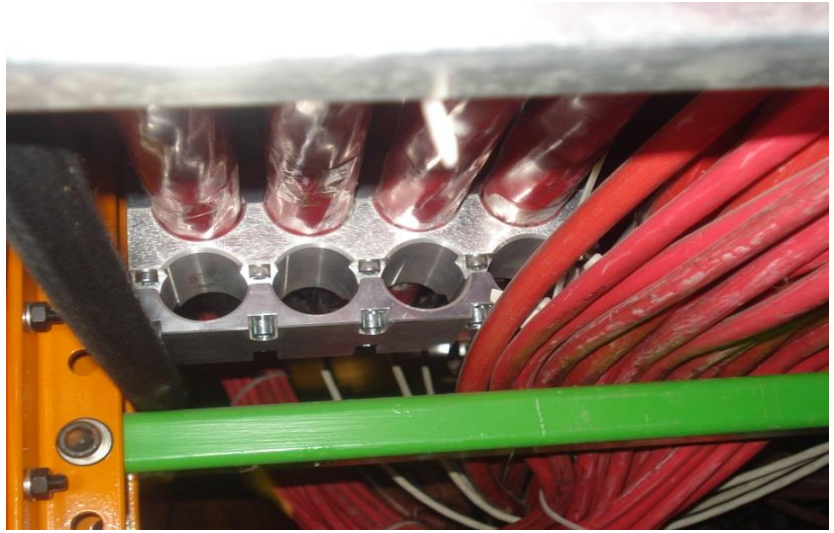
  - Either we cut the connectors and make two independent. (risk of cable short length).

  -OR we can make “ɣ” . One end with male tripolar connector and other end Jupiter.

For Slice test One umbilical cable need to pull from USC HV racks to UXC HV Patch Panel.

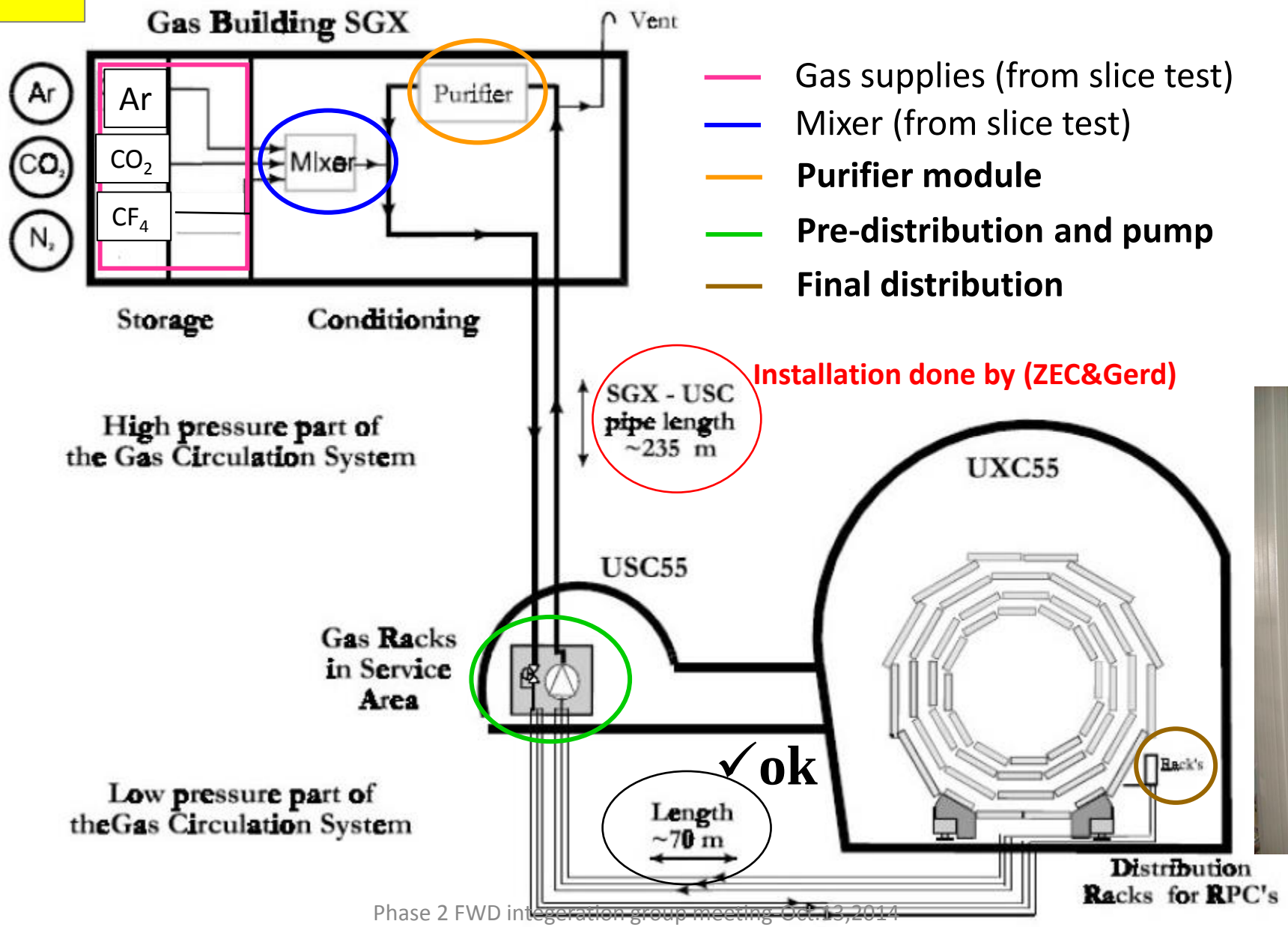


HV PP at X1 in UXC



From Roberto Guida Presentation July 14, 2014

Gas system layout



GE-1/1 gas sectors formations and line verification

Gas pipes positions at the negative side nose is checked, except one sector no. 10 which is at the top of the nose. Bunches of four pipes exists with 60 degree gap.

ON Base of these information's the gas Sector formation Scheme is prepared

For gas lines verification:

Stuff required and ordered status:

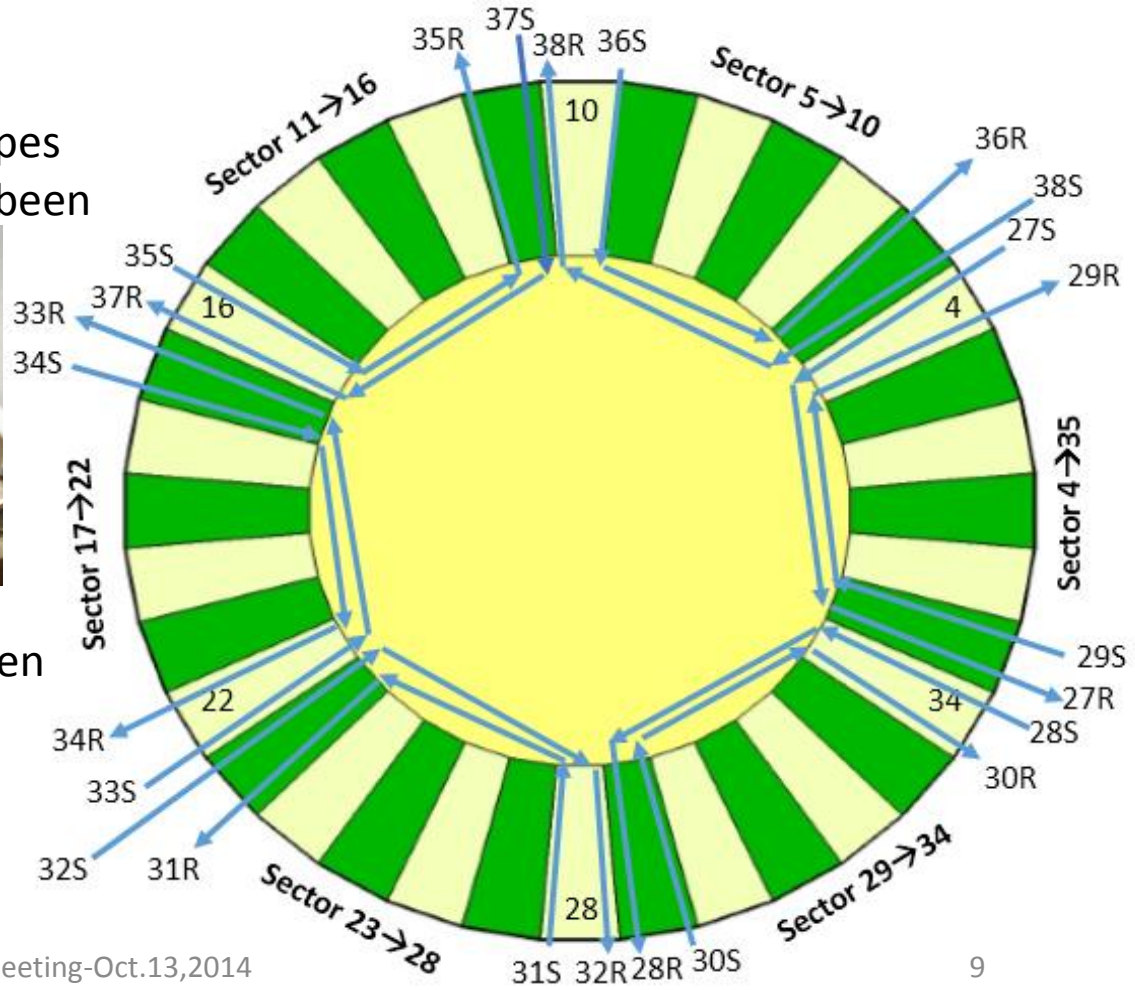
Swagelok Ferrule Unions one side 8mm and other is 6mm, plastic pipes 6mm dia. and for other stuff order has been placed. Some stuff has been delivered.

Pipes preparation:

- 12 pipes ~ 5 m long .
- Inter connection at the nose.
- Then One by one line verification.

Labelling:

- New labels are required to put on the gas pipes, because old Aluminium ones have can easily falls down as one already has been disappeared.
- Manifold on the gas racks labelling with corresponding chamber number.

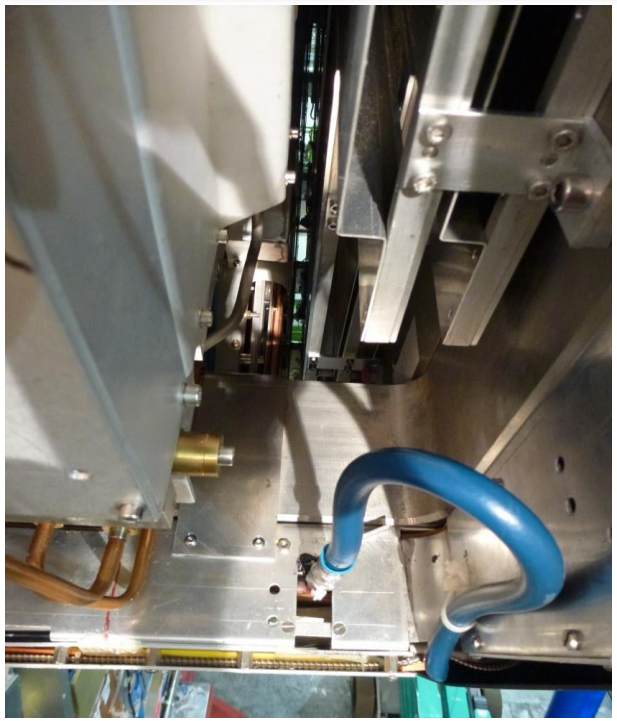


Cooling

- Approx. 100W dissipation of power per super chamber.
- Cooling pipes are in place for GE1/1 as these are done for RE1/1.
- Lines need to verify the documentation and labelling as built.

Installation and Removal of GE1/1 Mock-up

- The area of installation is narrow. One arm is already good. Two people in front of the problem is already a tight fit.
- This position close to the “x” axis is the easiest. They were installed in positions 33,34 & 35. The more vertical planes will give significantly greater challenges.
- All these different orientations must be studied in situ.
- Installation of the RE1/1s was done with an extension arm (in “R”) to assist in guiding the chamber into position.
- Cherry picker access does all positions with work outside the cherry picker when on top of the HE nose .



There is plenty of space in Z (~20mm) that could well be used to increase patch panel size and service space on the plane of the chamber. We should not restrict the design unnecessarily.
In the future we will see if more space is required.
The gas system installed for the RE1/1s will be used but will have to be cut back to reduce hindrance for installation

From Ian talk July 04, 2014