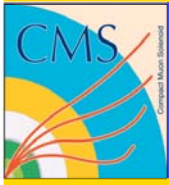


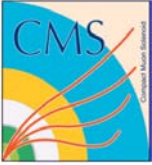
15/03/2005  
MU TB



# HV and LV power supply tests

## HV and LV system for Magnet Test

S. Braibant, P. Giacomelli, M. Giunta



# HV power supply test

- Full HV system consists of:
  - 10 SY1527 main power supply units
  - 64 A876 boards
  - 250 A877 boards (housed in 32 crates)

Most of the boards are at ISR waiting to be tested.  
3 SY1527 and some A876 and A877 are in use  
since more than 1 year to power several DTs.

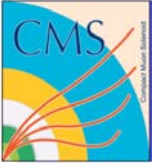


# HV power supply test

- Test setup consists of (1/8 of full system):
  - 1 SY1527 mainframe
  - 8 A876 modules
  - 32 A877 modules Location: end of ISR test area.

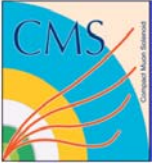
Two racks with 1 SY1527 and crates for the A877 already in place. All HV and communication cables needed for this setup are ready.





# HV power supply test

- 5 tests envisaged:
  - Min voltage and max current with resistive load
  - Max voltage and max current with resistive load
  - Transient test. Ramp-up/ramp-down tests with RC load
  - Min voltage and min current
  - Measurement of output voltages before and after all test



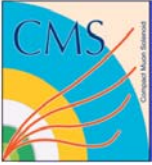
# HV power supply test

- Still missing
  - Resistive and RC loads with Radial connectors
  - Software. It will be adapted from the existing PVSS project used at the ISR.

## Time required

Of the order of 6-8 months

We should start as soon as possible as some boards are going out of warranty.

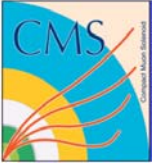


# LV power supply

- Full LV system consists of:
  - 1 SY1527 mainframe
  - 60 EASY 3000 crates
  - 10 A1676A boards (interface to EASY system)
  - 70 A3009 (8 LV output each, 9A)
  - 130 A3050 (2 LV output each, 50A)
  - 2 A3484 (48V converter)

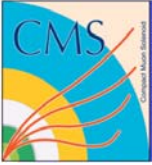
We do NOT have any of these boards in hand so far

Tendering process is finally finished. M. Pegoraro is trying to get a few prototypes from CAEN in the coming weeks.



## LV boards test

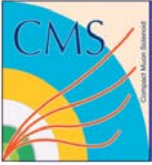
- Tests have been foreseen for a long time to be performed in bldg. 904 (Prevessin)
- Timing is however now difficult to predict
- It could very well overlap with the HV boards tests and with other activities
  - Not clear that bldg. 904 makes a lot of sense for us
  - ISR would be better in terms of manpower resources
  - LV system looks similar to HV system in terms of software. We will soon start to develop a first skeleton for LV slow control. Of course we will later on need some hardware to validate the software and test the system.



## Magnet test and cosmic challenge

- Alberto is planning on having 3 DT sectors ready in 2 wheels (YB+2 and YB+1) ~ total of 12-14 DTs.
- HV needs:
  - 1-2 SY1527, 3-4 A876 and 12-14 A877. We have all this material, and the DCS is ready since a long time. We are also ready to use a version of HV DCS which is completely integrated with the DCS of CMS (done in January 2005).





## Magnet test and cosmic challenge

- It would be very useful to test the complete HV chain using the long Kerpen cables, and patch panels which connect the A876 boards located in the control room to the A877 boards located in the racks on the detector balconies. We do not have these cables and we should prepare those.

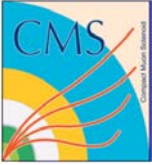
LV needs: 48 V converter, 1 SY1527, 1 A1676A, 3 EASY3000 crates, 6-7 A3050, 3-4 A3009.

**We need to order this equipment NOW!!**



# Conclusions

- HV test could start rather soon. Let's do it!
- LV test is much more in the dark since we do not know when we will have the hardware.
- HV system for the magnet test and cosmic challenge will be available. Should aim at having also final cables, connection boxes, etc.
- LV system for magnet test is a great unknown! We should decide **NOW** what to do.



## Magnet test and cosmic challenge

- So far, at labs or at test beams, we have powered with LV at most 2 DTs at the time.
- We need to go one order of magnitude beyond. We will not be able to do this with home made supplies.
- We should decide now whether we want to order some LV equipment for the magnet test or whether we should abandon the idea of reading out 12 chambers.