DT Chamber Production Status in Torino

Assembly and QC Hall

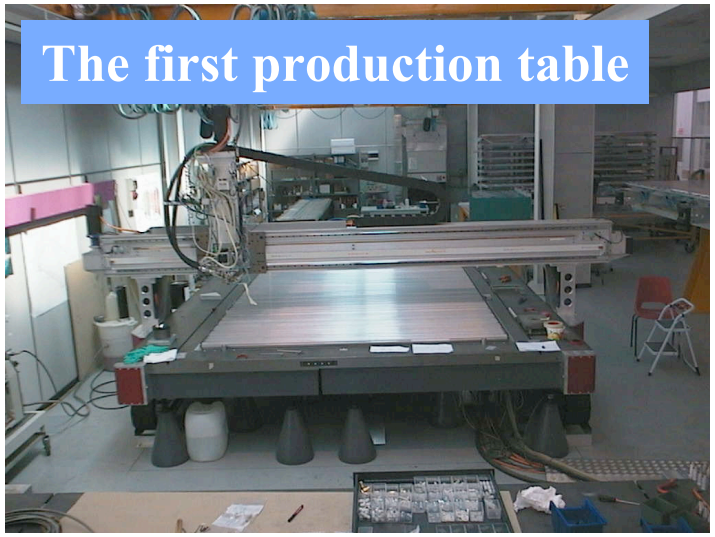
Super Layers Production

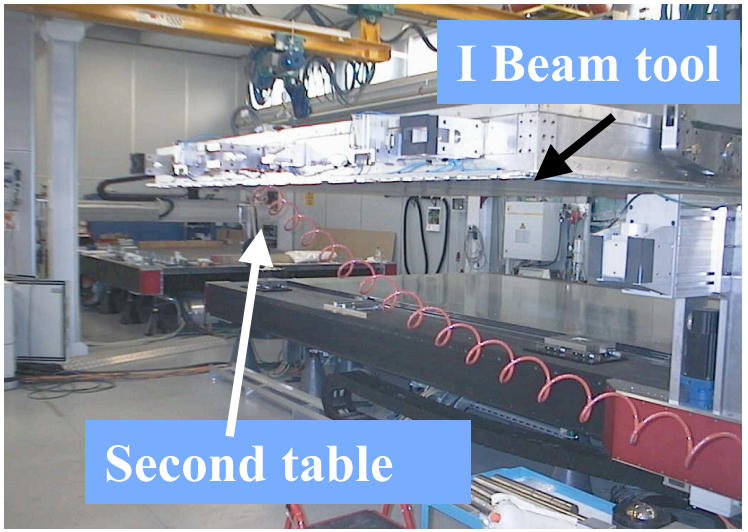
Quality Control (see details in QC session talk)

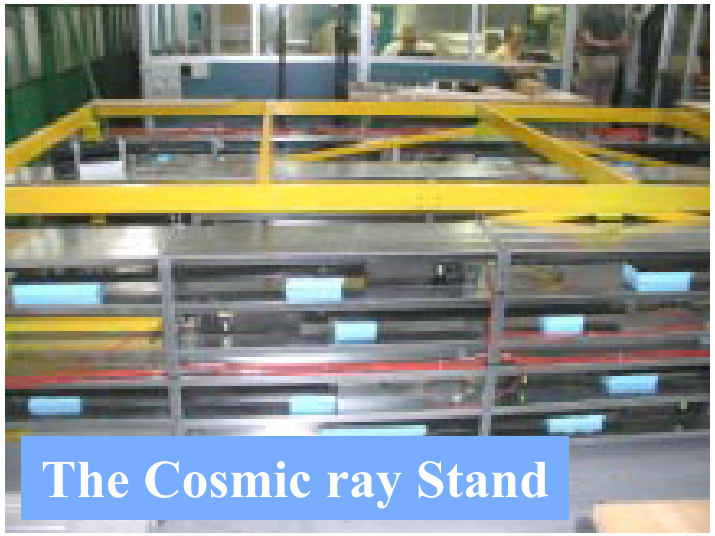
Aluminum Plates Production in Torino/Dubna

Summary and Outlook

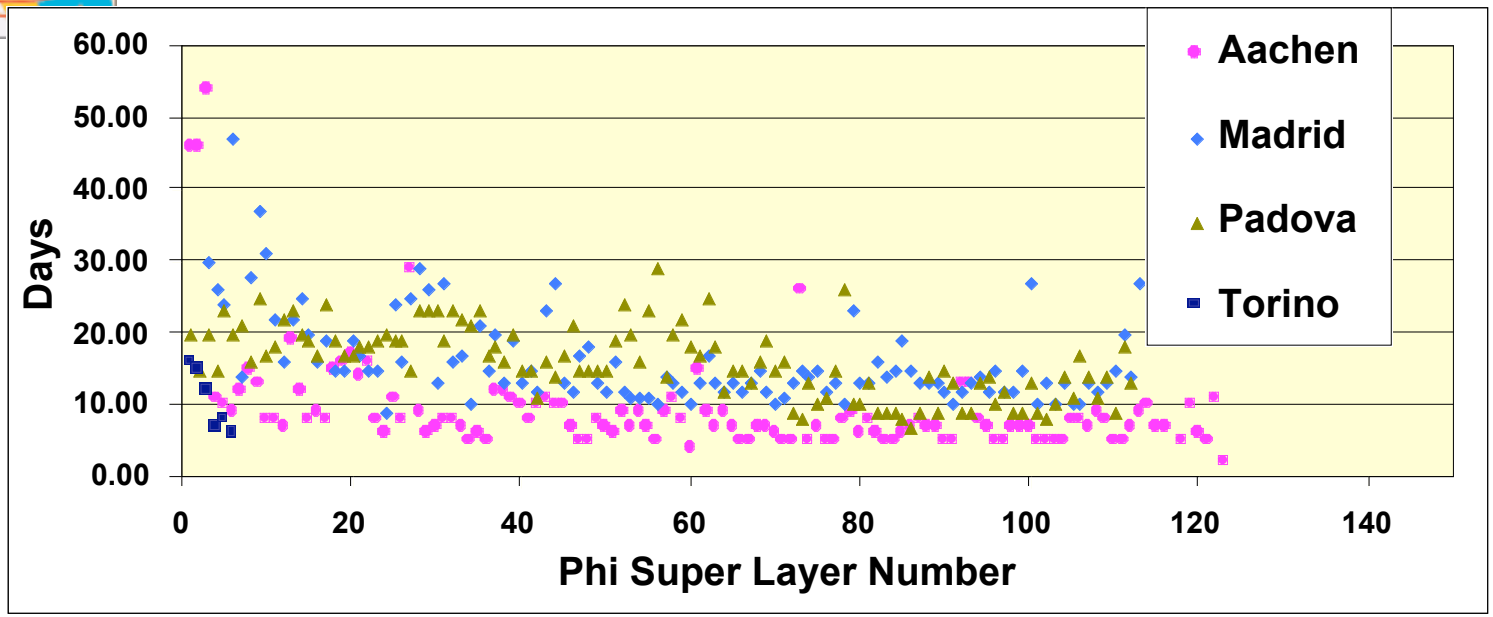
DT Assembly Hall in Torino







Torino DT Production Status



Mechanics	6 + 1 today
HV assembly	5
FE assembly	5
Assembly of HV anf FE covers	80 HV (100%) 40 FE (50 %)
QC on finished SL	Working on all 5 SL

Extrapolation to the near future

	now (10 weeks)	end 2004 (10 weeks)
Finished SLs	7	16
HV assembly	5	12
FE assembly	5	12
QC tests	2	10

Goal 6 chambers for February 2005

12 SLs

4 MB4(1-7) and 2 MB4(8,12)

Honeycomb gluing: starting December 2004

Observations during mechanical production

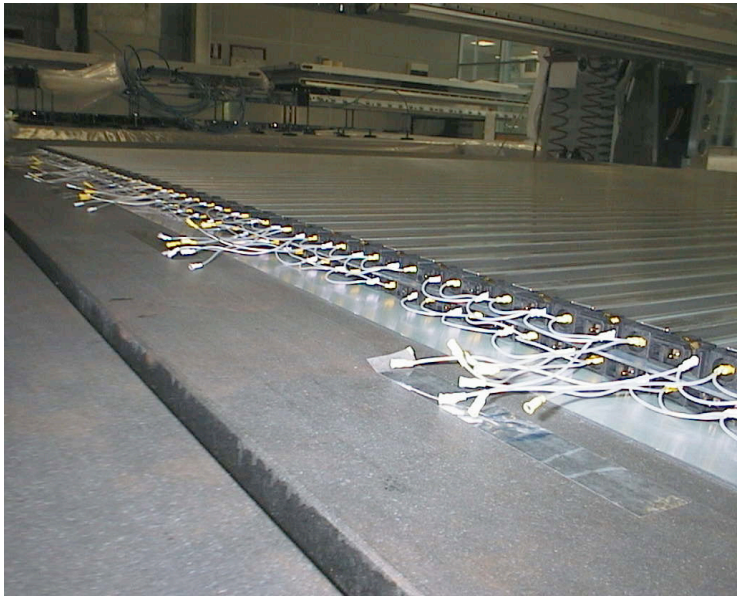
- Double gluing on production table (Ibeams + plate).
- Mount daisy chains each layer.
- Interference with other activities:

  Preparation of the second table (end of September)

  Cutting of Aluminum Plates

  Wire production in Legnaro (once/month)

  Tunings of tools (e.g. I-beam tool see later)



-Al-Plates Drawer
-Honeycomb align. tool
-Tool to transport chambers to Cern

} Mimmo

SL Quality Control in Torino

QC on incoming material:
- Al-Plates
- HVC,HVB
- Test HV on strips of Al plates

QC during SL mechanical construction:
Tension, position, capacity, electrical contacts, planarity

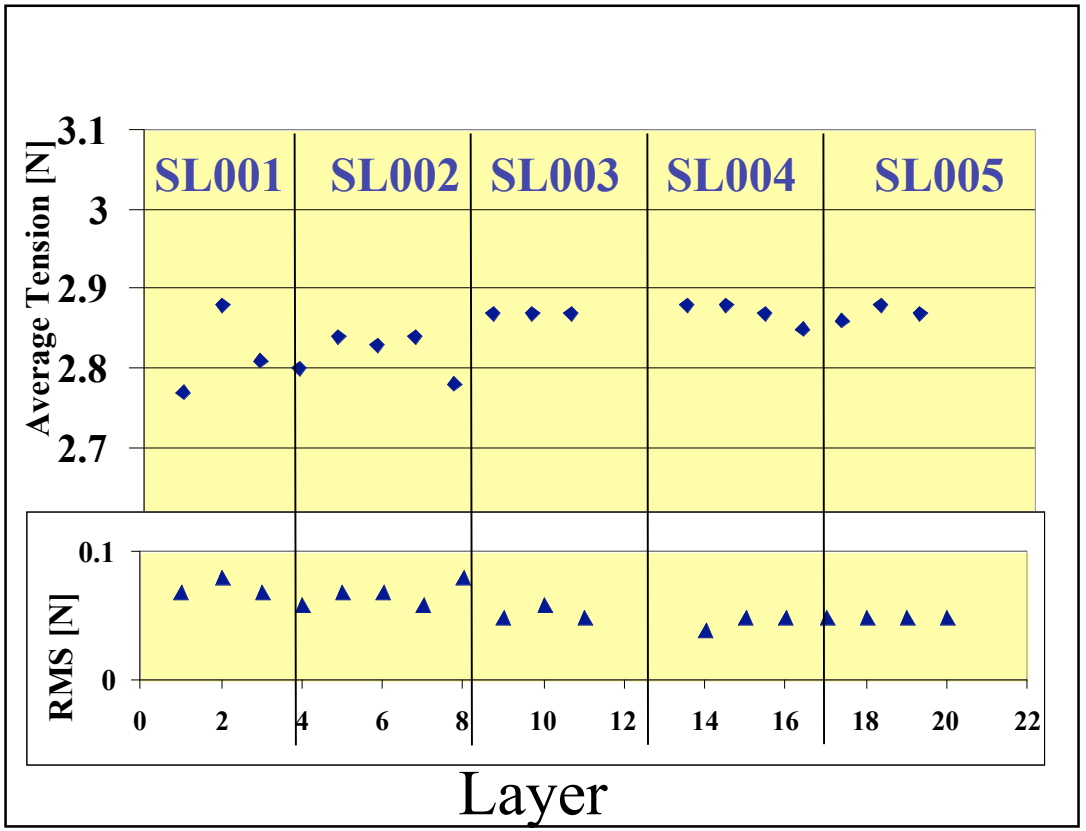
QC at completed SL so far in Torino:
- gas tightness
- HV test in air
- Noise
- Test pulse

Quality Control During Assembly
Average Wire Tension

Frequency range 79.3 –83.3 Hz (phi)

Wires with frequencies outside this range get adjusted or eventually replaced.

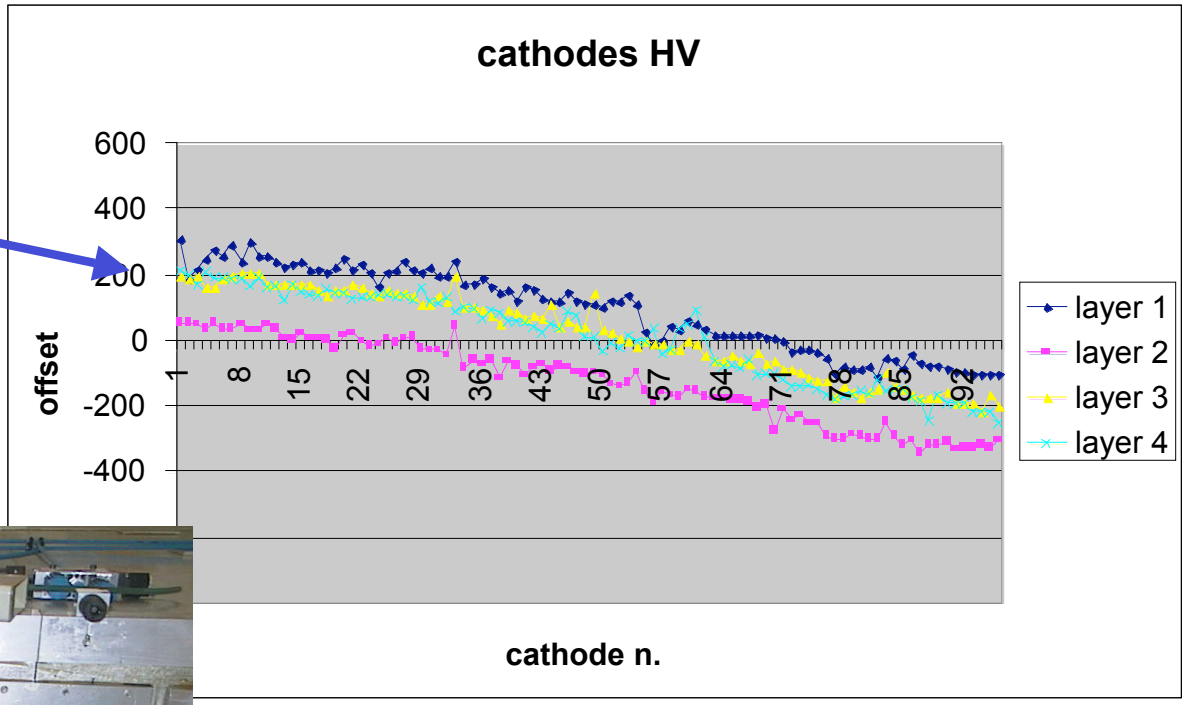
Output: Wires are measured and stored in local file -> Local Data Base

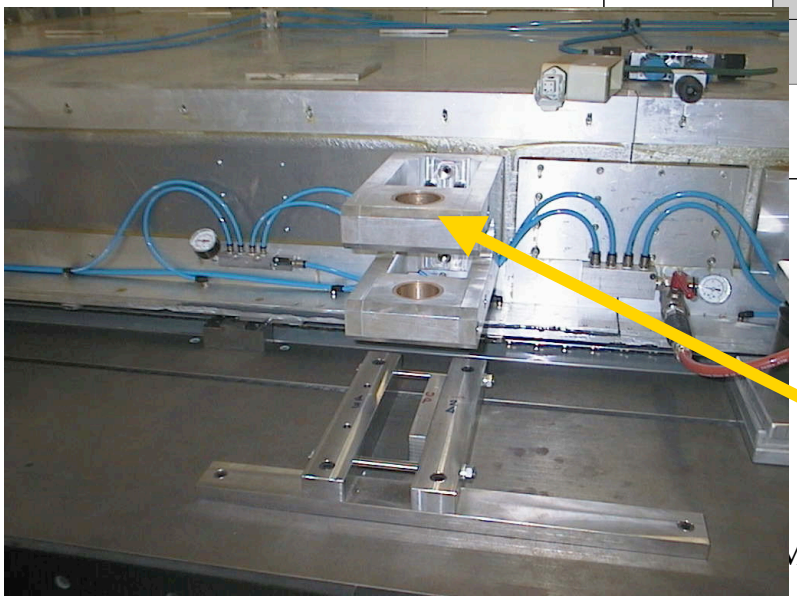


QC requirement: measure individual wires before closing the layer, allowed range 230 –325 gr.

QC During Assembly
Wire Position

SL005: I Beam tool alignment problem

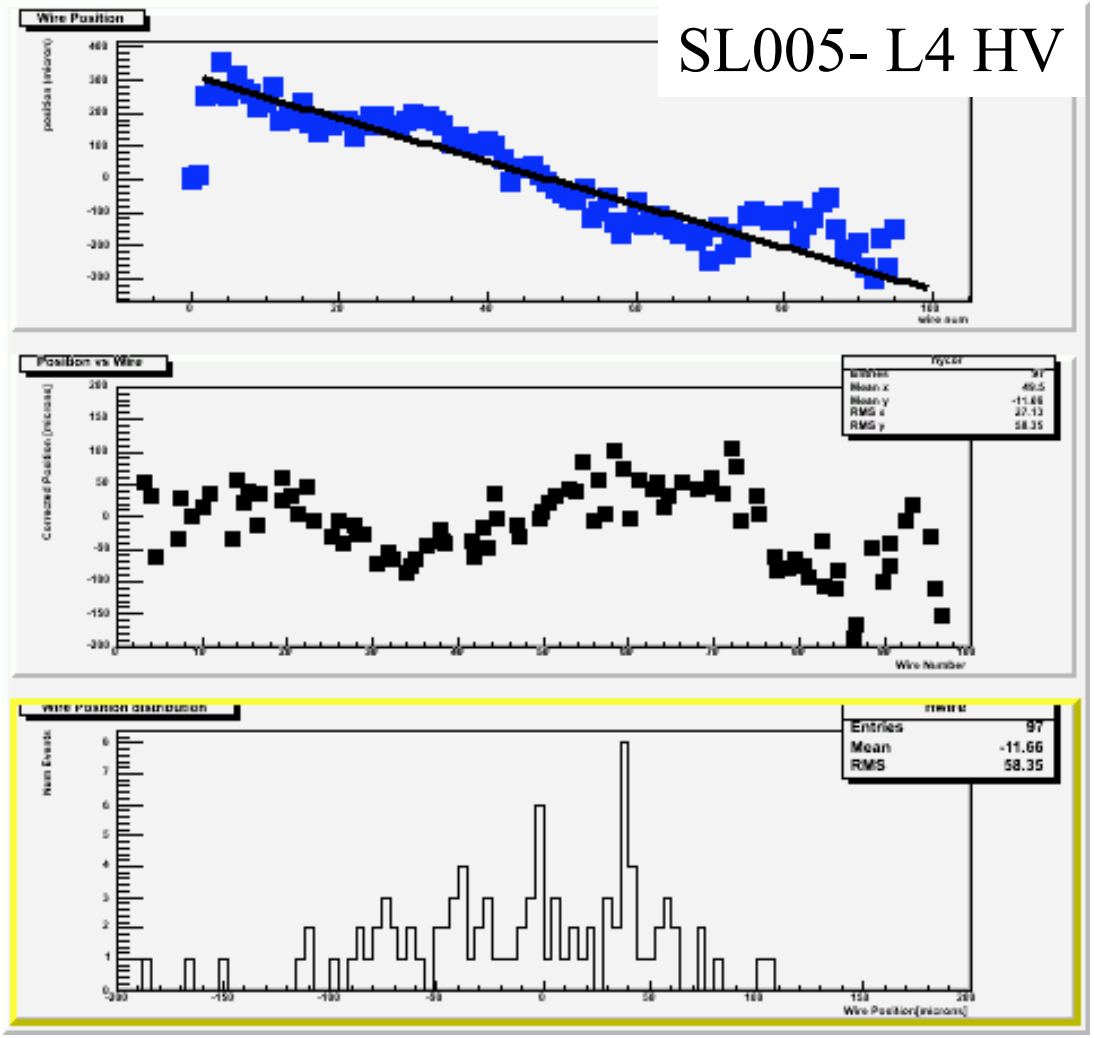




Modify alignment bearing on I Beam tool

QC During Assembly
Wire Position

SL005- L4 HV



Output: Wires are measured and stored in local file -> Local Data Base

QC requirement: 100 microns during assembly/500 microns for trigger

QC During Assembly
Summary on Wire Position

Wires and I Beams positioned relatively to each other within 150 microns.

Alignment of Ibeam tool: fluctuation of ~ 200 microns in alignment between the 4 layers (change alignm. bearing).

Wire position less accurate on FE side wrt to HV side (glue deposition problem ?).

Tuning to apply:

Mechanic effects on the production table (calibration with interferometer);

Thermal effects.

QC Test during assembly
Planarity

SL number	Planarity range [mm]
SL001	0. - 0.30
SL002	-0.05 - 0.10
SL004	0. - 0.60
SL005	-0.10 - 0.20
SL006	0. - 0.80

Defect during gluing SL006:
- last Al-Plate strongly bent
- interference on the table production of alignment tool which prevent the I-beam tool to lay correctly on the plate

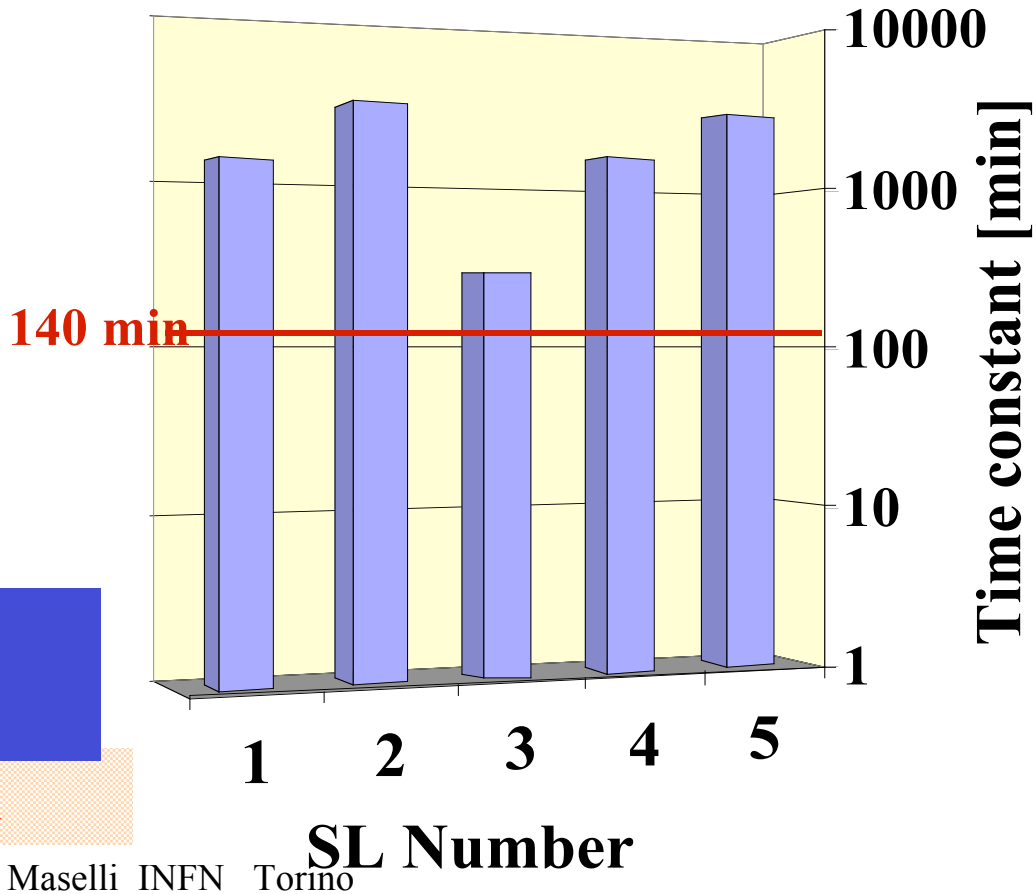
Possible source of later problem on SL006?

Quality Control on Finished SL
Gas Tightness test

Gas tightness measured with final Configuration: HV + Fe covers

Duration of the Test: 1 hour

SL No.	t[min]	Additional Sealing
001	1322	Yes
002	Inf	Yes
003	296	Yes
004	1536	-
005	Inf	-
006	Unglued the last plate	-



Output: stored in local file > Local Data Base

QC requirement: t >140 min

Quality Control on Finished SL
First HV test in Air

Procedure:
-Visual test of HVC and HVB before mounting
-Measure capacity for strips and cathodes on Daisy chains
-CAEN SY527 + filter RC 20 nA resolution
-Rump up 50 V/sec

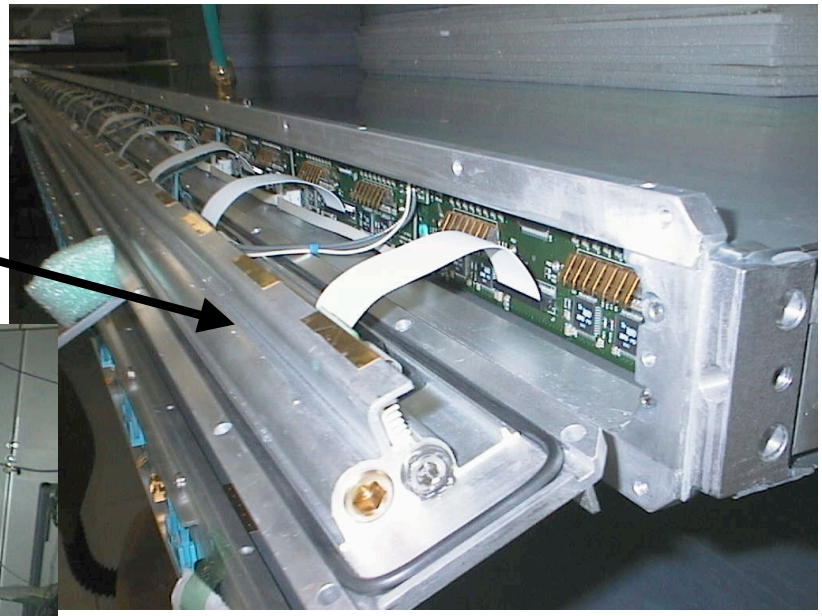
SL001, SL002 and SL005 tested:
HV values: V(wire) = 3900 V
V(strip)= 1900 V
V(cathodes)=-1900 V

Typical currents observed:
I (wire) < 20 nA /8 wires
I(strip) <300 nA/16 strips
I(cathodes)< 200 nA /16 cathodes

1 noisy Cathode (~1 microA) on SL001 probably get cleaned with long HV run
< 1 per 1000 dead channels (0.5% required by QC)

QC on finished SL
Noise and Test Pulse

Assembled FE SL side



A lot of work to find the correct grounding configuration

QC on finished SL
Noise and Test Pulse

SL001 tested Noise and Test pulse:
in air,
no HV cable connected
15mV and 10 mV threshold

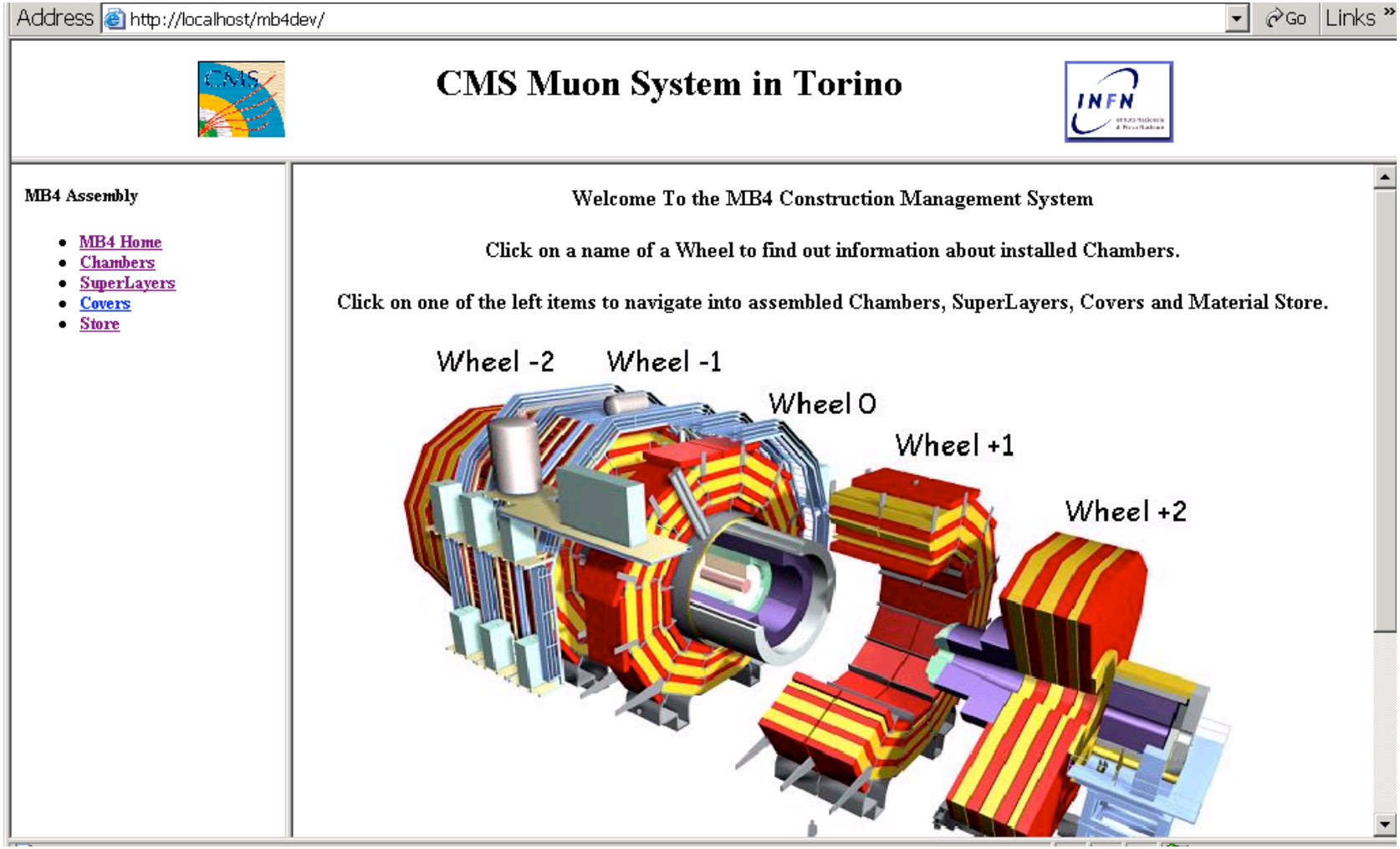
Result: after a lot of gymnastics
0 Hz noise on all channels L2, L3, L4 (10 mV)
few Hz on channels L1 (why?)

Next steps: rise HV and fill gas and measure again
Noise and test pulse tests on other SLs

SL005 being tested today ….

Torino Production and QC Data Base

http://tok17w2.to.infn.it/mb4dev



Al-Plates Production in Torino/Dubna

Aluminum Plates cutting in Torino:

- **Torino:**
  - (66MB1 +66MB2+66MB3+74MB4), production almost completed. Next batch to be sent in Dubna October (last transportation).
  - 2 technicians from Madrid have cut for ICARUS (2 weeks in Torino).

- **Pechiney:**
  spare plates (amendment to contract F340/EP delivered). Pechiney produced and delivered by mistake 167+35 instead of 180+40 plates, Missing units are delivered and being transported to Torino.

Al-Plates Production in Torino/Dubna

Electrode Field Strip production (Dubna):

	Plates for n.chambers
MB1-S	60
MB4(9,11)	11
MB2-S	62
MB4(10)	6
MB3-S	56
MB4(4)	8
MB4(8,12)	11
MB4-S	29

Completion in march 2005.
Last spare plates produced in may 2005.

Summary and outlook

Mech. SL Production: now 7 SLs , 16 SLs by end 2004
Tested SLs :
now ~2SLs, 10 SLs by end 2004

QC under control for:

Wire tension, Gas tightness, HV test in air, Noise/test pulse.

Wire position still to be tuned.

Honeycomb gluing: starting December 2004.

Aluminum Plate production ending in March 2005

Cosmic stand + TDC DAQ ready.

Material Procurement inTorino

HVB16 Urgently needed