

CMS Week (june 2000)

STATUS REPORT FROM CIEMAT

Status of tools

News from Q4

Status of MB2

STATUS OF TOOLS

At the Superlayer level we are in good shape

1st Phi assembly line: Operational. Complete set of tests made with the first MB2 prototype SL.

1st Theta assembly line: Ready to be calibrated with our next MB2 SL.

2nd Phi assembly line: It will be ready when we make the third SL of the first MB2 chamber.

At the Chamber level we are not ready yet

The assembly table is there but before being able to finish the chamber gluing jig we need detailed final chamber drawings (sketches of the HC panel and the 3 SL's are not enough).

The same applies to the chamber handling device.

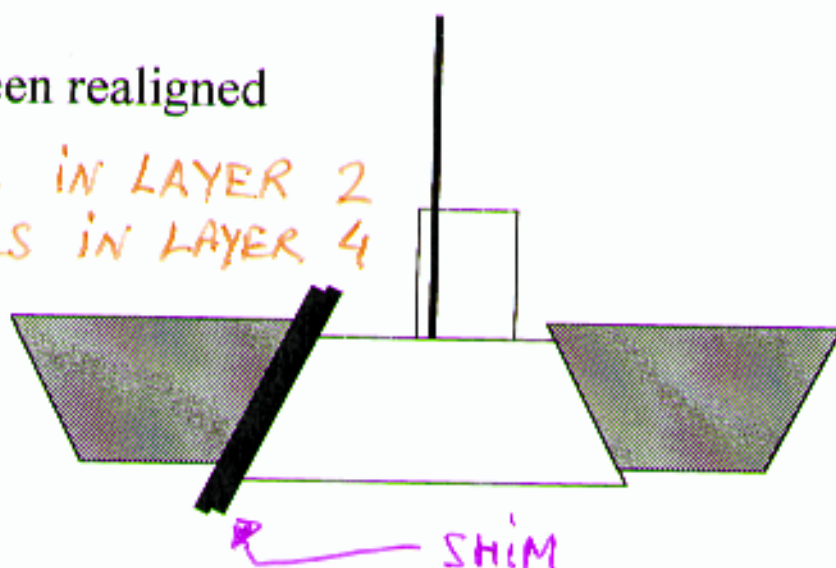
Other tools

We have a new transport tool which we have used to transfer the MB2 superlayer from the assembly table to another auxiliary table.

NEWS FROM Q4

Wires have been realigned

8 CELLS IN LAYER 2
and 8 CELLS IN LAYER 4



A new board was installed to measure the gain (as requested by Fabrizio).

4 WIRES IN ADJACENT CELLS
OF LAYER 1

Schedule for transport and installation for the July test beam:

Arrival date at CERN already fixed: June 28

THE SUPPORT SHOULD BE READY AT H2 !!!!

Installation inside the magnet during June 29

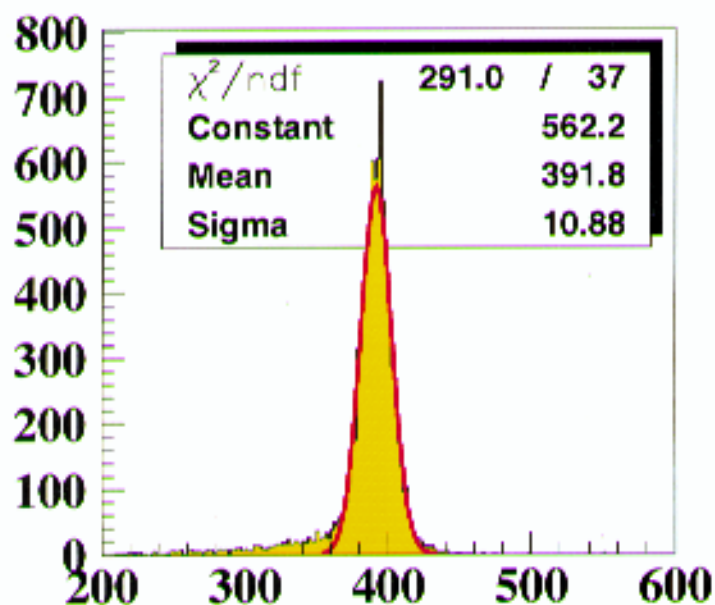
Gas and HV as soon as possible: June 30

THE HV SYSTEM SHOULD BE AVAILABLE !!!

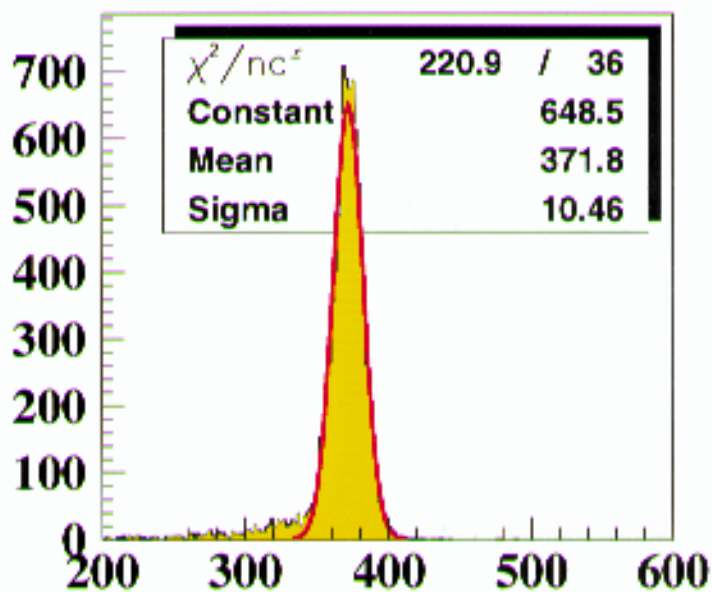
Leave Q4 under HV during the week end (July 1,2)

Q4 ready for DAQ people to make tests on July 3rd

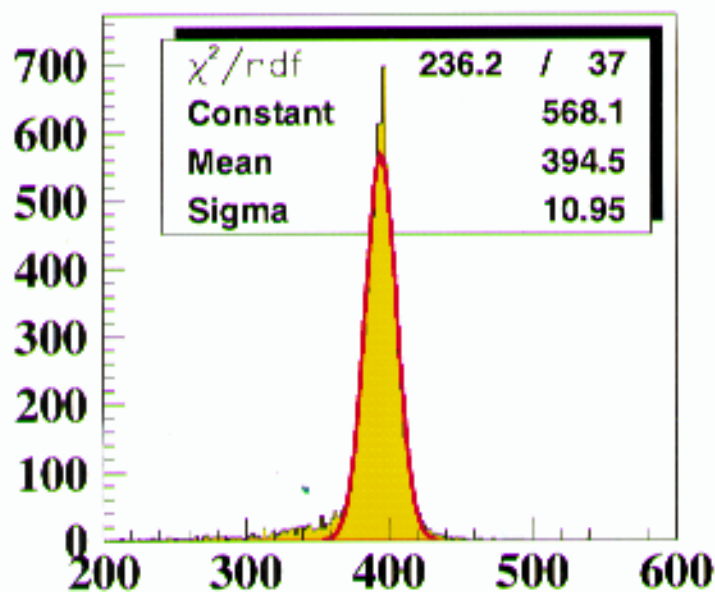
Before corrections



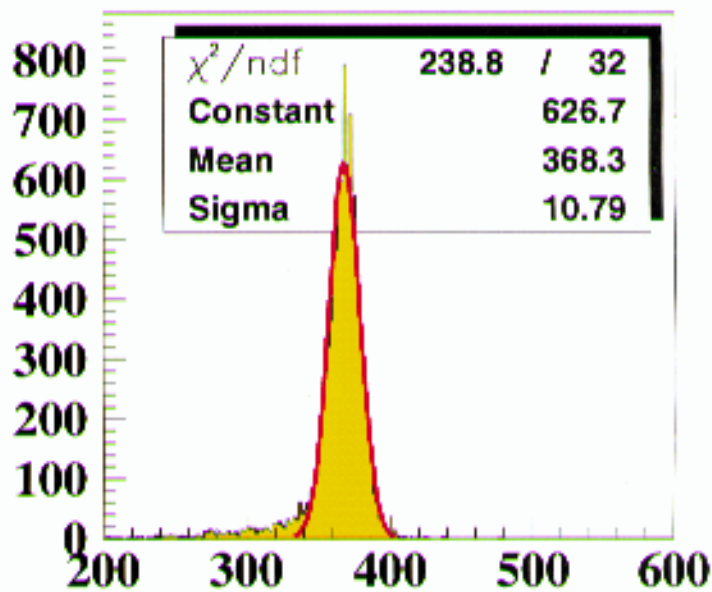
MT1 right



MT1 left

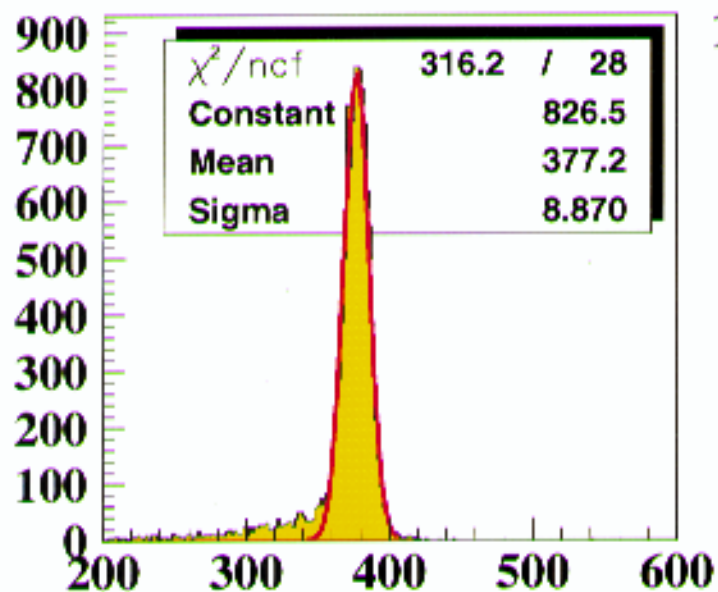


MT2 right

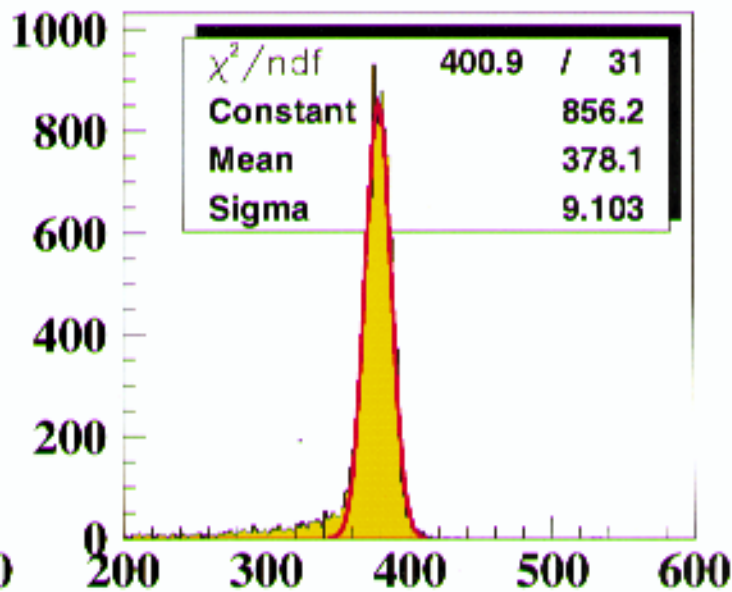


MT2 left

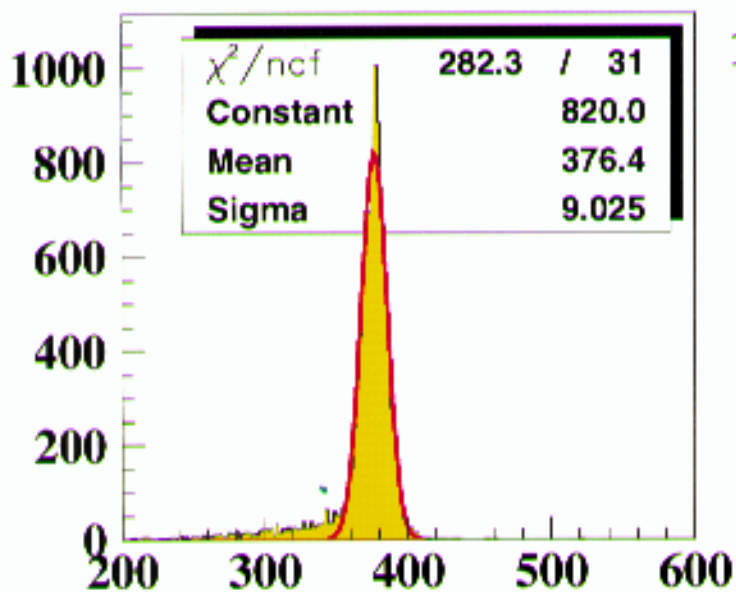
After corrections



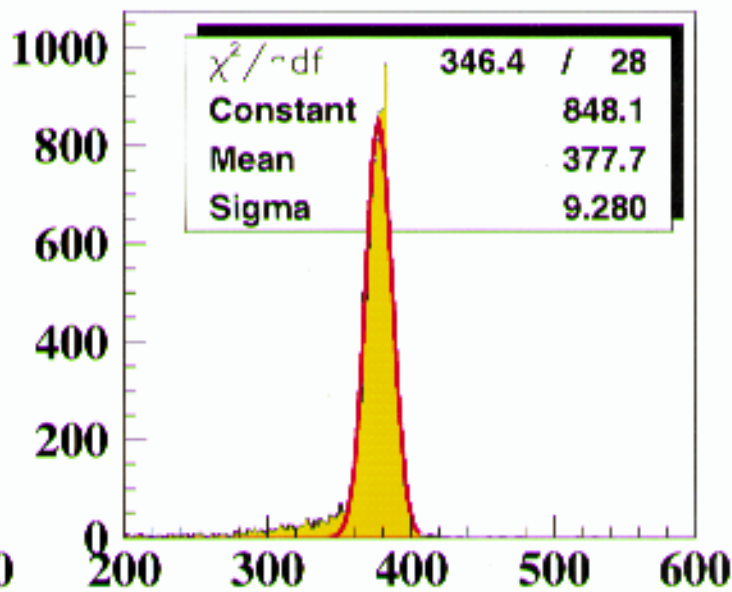
MT1 right



MT1 left



MT2 right



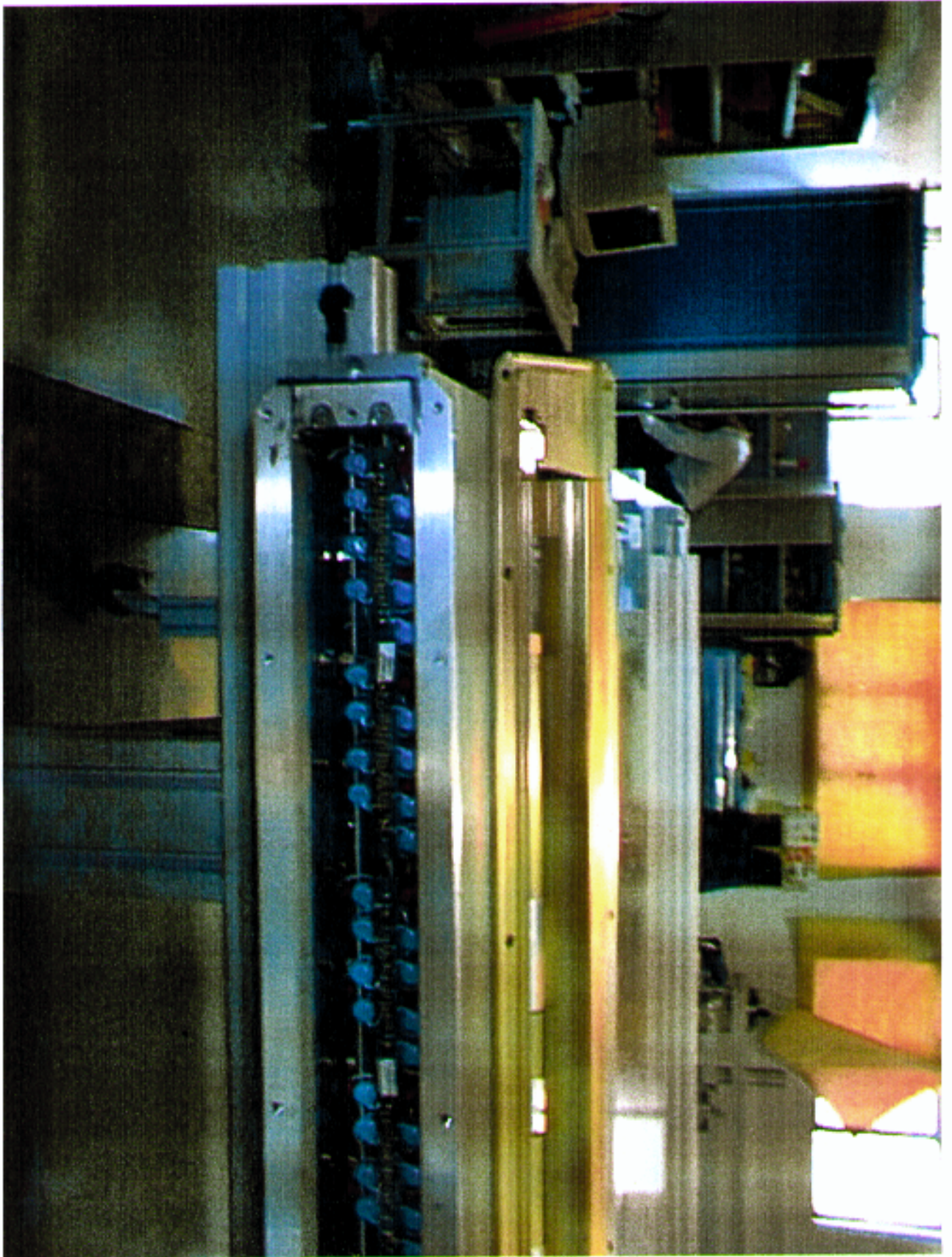
MT2 left

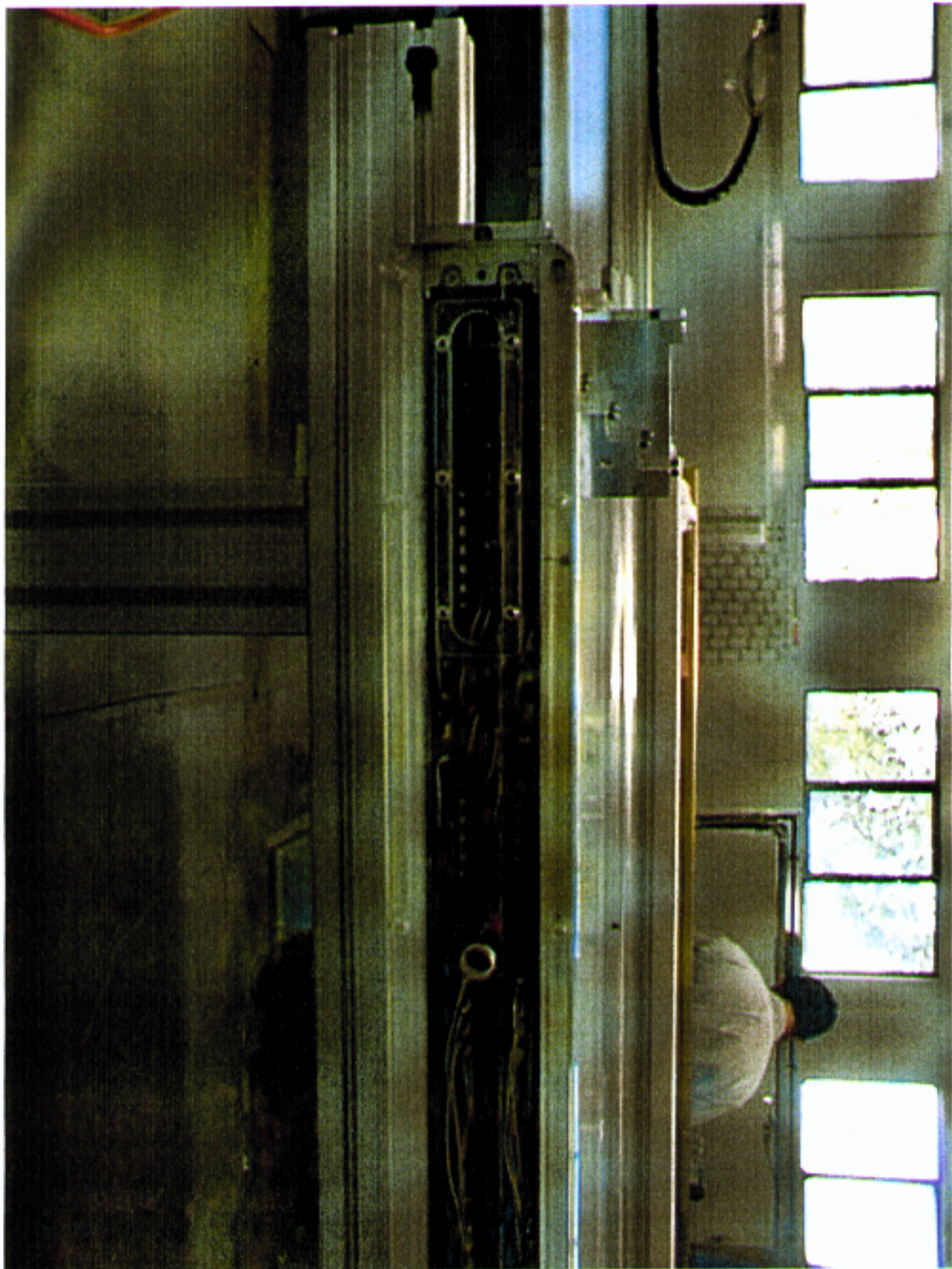
Status of MB2

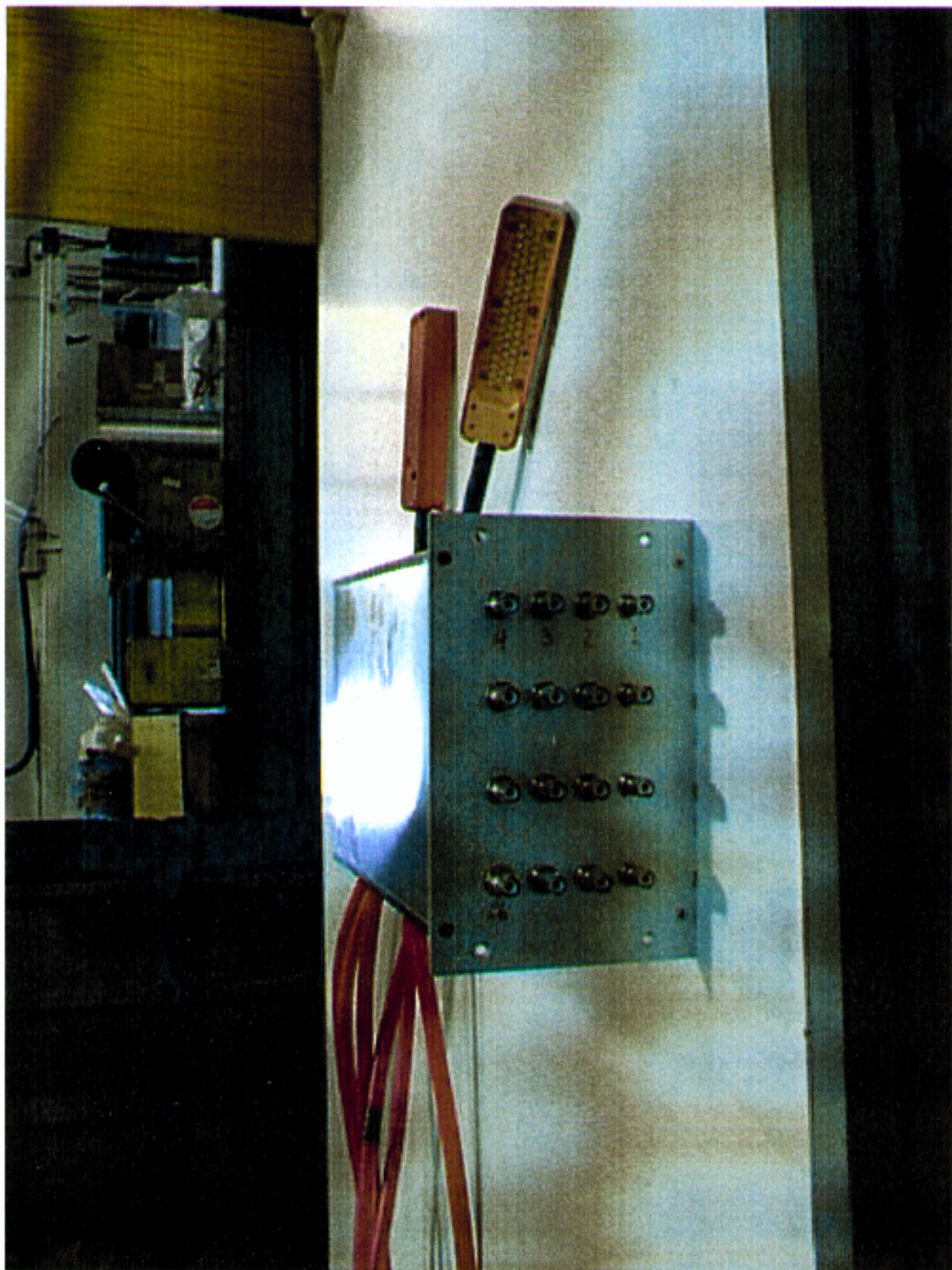
The Superlayer is mechanically finished

It has been tested in air with HV

Installation of FE boards still missing. Also missing is gas tightness checks and HV tests with gas.



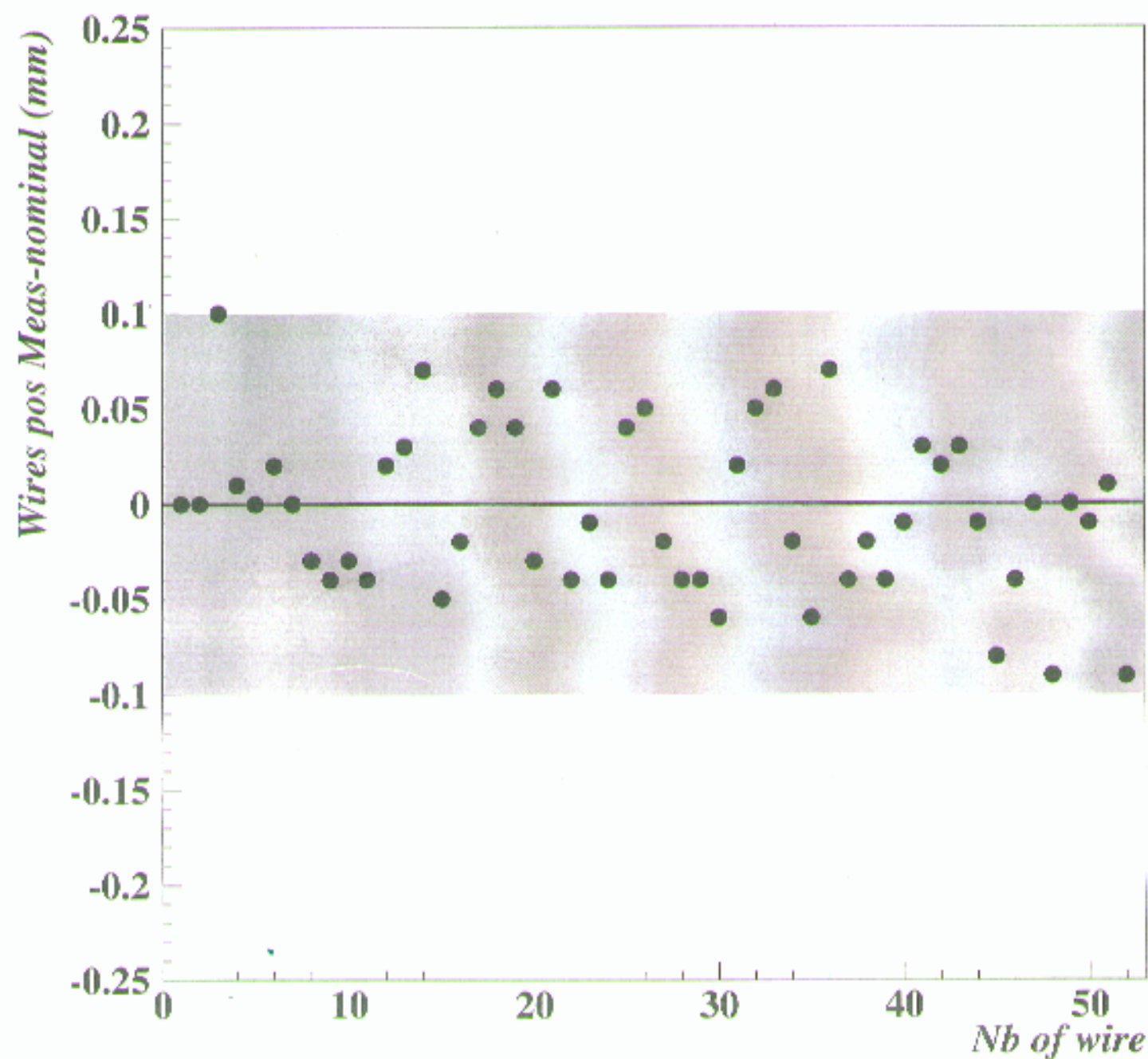




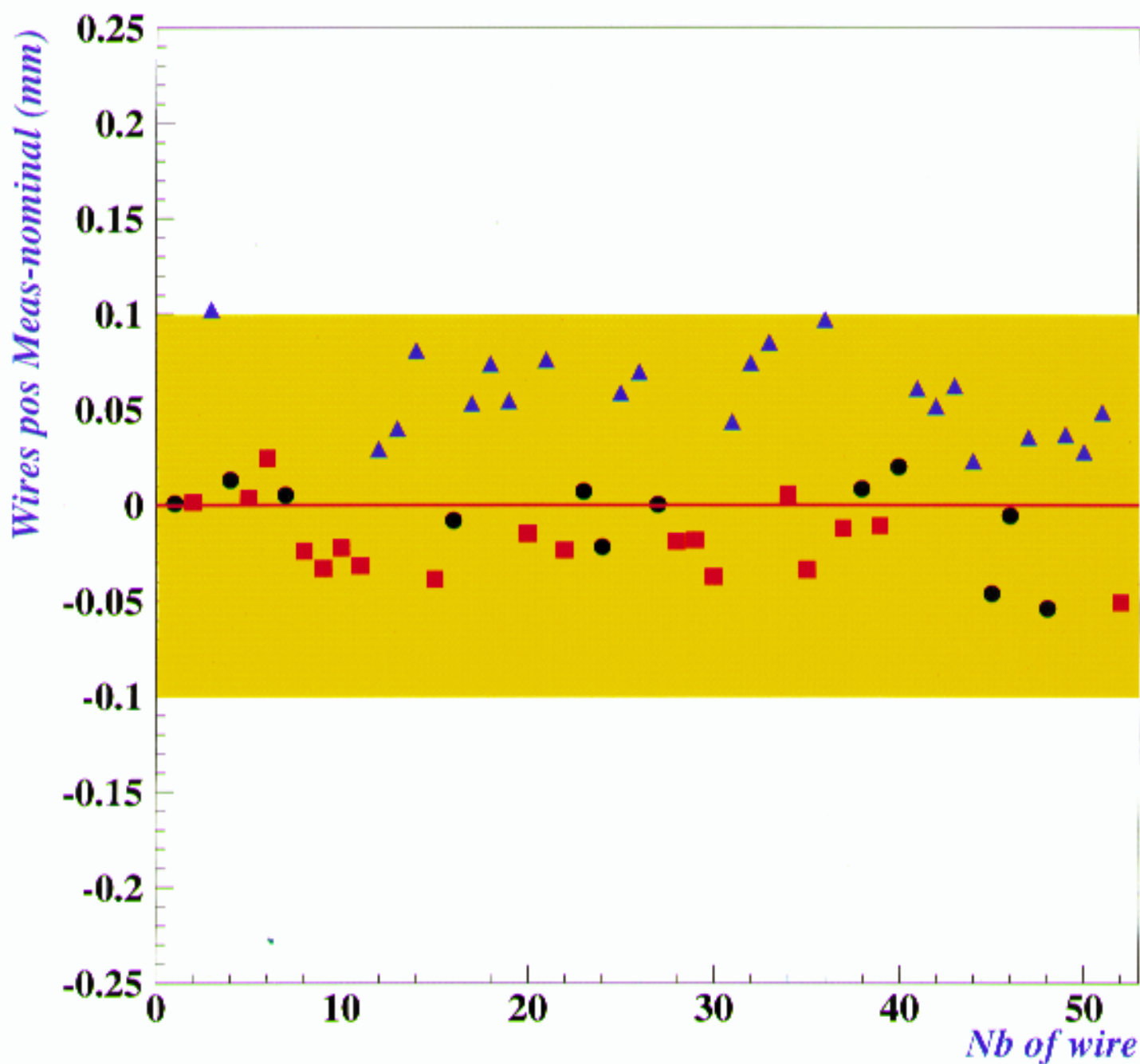
Experience in building SL's

- Not too many built so far. The experience is not overwhelming.
- Building the first superlayer is the best opportunity to calibrate your tools and this takes time !
 - ↳ DO NOT COUNT ON 9 DAYS / SL with the first one
- It is important to understand the geometry of your first SL
 - ◆ *Check strip positions in aluminum plates.*
 - ◆ *Check relative position of I beams and endplugs as provided by the Ibeam tool.*
 - ◆ *Measure everything in the finished layers.*
- We realised that there are 2 kinds of endplugs which differ by 0.1 mm in the wire positioning.
- There are many operations and checks to be done during the gluing process. A detailed list should be there to be followed by technicians or whoever is in charge of the assembly team.

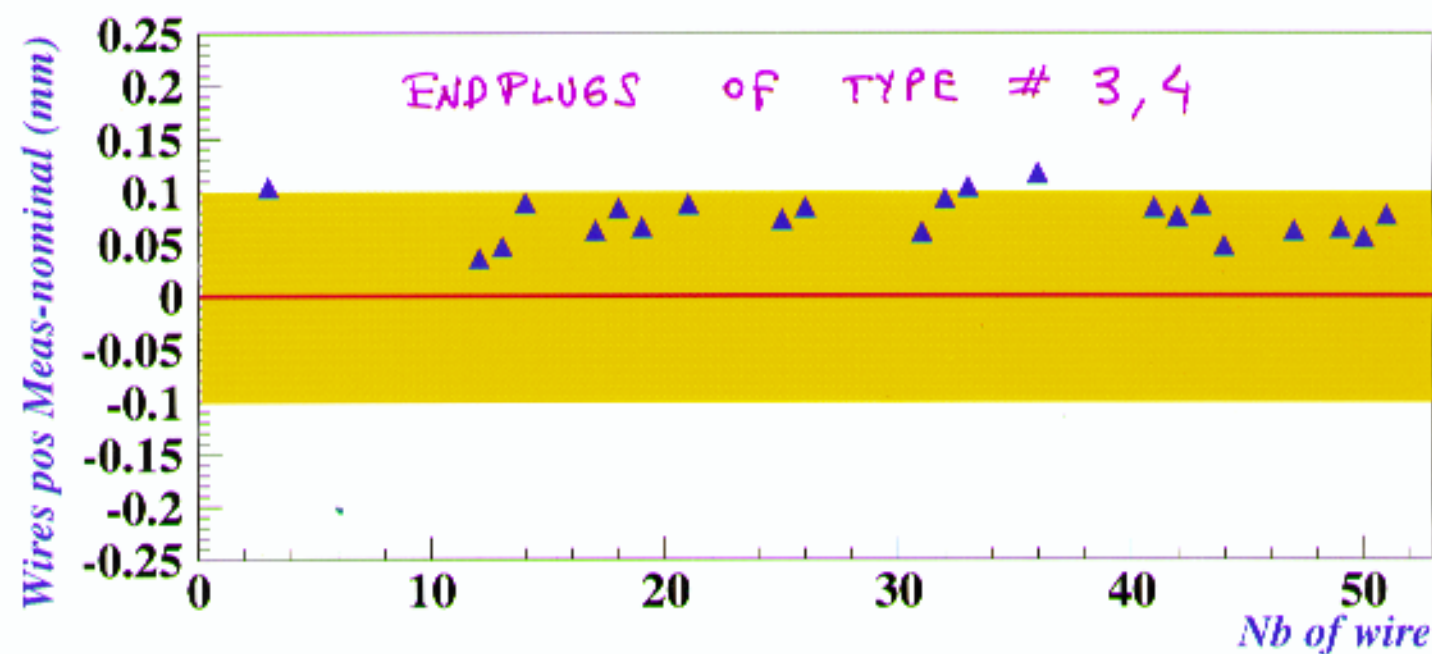
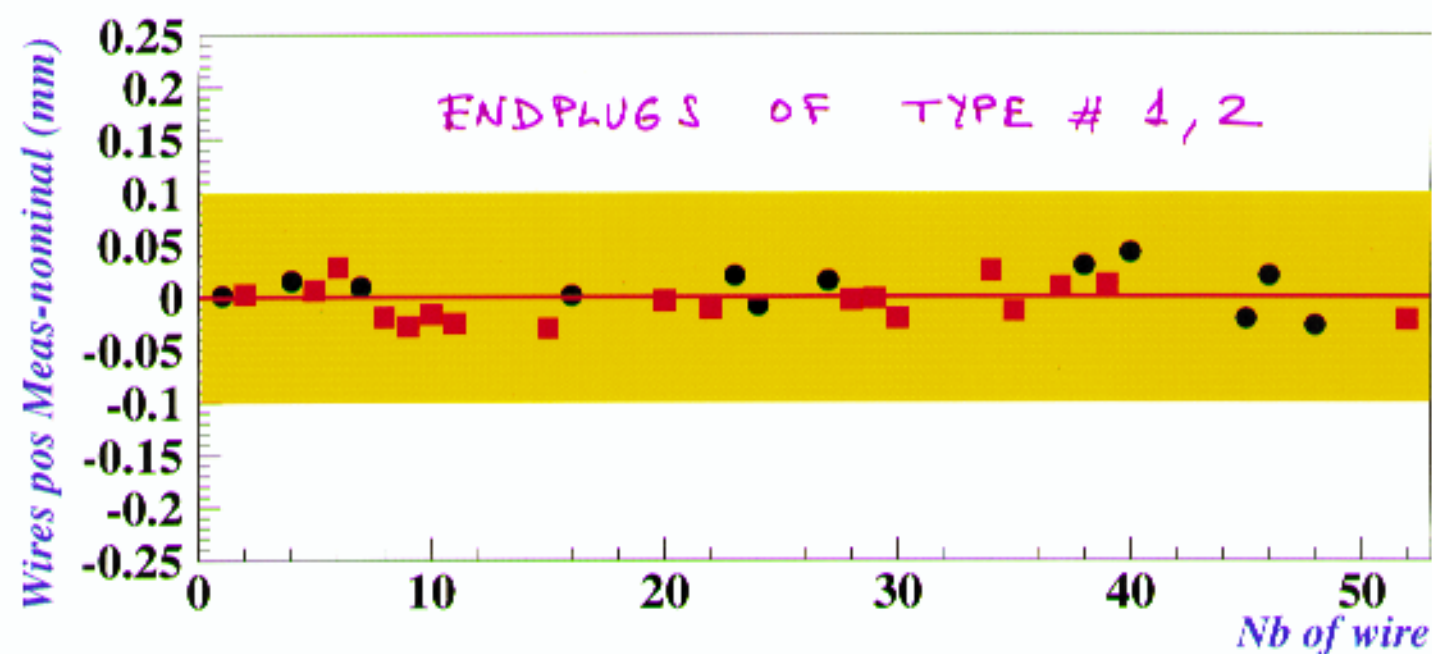
Layer 4 (Wires)



Layer 4 (Wires)



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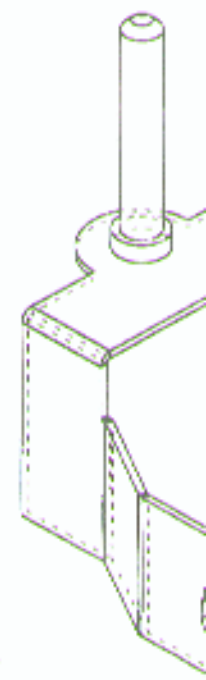
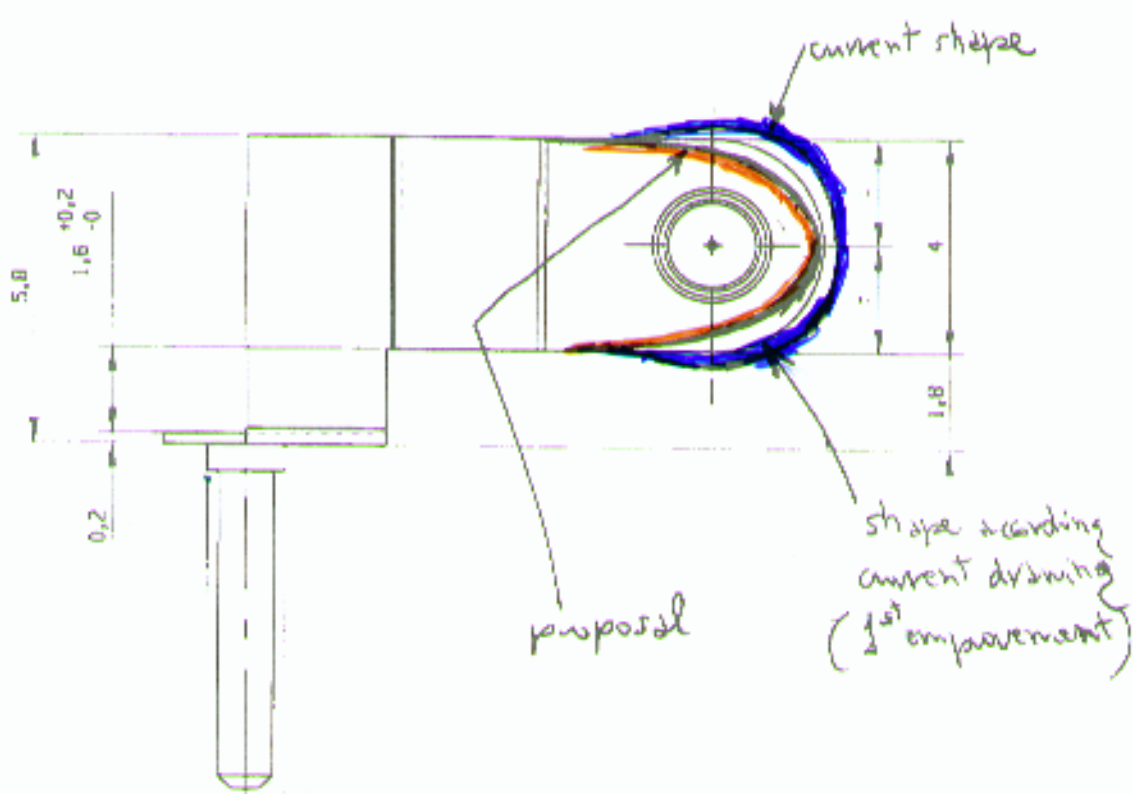
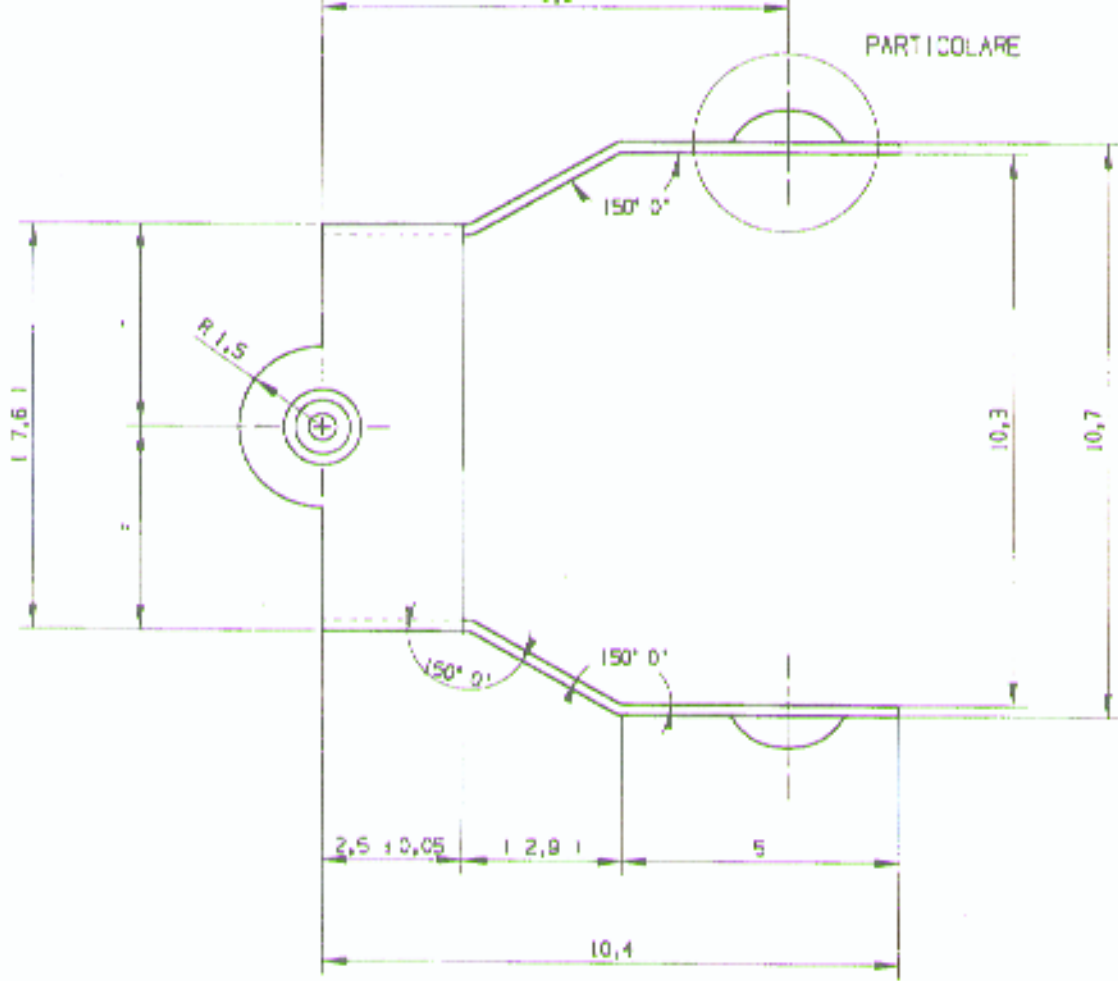


PEGADO INTERMEDIO 1

- 1- Poner dos papeles de estraza de 200 mm a lo largo de los bordes Y de la supercapa, apoyados en los end plugs de la 1ª capa de forma que cubra los extremos de la primera chapa y un buen trozo de mesa.
- 2- Pegar en ambos bordes Y de la supercapa dos cintas de Mylar amarillo de 10 mm de ancho cubriendo todos los espacios entre los end plug y las vigas. Las cintas deben cubrir 1 mm del end plug.
- 3- Pegar 2 cintas de pintor de 20 mm en los 2 últimos mm del end plug. Los 18 mm restantes de las cintas sobrevuelan fuera de la supercapa.
- 4- Comprobar que la válvula de distribución del pegamento señale hacia la bomba de pegamento, que los émbolos están llenos y que los conductos del cabezal estén limpios de pegamento fraguado.
- 5- Ponga una cánula mezcladora limpia en el cabezal de pegamento.
- 6- Ejecute el programa de dispensado de pegamento. Al comienzo, mientras se purga el sistema, poner un papel para recoger el exceso de pegamento. Las siguientes operaciones se realizan mientras se dispensa pegamento.
- 7- Recoja una plancha intermedia con el útil de vacío. La toma de aire comprimido del útil debe estar situada sobre el borde de la chapa opuesto al de referencia. Equilibrese bien la chapa. Aplíquese vacío.
- 8- Ponga sendas cintas de pintor sobre los primeros 5 mm de los bordes de la chapa perpendiculares a los hilos. Déjese libre la zona correspondiente a la referencia X.
- 9- Ponga una cinta de mylar de 10 mm a los 20 mm del extremo del electrodo de aluminio del front end de los electrodos.
- 10- Mezcle una porción (1 mililitro) de pegamento conductor y rellene con él una jeringa.
- 11- Espere a que termine el dispensado de pegamento.
- 12- Ponerle una funda a la cánula mezcladora para que no gotee y continuar el programa de dispensado para que el cabezal se sitúe en el extremo izquierdo de la mesa.
- 13- Retire las cintas de Mylar y las cintas de pintor.
- 14- En el front end, poner una pizca de pegamento conductor en el lugar de cada viga cubierto por el mylar.

PEGADO INTERMEDIO 2

- 15- Presentar con la grúa la chapa intermedia sujeta con el útil de vacío. El borde de referencia debe apoyarse en los discos de referencia Y. El borde opuesto ha de estar levantado. Situar visualmente el borde de referencia X sobre su tope.
- 16- Bajar lentamente la chapa con la grúa con dos personas asegurando en todo momento el contacto con las referencias Y. Mientras el encargado de la grúa se asegura que el borde de referencia X baja hasta su tope.
- 17- Una vez que la chapa está en su lugar retírese el útil de vacío a su lugar de reposo.
- 18- Active el programa de pegado de forma que el cabezal se sitúe cerca del origen.
- 19- Retire la protección de la cánula mezcladora.
- 20- Dispense pegamento sobre la chapa. Las siguientes operaciones se realizan mientras se dispensa pegamento.
- 21- Recoja con la grúa el útil de vigas, cargado de vigas y end plugs, del almacén de útiles y situarlo a 1 metro sobre la mesa.
- 22- Espere a que termine el dispensado de pegamento.
- 23- Ponga el protector a la cánula mezcladora y continúese el programa para llevar el cabezal al extremo izquierdo de la mesa.
- 24- Retire las tres cintas de pintor.
- 25- Retire los papeles de estraza protectores.
- 26- Aplique una pizca de pegamento conductor en la huella sobre las vigas de la cinta central.
- 27- Presentar el útil de vigas, ligeramente inclinado, a las referencias Y.
- 28- Bajar lentamente el útil, apretando fuertemente con la mano la barra del útil a las referencias Y.
- 29- Desatomille la estructura de volteo del útil de vigas y retírelo con la grúa.
- 30- Recoja con la grúa el peso de pegado y sitúelo sobre el útil de vigas, asegurando con la mano la posición del útil de vigas.
- 31- Retire la grúa.
- 32- Retire la cánula mezcladora y limpie el acceso de pegamento.



± 0.5
11.9 -0

- Checks/measurements to be done for each layer:

Wire tension - Simple to do, but slow with the single wire monitor.

→ We look forward to get the new tool from Aach.

Wire position - Once your CCD camera is calibrated, this is a simple and fast measurement.

- One of the effects we had to look at more carefully was the shift between layers (because of problems found in Q4). Now, we measured it to be less than 100 microns.

- Another problem we found is the fitting between endplugs and strings (for strips). Massimo is proposing a cure for this and we have to check.

- Before closing the SL: (see Massimo's note)

Cut to length and machine C profiles : EASY

Machine corner blocks and columns : TIME CONSUMING

A special tool is needed to position corner blocks.

We made another piece to measure Corner Block ref. surface with respect to the wires.

- Before gluing the last plate, we found convenient to install the HV boards (it takes less than 1 day) and HVC boards (it takes a couple of hours). It can be improved after some experience.
- Also before gluing the plates a last set of capacitive tests can be made to ensure all springs give good HV connection to strips and I beams.
- For HV tests in air we chose -2000, +2000, +4000 Volts. Currents in wires after 1 day \approx 1 nA/channel. If this is the case, the SL can be closed.

We found currents in a few wires and replaced them after cleaning the cell as carefully as possible.

Replacing wires is not an easy operation but can be done.

- Machining of HV and FE covers is VERY time consuming (mainly FE side, which by the way, there is no final version of this drawing yet). The question of wether to machine it before or after the surface treatment, is still not answered.
- Prepare HV connectors.
- Install FE side electronics, close SL (see Massimo's note), check gas tightness, and make last HV tests.

HERE WE ARE NOW 

MATERIAL PROCUREMENT

UNDER CIEMAT RESPONSIBILITY

We propose to deliver to all production sites the following items:

- Plastic Pieces

ENDPLUGS (Wire + I-beam)

I-beam HV protections

Gas Stoppers

- SL aluminium frames:

C profiles

L profiles

FE and LV covers

Things not yet defined { FE cover goldplating
FE cover machining

- MINICRATE aluminium profiles
- LV connectors (ready to mount)
- HV connectors
- ROB (Read Out Boards) (ready to mount)