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# Linac 4 Faraday cage

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P. Baudrenghien , D. Stellfeld

BE/RF

Reinforcements  
on the roof

# LHC cage. Outside

Honeycomb for  
air intake



Honeycomb for  
air exhaust

Tube for fire  
detection

Plate for fire  
detection

Feedtrough for coax cables

# Inside

Honeycomb for air intake and exhaust

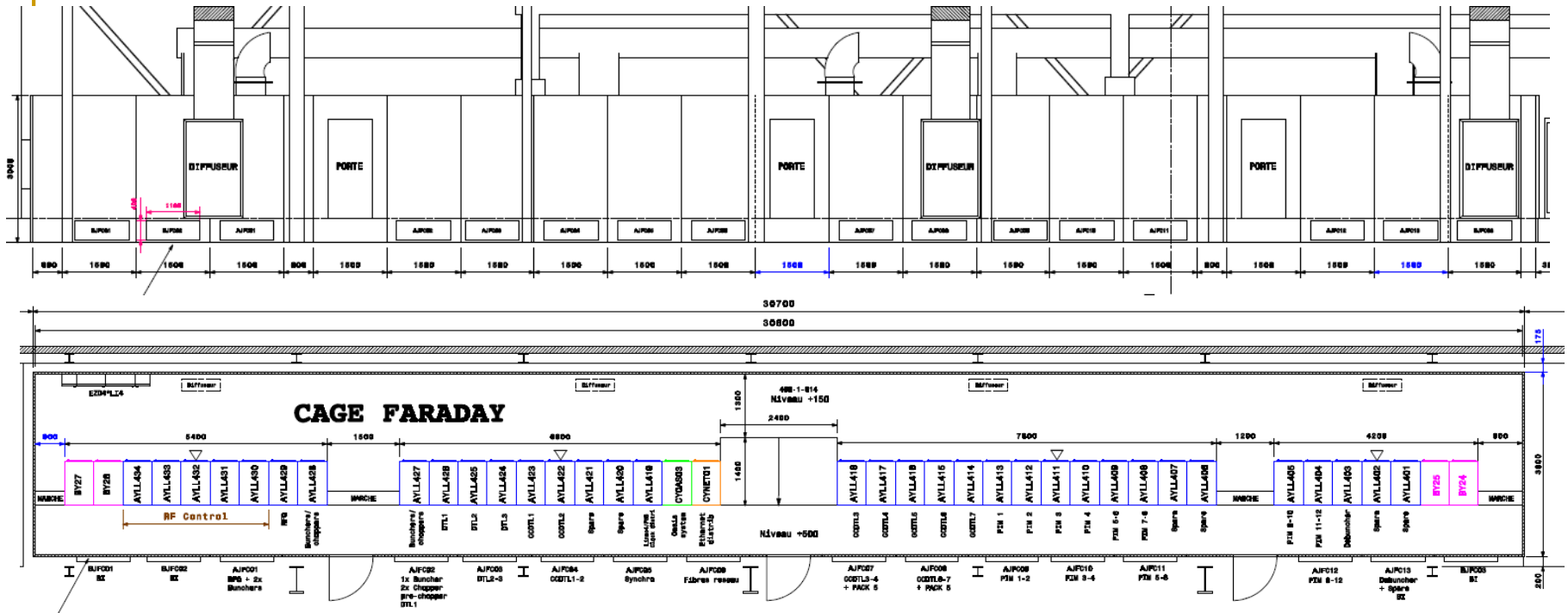
Metallic plates bolted together with copper joints

Coax entry via simple feed through



The LHC Faraday Cage during assembly

# Size



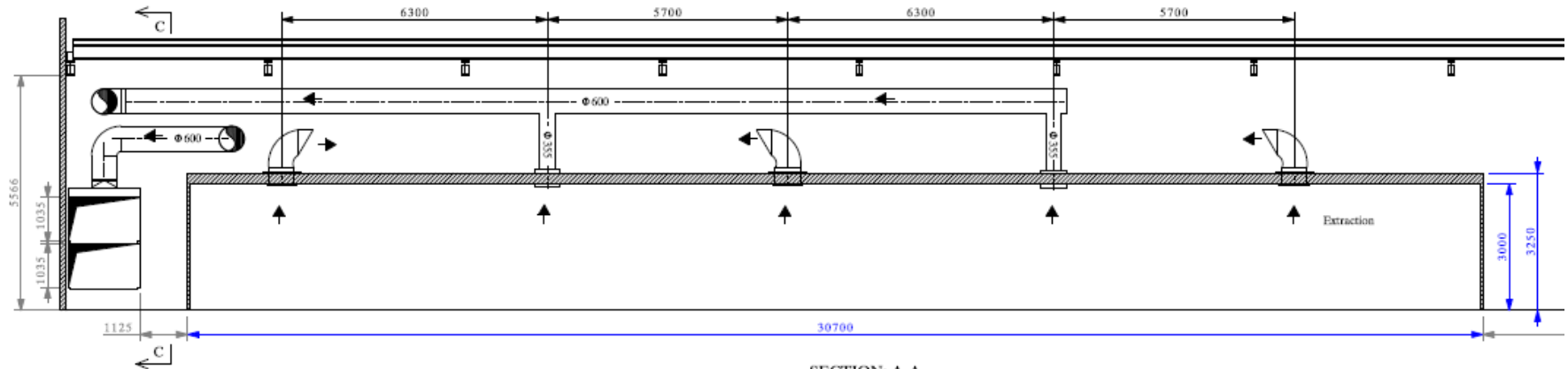
J.P. Billon-Grand

- Size 30700 x 3800 x 3000 (tolerances -100 +0)
- 40 racks
- 3 doors (900 x 2000 min)
- 16 patch panels for coax and fiber entry

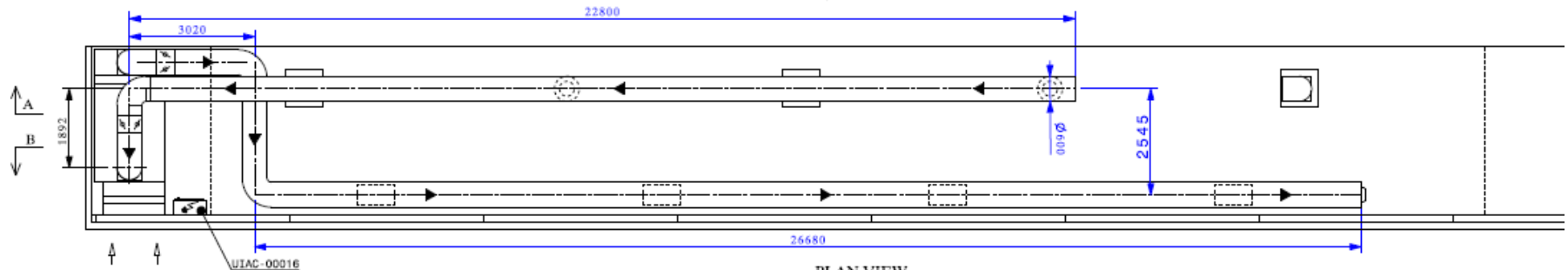
Check overall sizes  
Action: J.P. Billon-Grand, D. Stellfeld

# Cooling

Yannic Body



SECTION: A-A  
Scale: 1:75



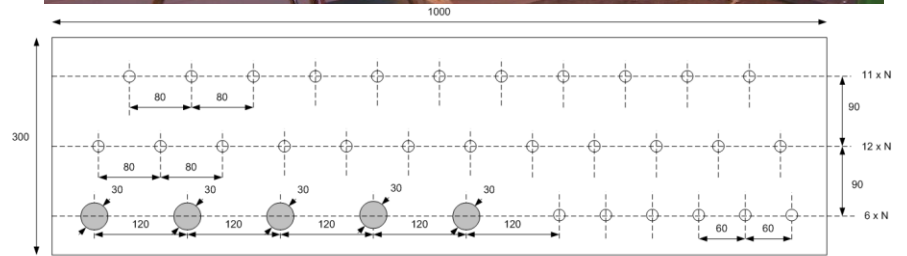
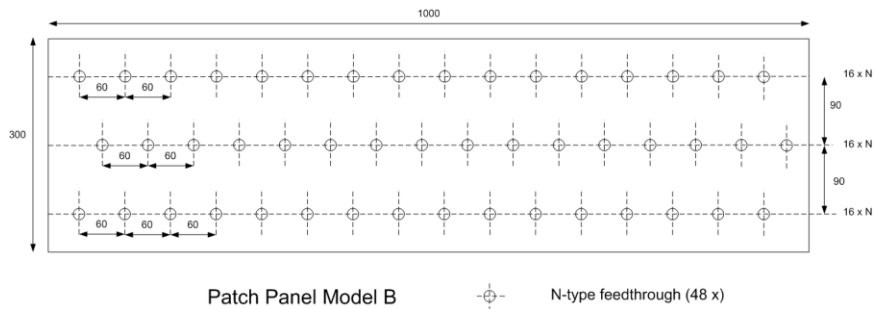
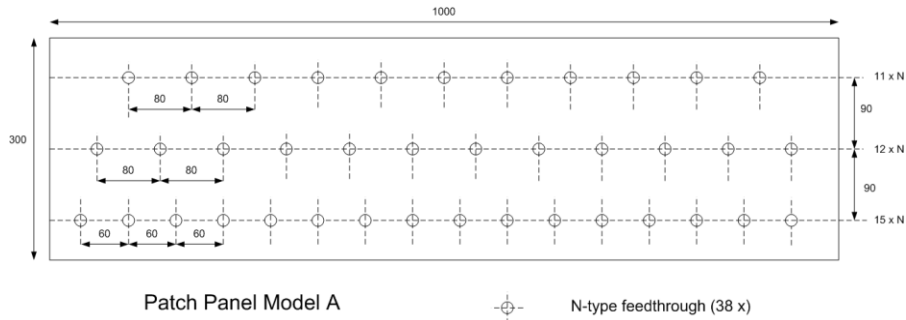
PLAN VIEW  
Scale: 1:75

- 4 diffusers
- 4 x 200x600 honeycomb for inlets
- 2 x 600x600 honeycomb for recycled air
- 3 x 600x600 honeycomb for extraction in the hall (motorized hoods)
- Temp set at 22 deg. Alarm at 25 deg. Mains off at 30 deg.

Position honeycombs  
Action: J.P. Billon-Grand, D. Stellfeld, Y. Body

# Signal entry

- 16 patch panels, 3 models
- All located in the side facing klystrons
- Max size: 1100 x 400 including bolts
- Must not extend higher than 450 mm above concrete floor (being discussed with D. Parchet)



Patch Panel Model C

N-type feedthrough (29 x)

Waveguide for Fiber-Optic passage (5 x)

# Powering

N .Dos Santos. See edms 1003296, June 2009  
Pre-etude de l'installation et recommandation de  
materiel electrique pour la Cage de Faraday

## ■ 2 circuits

### □ Tri-phase UPS

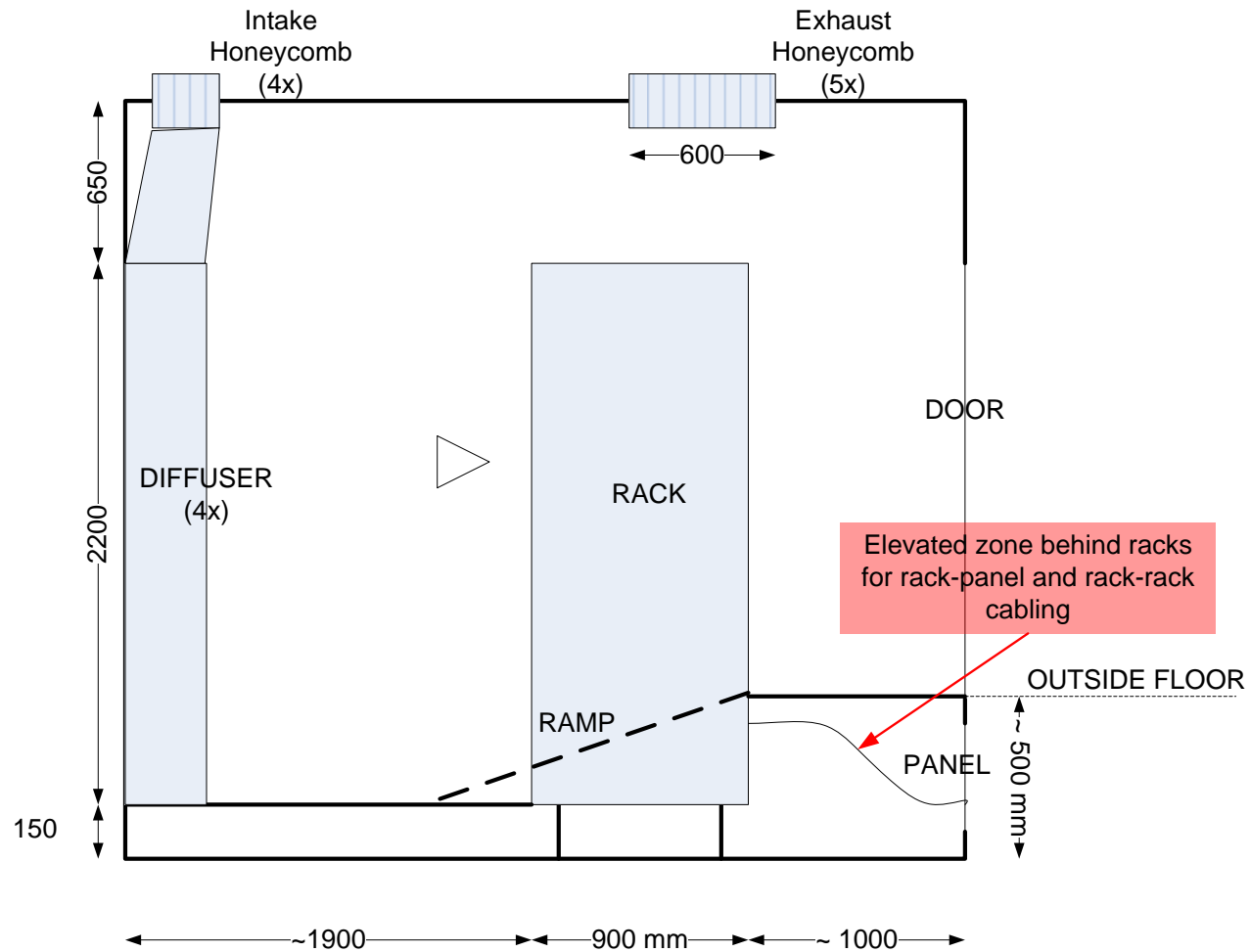
- Racks plus mains outlets
- 400 V/100 A (three phases plus neutral with independent ground line, TN-S network configuration before and after filter)
- Needed power: 30 kW (conservative)
- Circuit breaker piloted from temperature sensor
- Responsibility of contractant ends at the electric cabinet (**AJFC**)

### □ Mono-Phase unprotected

- Light only. 230V/20A
- Fluorescent tubes plus spots
- Needed power: 4 kW
- All under the responsibility of contractant

Cable entry on the roof ?

# Inside





# Miscellaneous

- **Fire detection:** Aspiration Smoke Detection units on the outside (how many? Located where?), type SecuriRAS . Duct for aspiration pipe, 30 mm inner diam min (check). Foresee attachment plates on the outside of cage.
- **Roof:** shall support the weight of 2 persons plus tools (300 kg) to ease installation of the AC system
- **Performances:** 80 dB attenuation min at 352 MHz and 1 GHz

How many aspiration ducts and where ?  
Action: J.P. Billon-Grand, D. Stellfeld, ?

# Calendar

- **MS-3699 completed**: 8 firms selected from D, CH, F, NL, UK and Finland
- **Final drawing** of the cage with all details. During Aug. (J.P. Billon-Grand, D. Stellfeld)
- **Prepare IT-3699**. August. Lazlo Abel (purchase), D. Stellfeld and P. Baudrenghien (Technical)
- 500 kCHF estimate + competitive tender -> **no need for Finance Committee**
- **Circulate IT document** around Linac4 management. Aug. Who?
- Send **IT begin Sept**
- Installation planned end **March-begin April 2011**
- 4 weeks installation

Detailed drawing with position of posts, honeycombs, mains entry, smoke detector ducts,...

Action: J.P. Billon-Grand, D. Stellfeld

Is the metallic platform installed before or after the cage?

Draft of IT-3699 in my public (user baudre)