



The CMS muon upscope



**Restore the TDR version of CMS ↻ ME4 CSC's and
RE4 RPC's on Yoke YE3**

- ☐ **When ?** During first long shutdown (2012 or 2013)
- ☐ **Who ?** CSC's US groups @ CERN
 RPC's China, Korea, Pakistan + Belgium, India, Italy...
- ☐ **What ?** 144 chambers + 56 spares (also for stations 2 & 3)
- ☐ **Where ?** Ghent (~30), India (~30), CERN (~140)



Restoring the TDR low η system



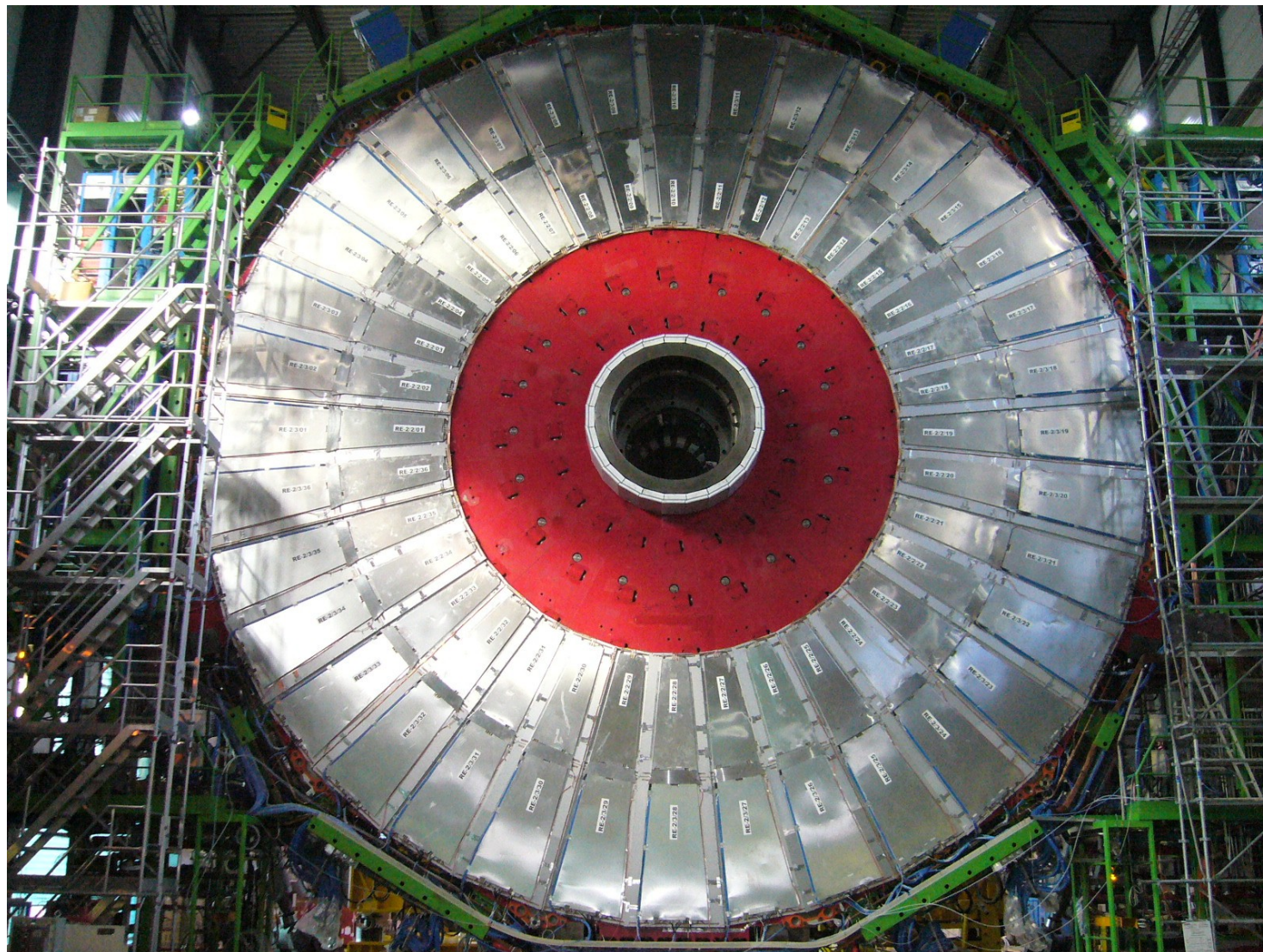
- ❑ Use identical chamber design ; modest integration required and backward compatible (spares)
- ❑ Build station RE4 i.e. **144** RPC of the low η type + spares (**~56**)
- ❑ Install on YE3 behind CSC's
- ❑ All services to the RE4 station (in UXC) ex. :
 - HV umbilical in YE1 cable chains
 - Extra Patch Panel space on YE1
 - Rackspace on YE3 and services in mini cable chains
 - Gas distribution rack on YE3
 - Cooling off YE3 manifold
 - Link system

...

Price tag ~ 3.6 Mio CHF

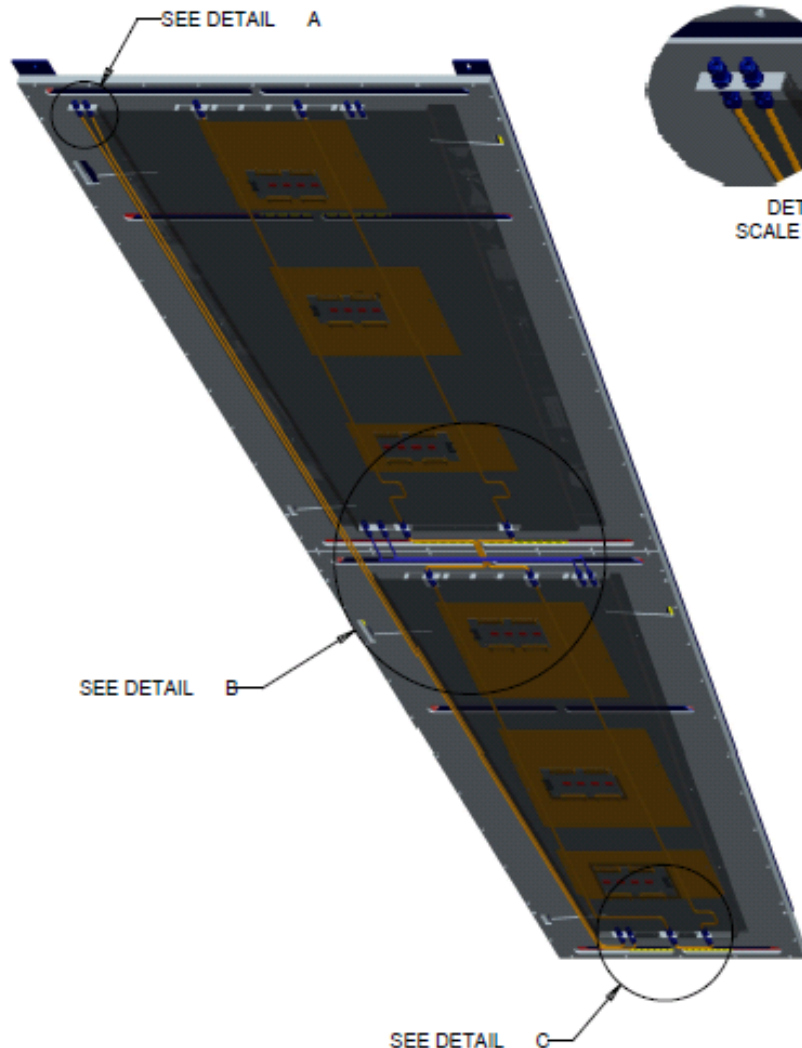


RE-2 station

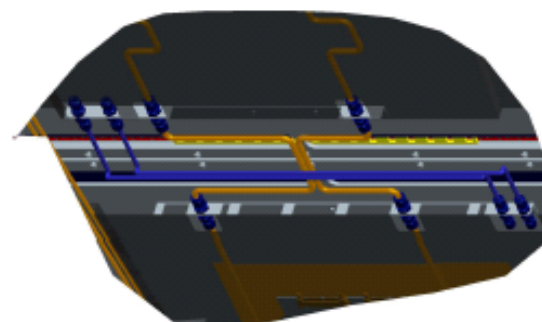




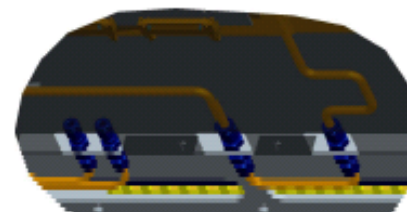
10 degree sector design



DETAIL A
SCALE 0.300



DETAIL B
SCALE 0.200

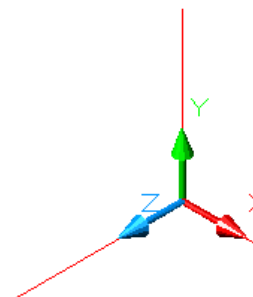
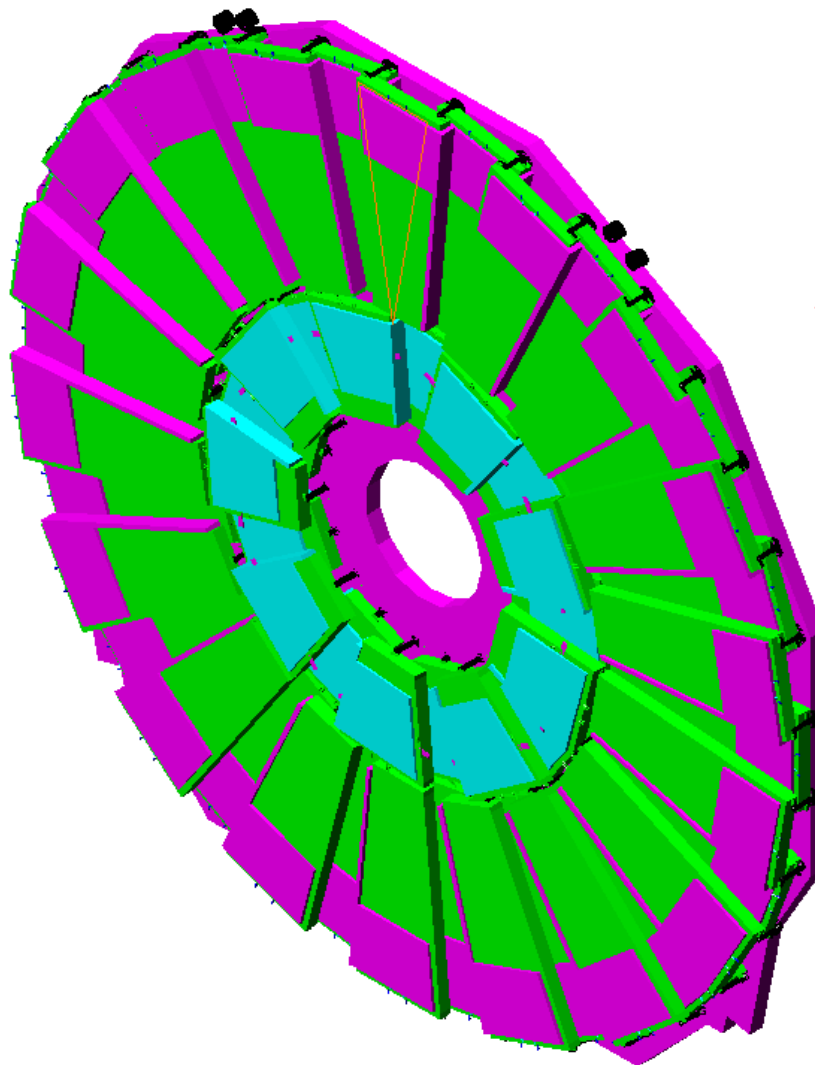


DETAIL C
SCALE 0.300

PLAN NR. RE4-R2-R3-Frame-001	REPLACE:	SCALE: 0.1
Design by: Luc Van Lancker	Verify by: LVL	Datum: 08-Nov-10
TITLE: RE4-R2-R3-Frame-piping	ASSEMBLY: RPC RE4 FRAME	ISO-SYMBOL:
VUB DEPT ELEM PLEINLAAN 2 - 1050 BRUSSEL TEL:32-2-6293231 FAX:00-32-2-6293816		Vrije Universiteit Brussel

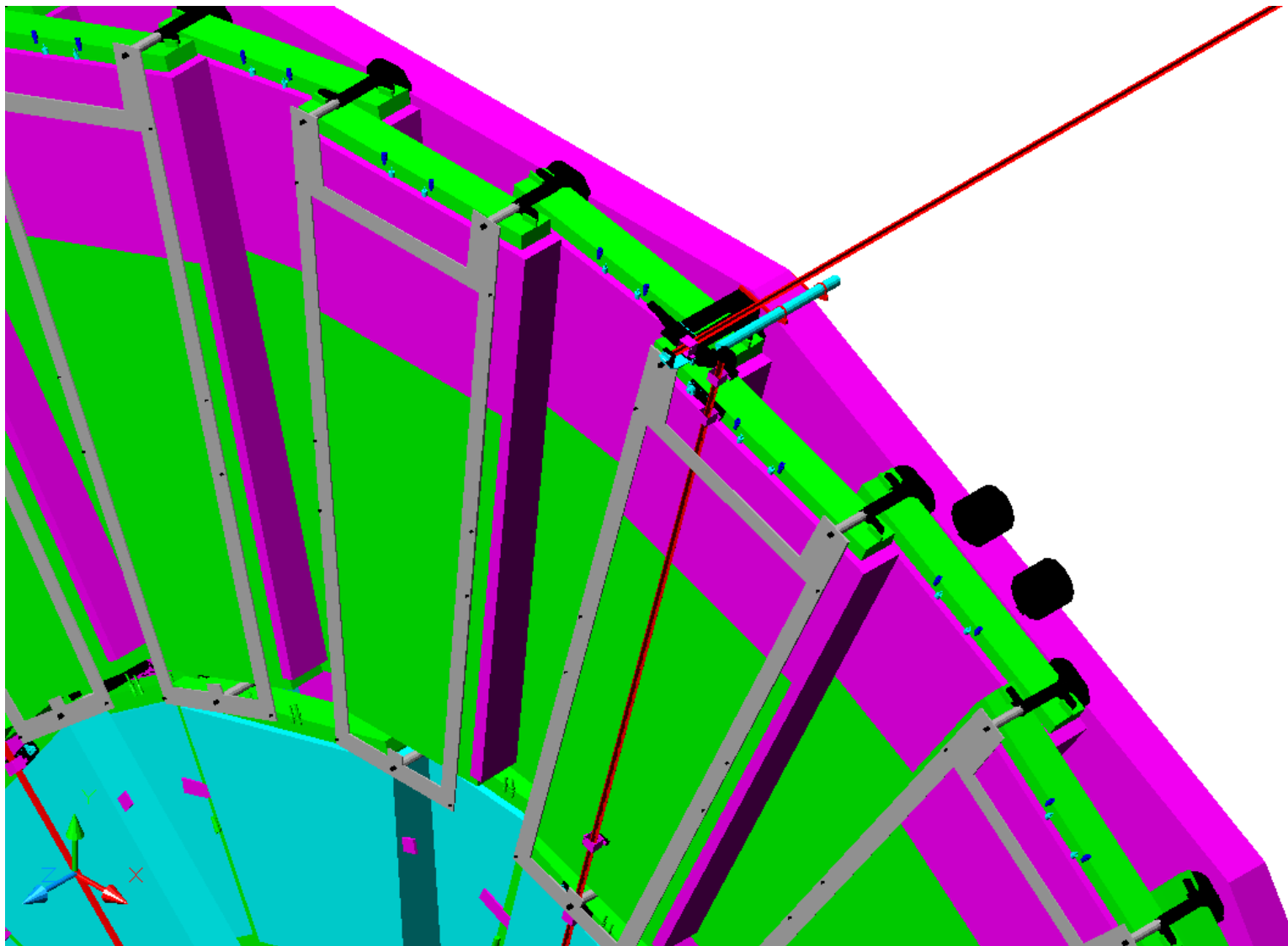


ME4 on Yoke YE3





Interface RPC frame





Changes & improvements but remaining backward compatible



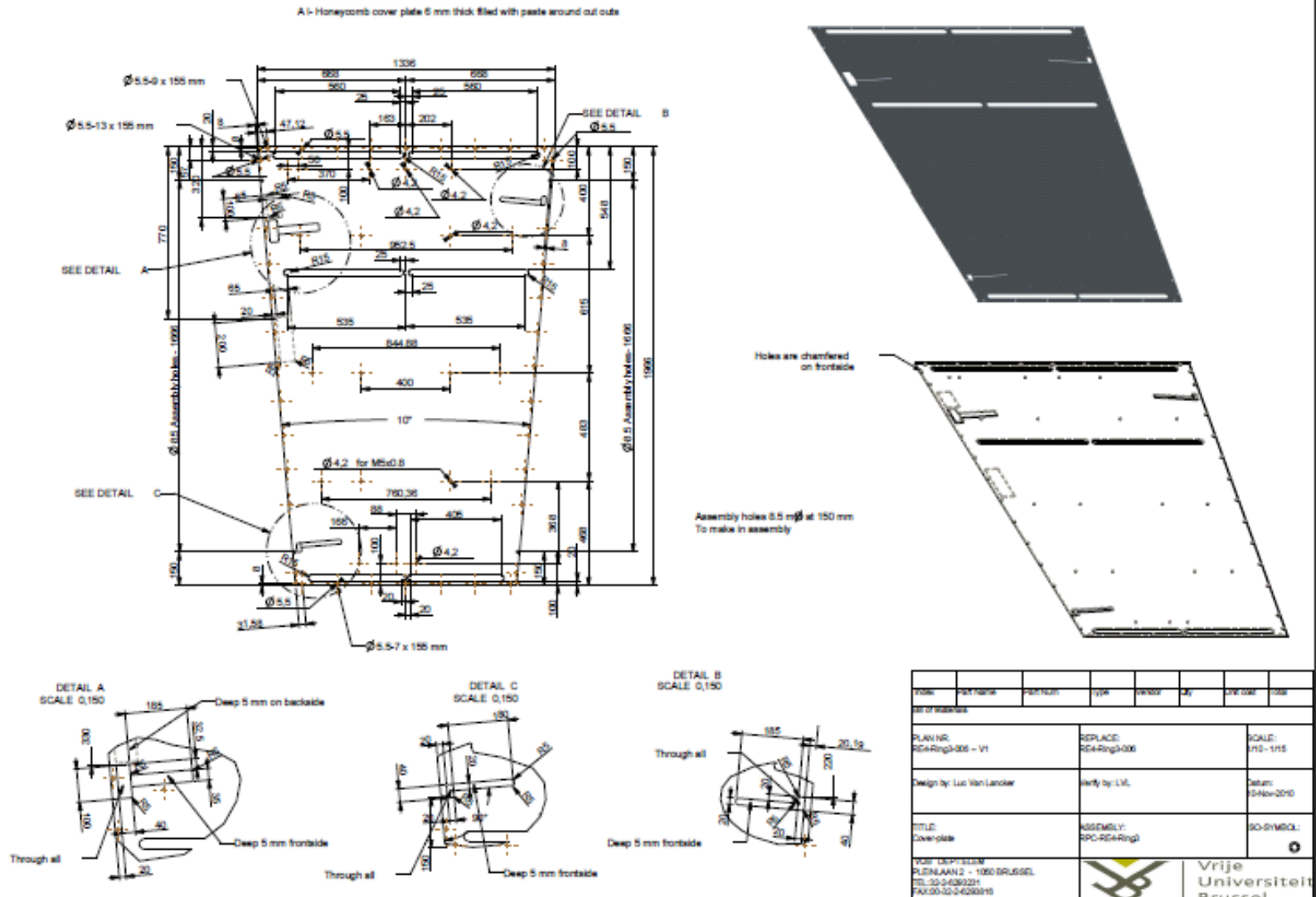
- ❑ Preassembled 10 degree sector (fast installation & removal)
- ❑ Improved connectors (HV & coax/FEB connection)
- ❑ Improved cooling also for chamber body (see simulation)
use double ferrule connectors (SAGANA)
- ❑ Decrease Desy chaining for gas & cooling (per 10 degree)
- ❑ Internal gas flow unchanged (see simulations)
- ❑ Improved grounding (alodine screen box)



Status of mechanics



- ❑ Honeycomb chamber boxes, strip panels, Cu and mylar sheets delivered from China for 3 RE4/2 and 3 RE4/3
- ❑ Auxilliary parts fabricated at CERN for these 6 PTY's
- ❑ All production drawings ready taking experience of chamber assembly into account
- ❑ Still on HOLD: patch panel (HV connector & distri board)
cooling circuits (awaiting test with CSC)
- ❑ Ready to order Chinese parts & FEB's





Tentative schedule

