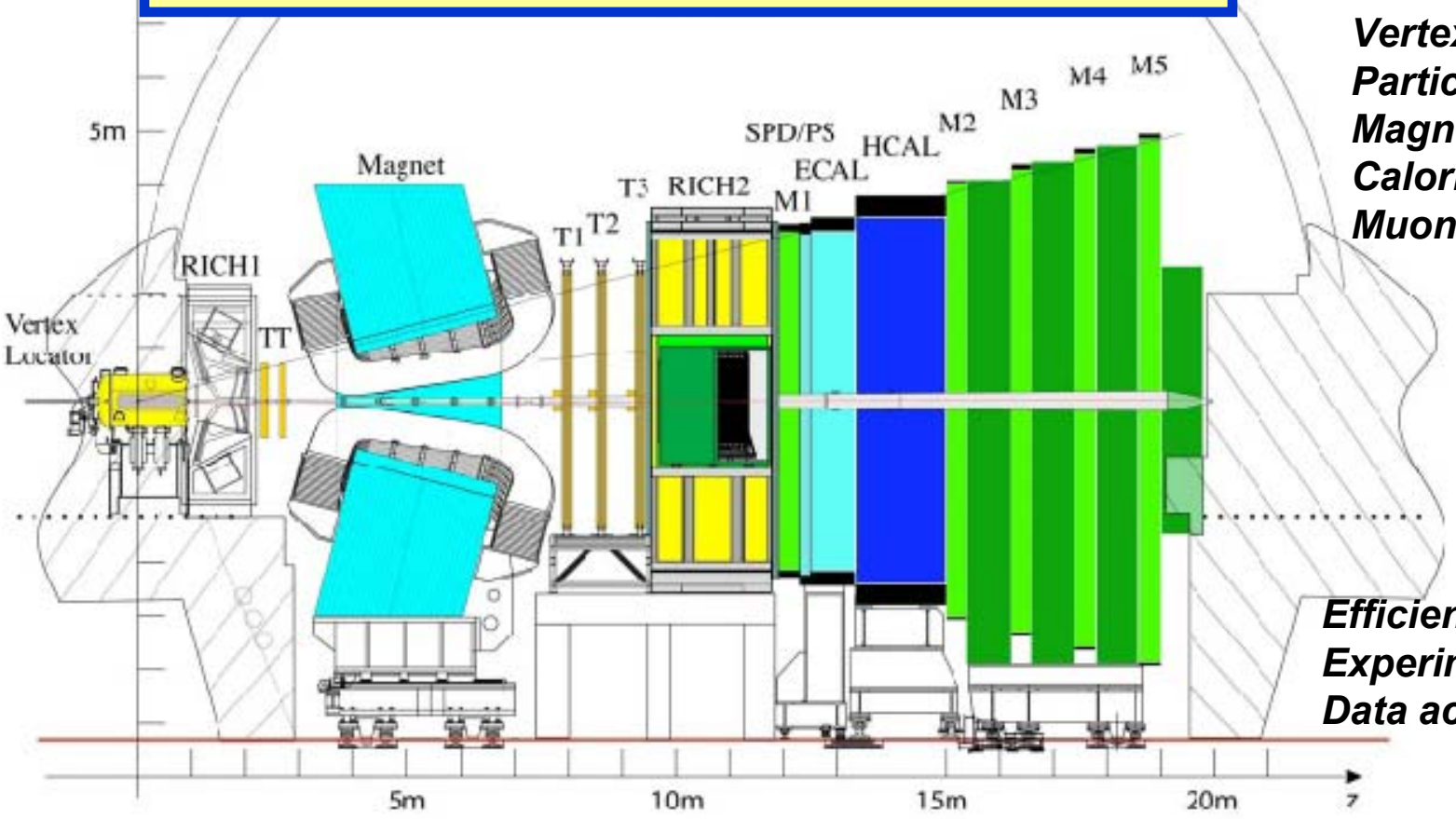
LHC Days in Split

Status of LHCb construction

Study of CP violation in B meson decays

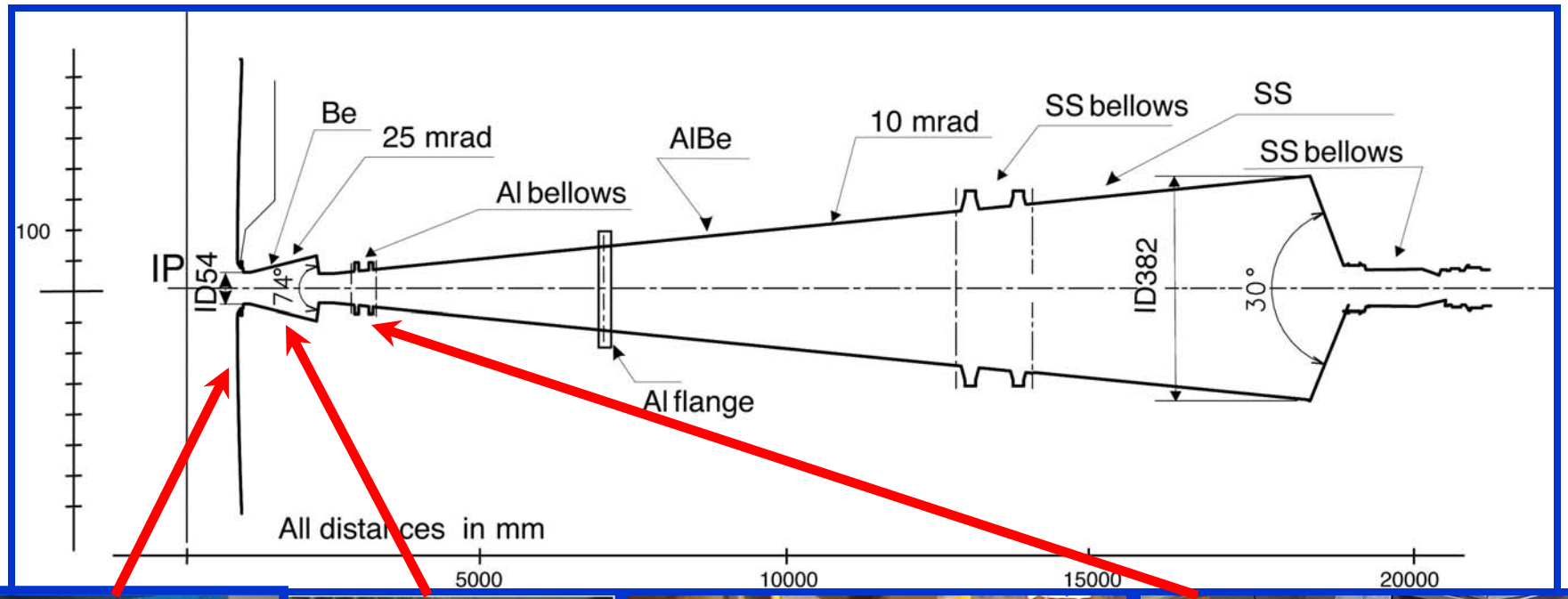


Vertex reconstruction
Particle ID up to 100GeV
Magnet spectrometer
Calorimeters
Muon system

Efficient multilevel trigger
Experiment control and
Data acquisition Systems

On behalf of the LHCb Collaboration *06.10.2004 Rustem DZHELYADIN (IHEP, Protvino)*

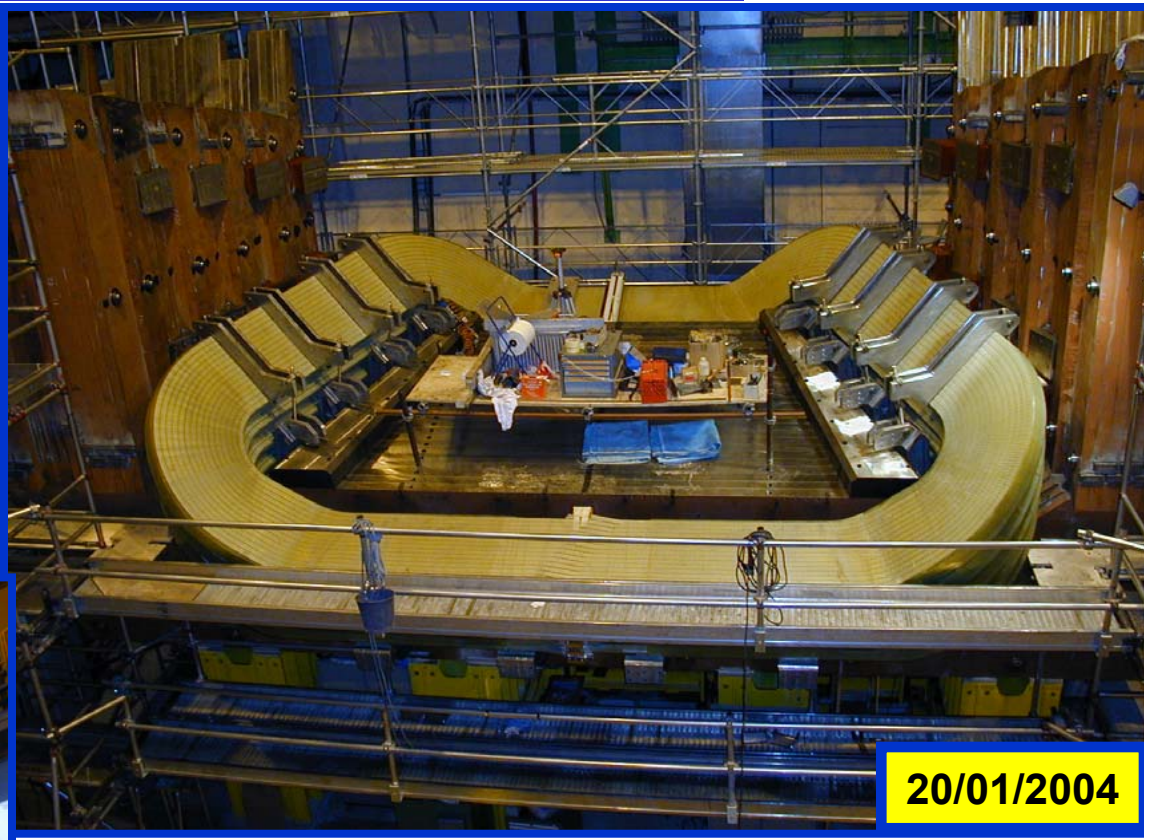
Beam pipe


Be
25 mrad
Al bellows
AlBe
10 mrad
SS bellows
SS
SS bellows
100
IP
ID54
74°
ID382
30°
Al flange
All distances in mm
5000
10000
15000
20000

Dipole magnet

17/11/2003

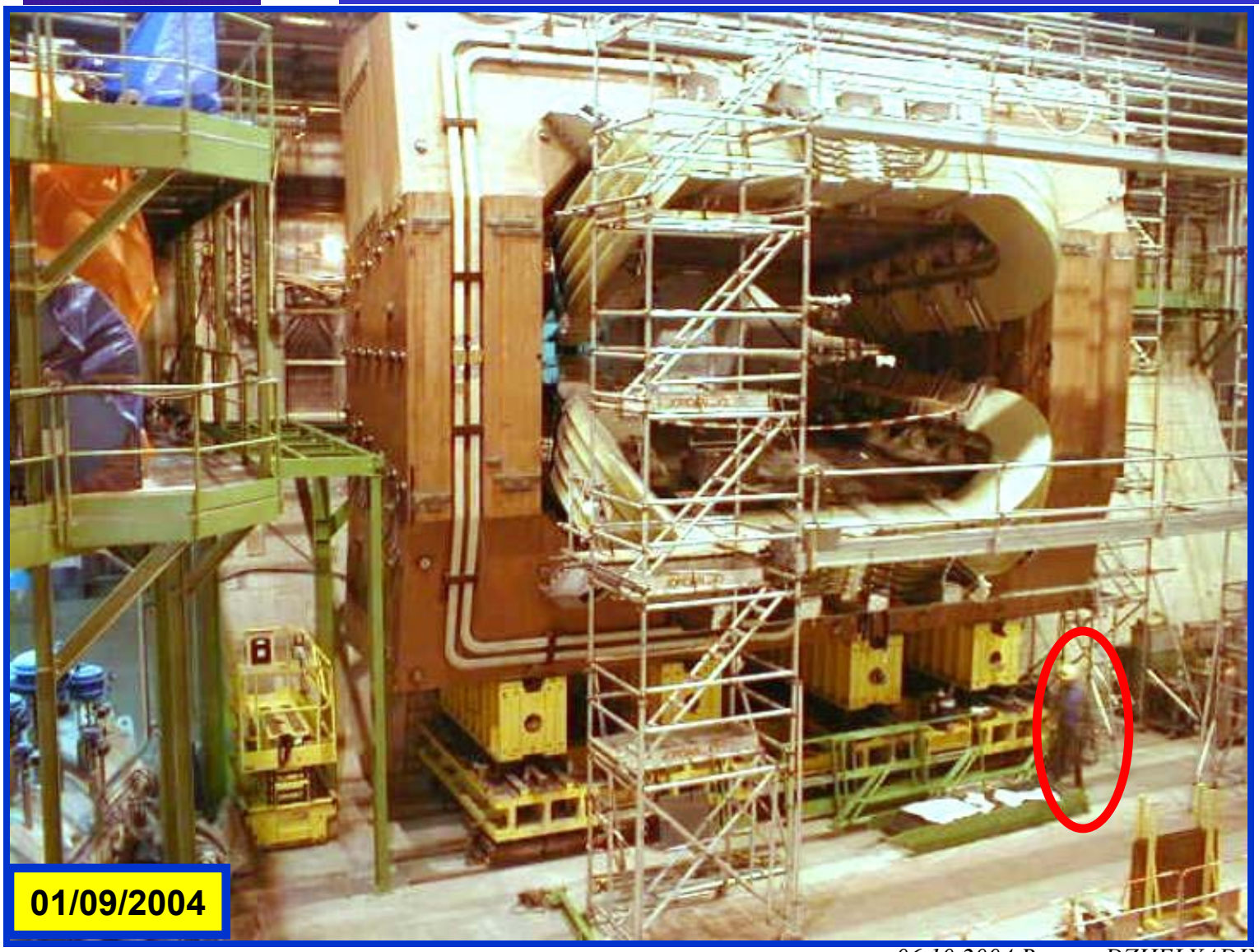
12/12/2003



20/01/2004

Magnet install in 2003-04

Dipole magnet

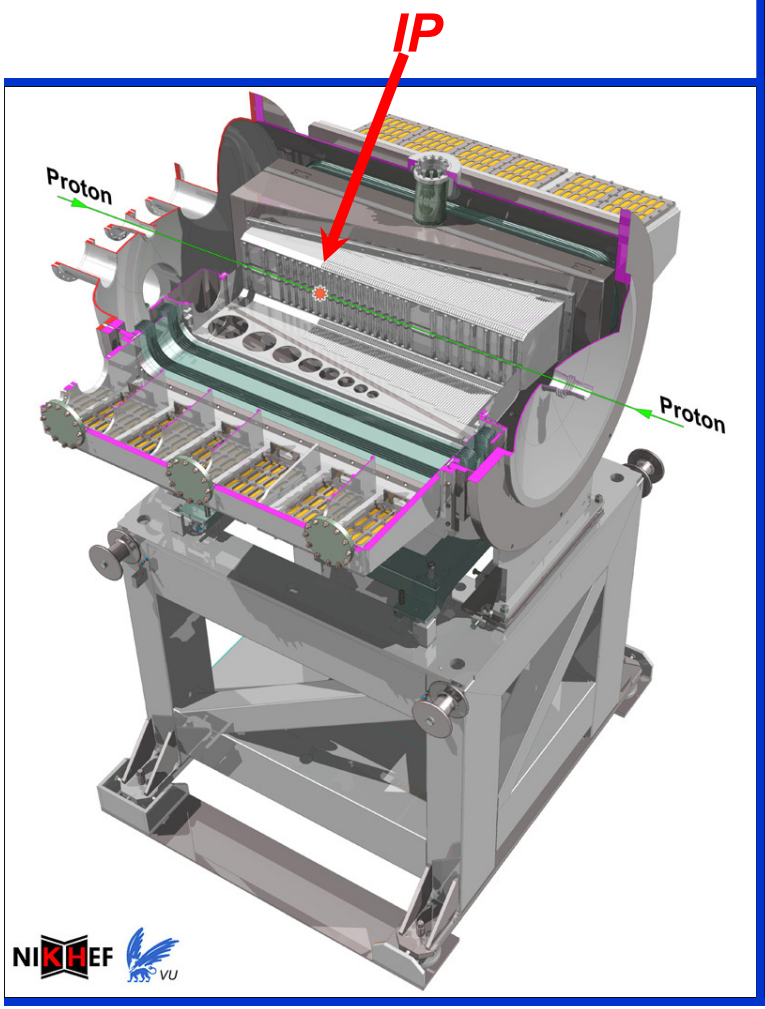


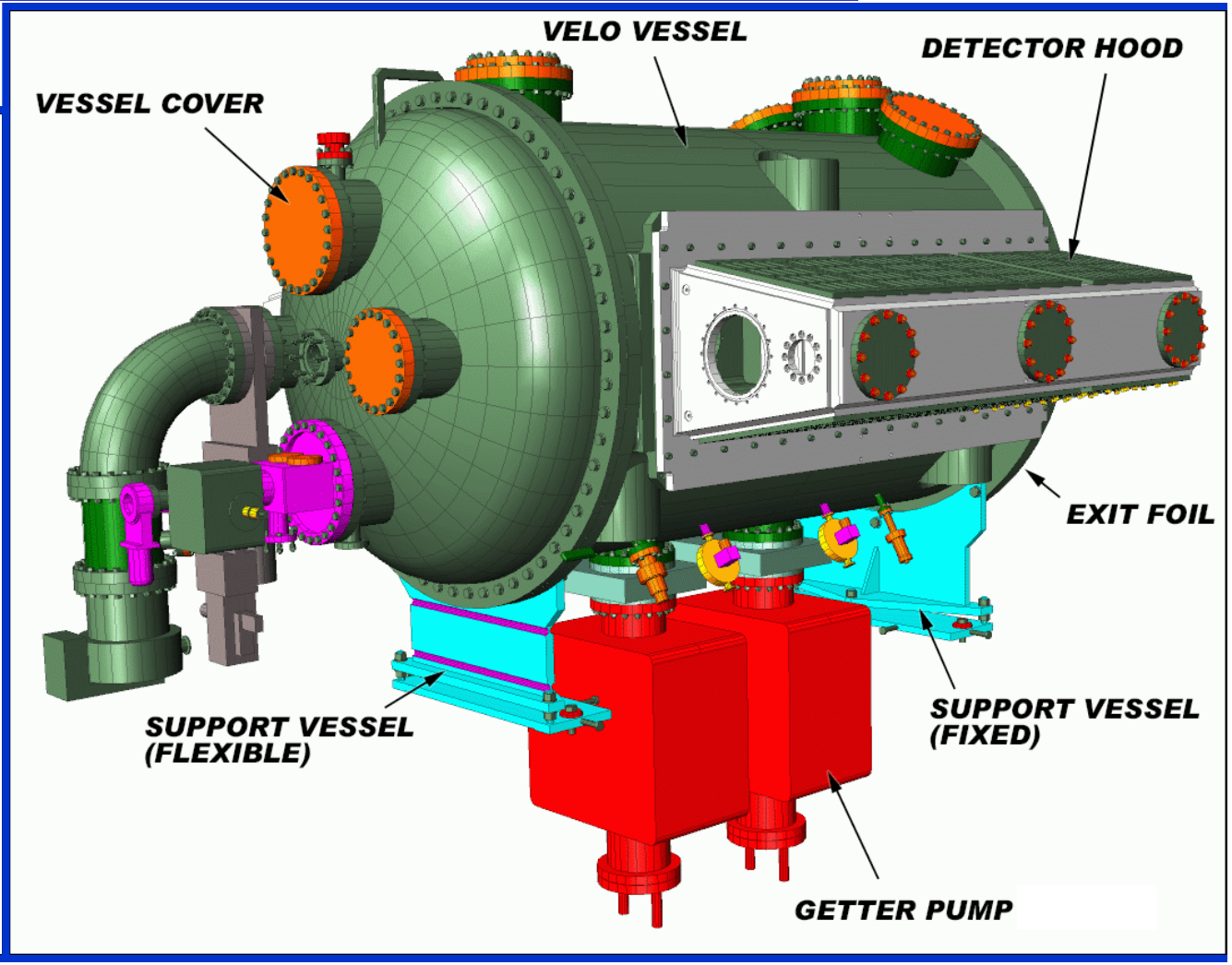
Magnet assembly done
Moved to working location (~1500 ton)
Connected to supplies

Currently preparing for field measurement

Ready for detector install in November 2004

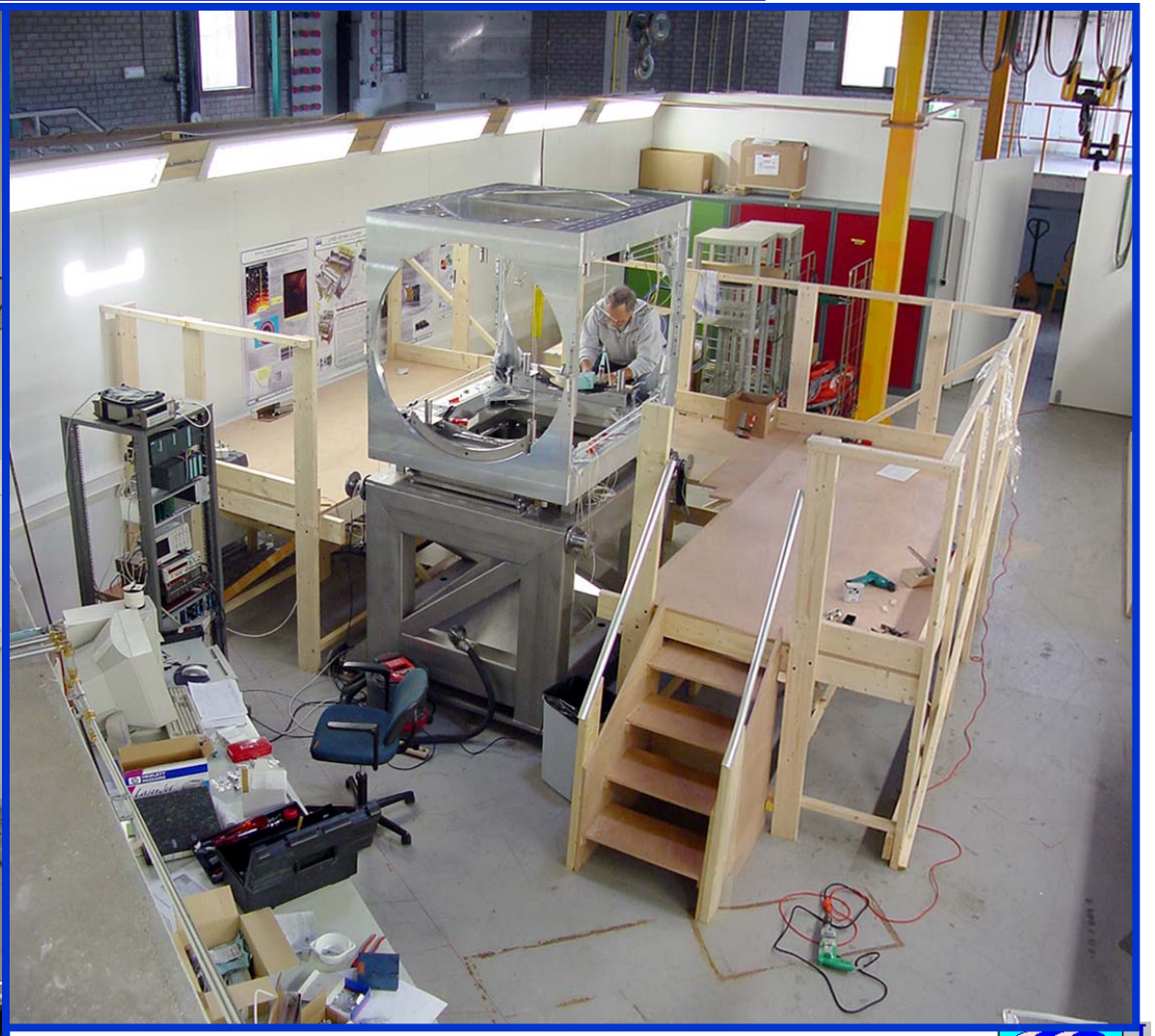
VErtex LOcator





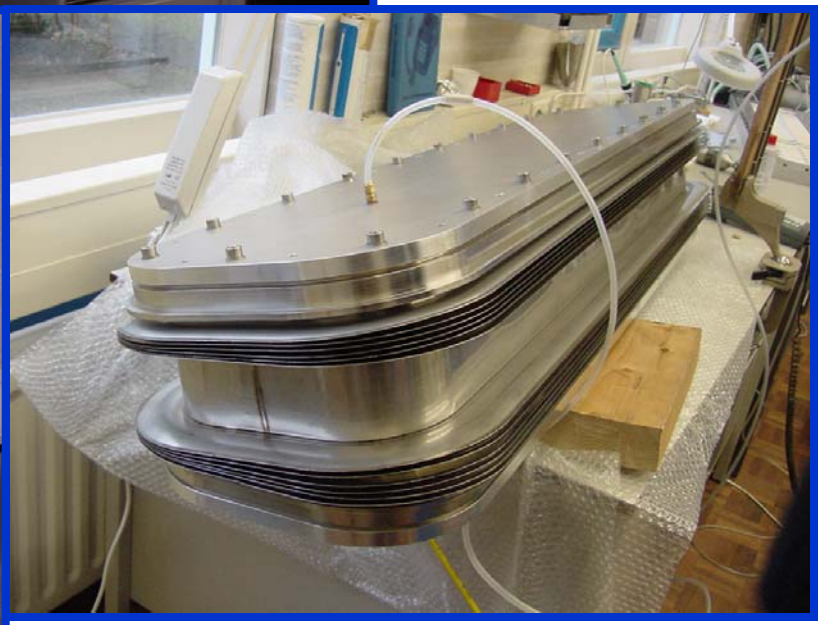
Status of LHCb construction

VErtex LOcator

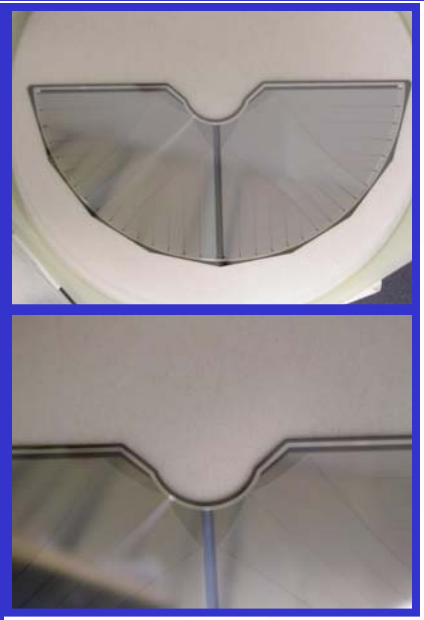


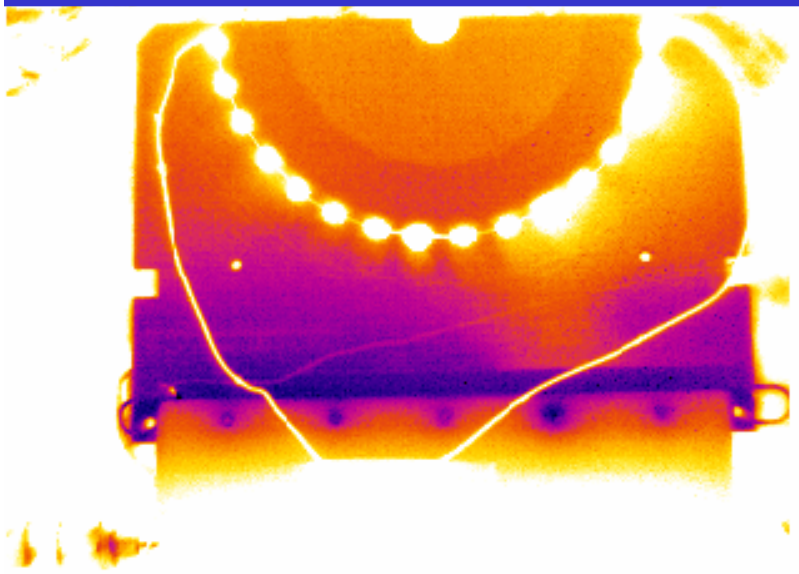
VErtex LOcator

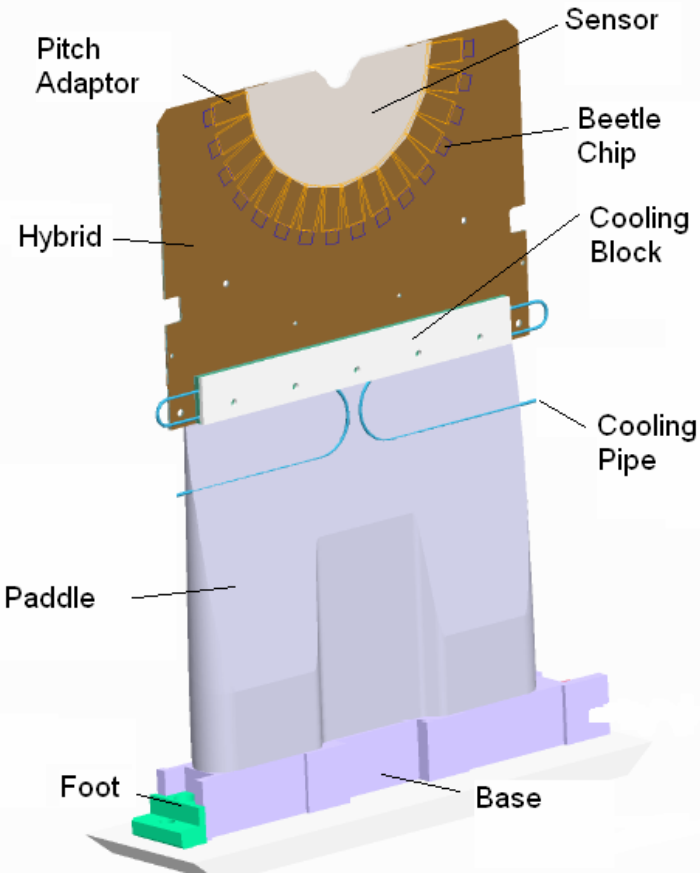
VELO mechanics under construction



VErtex LOcator

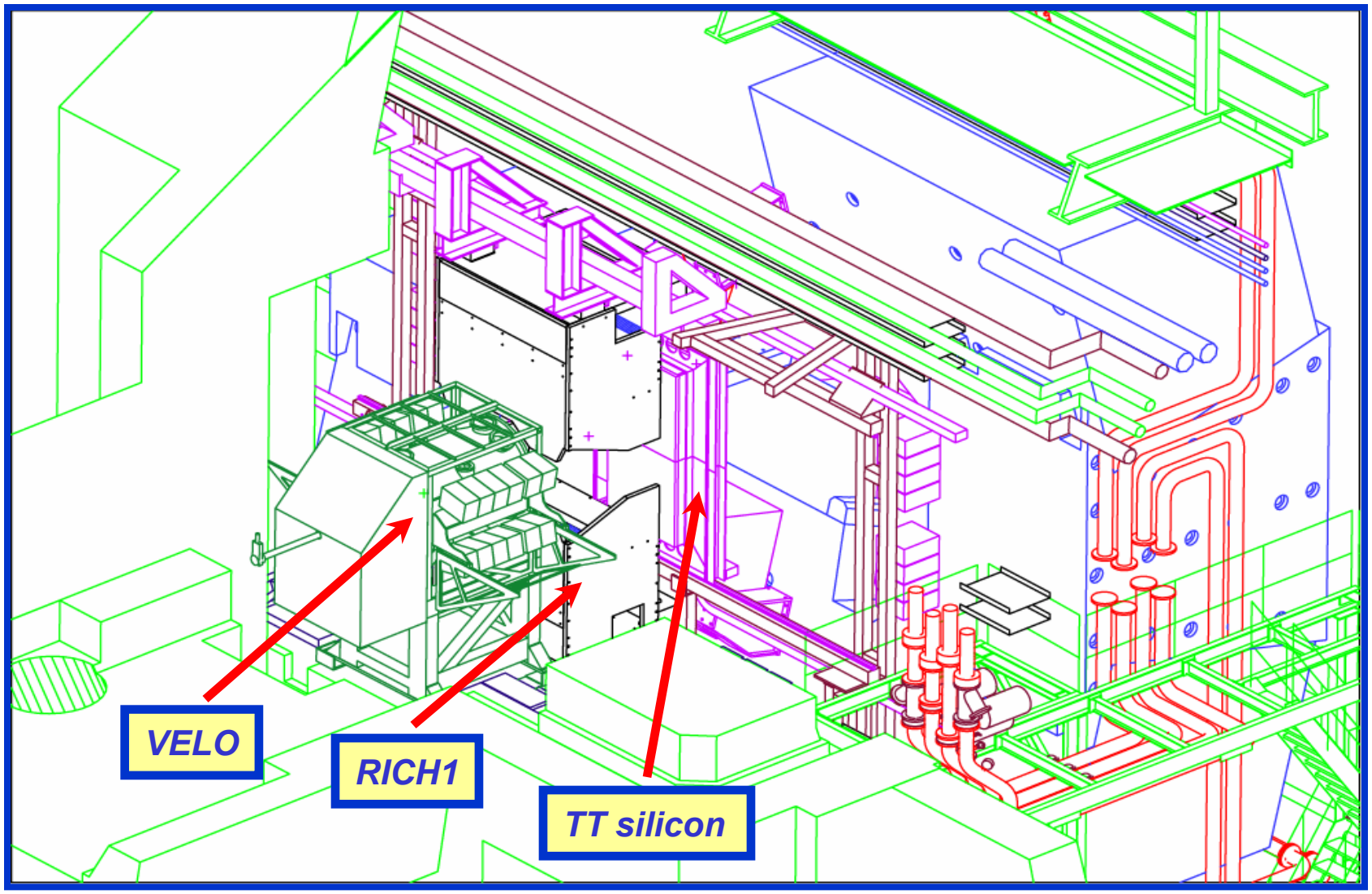




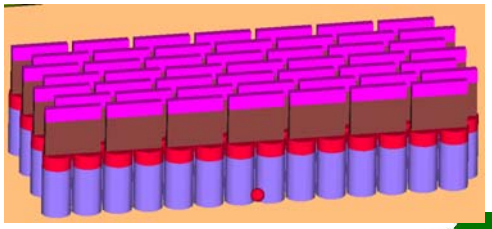


Final prototype test in 2004
Mass production in 2005

Upstream integration

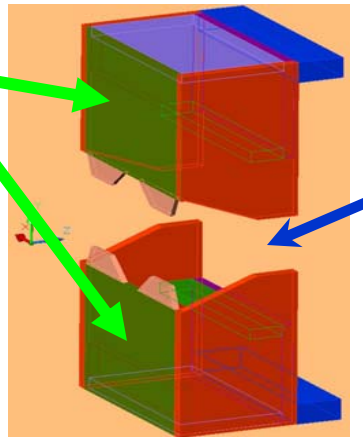


RICH 1

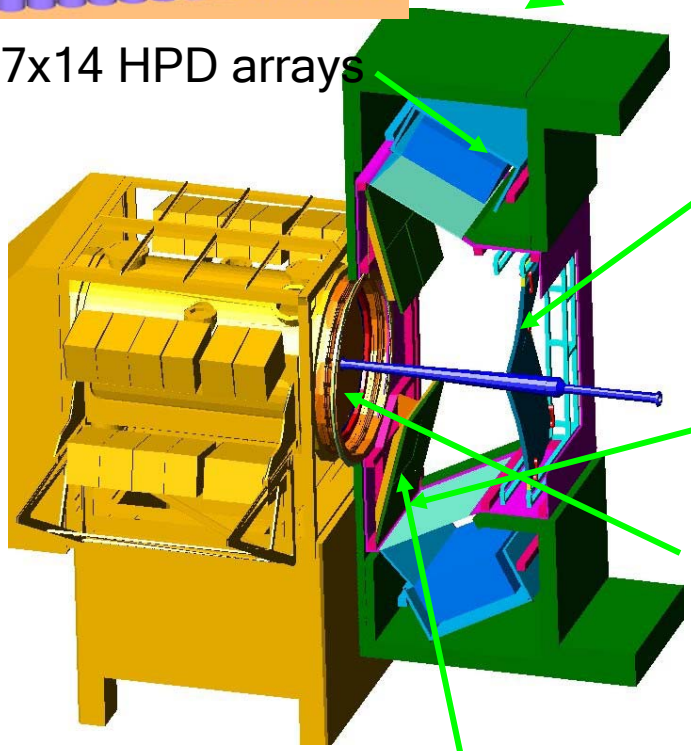


7x14 HPD arrays

Magnetic shields
(each ~8 tonnes of "Armco" iron)



∫Bdl~0.15 Tm

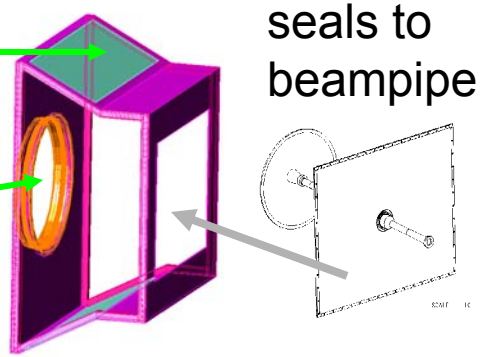


Beryllium
spherical mirrors

Quartz windows

Seal directly to the
VELO exit window

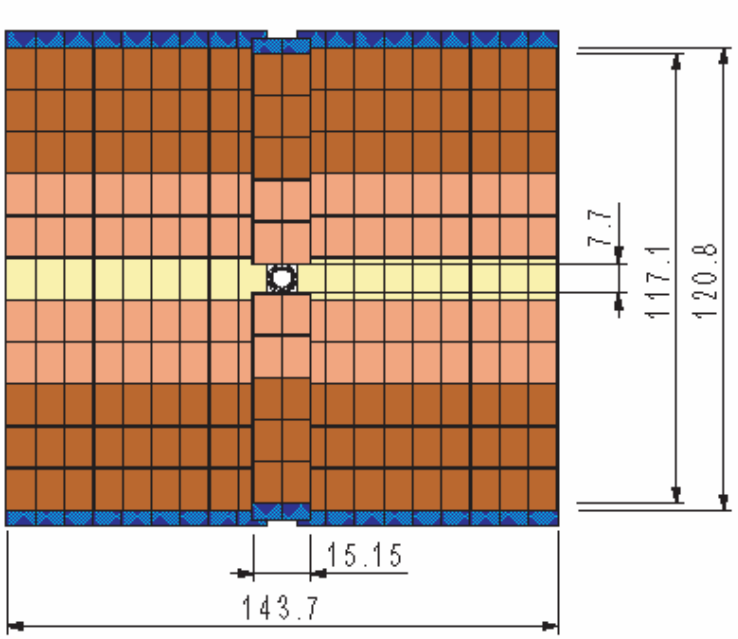
Exit window
seals to
beampipe

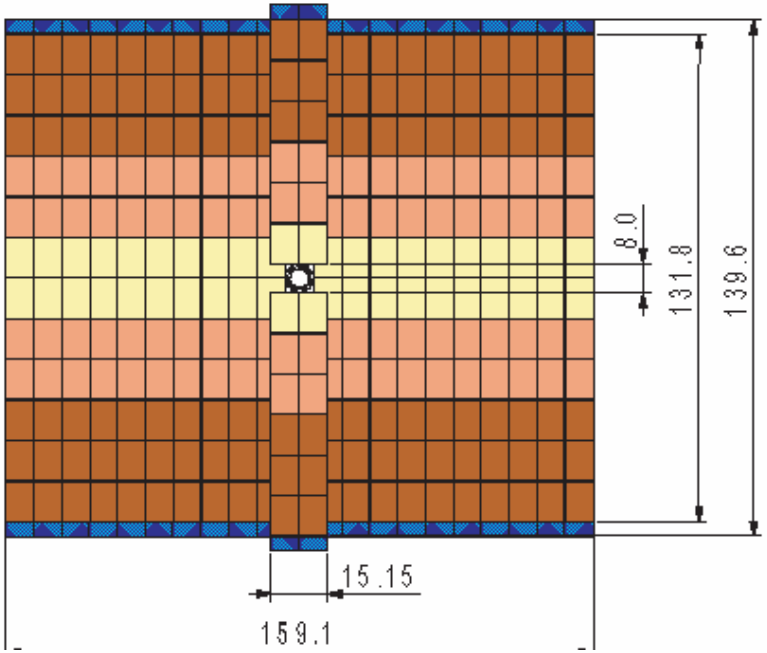


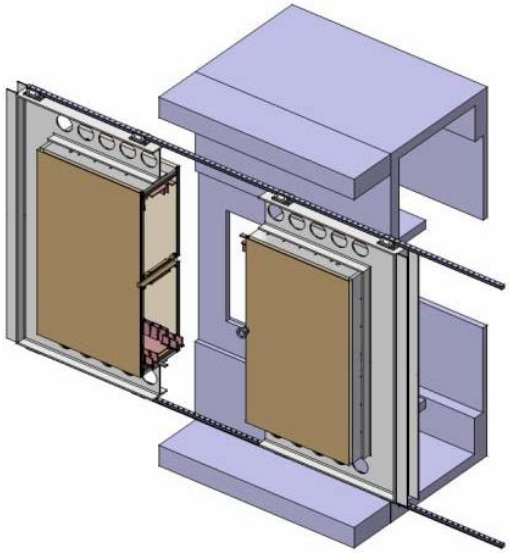
Glass secondary plane mirrors (outside the acceptance)

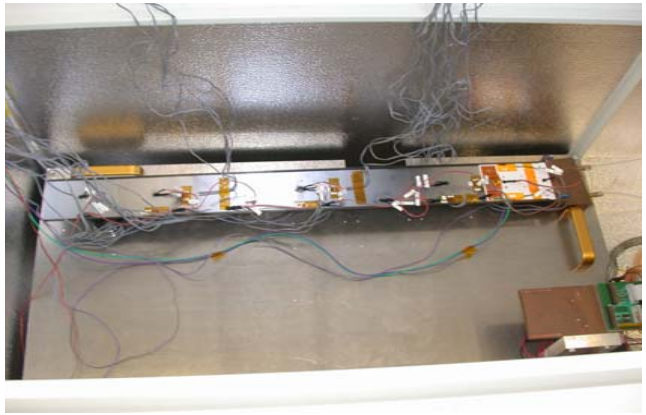
Gas enclosure

Silicon Tracker









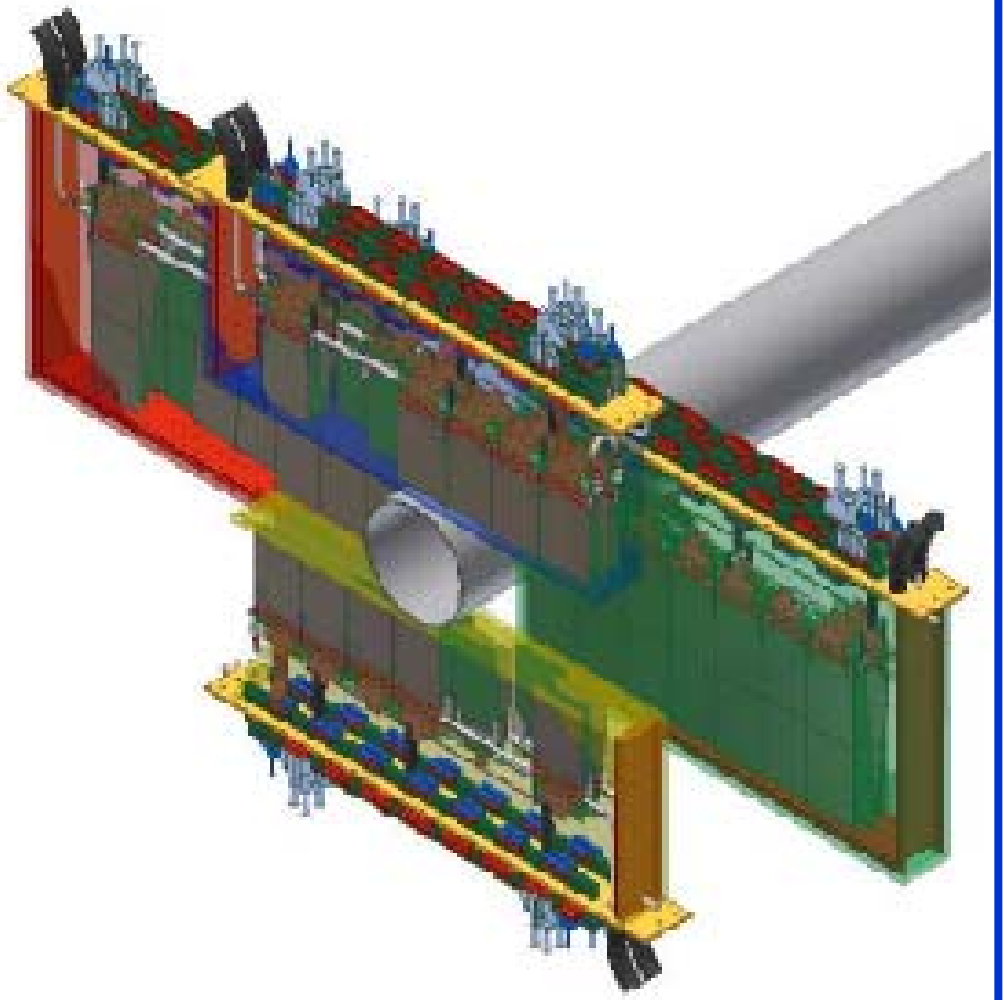
Trigger Tracker
TTa and TTb ladder structure

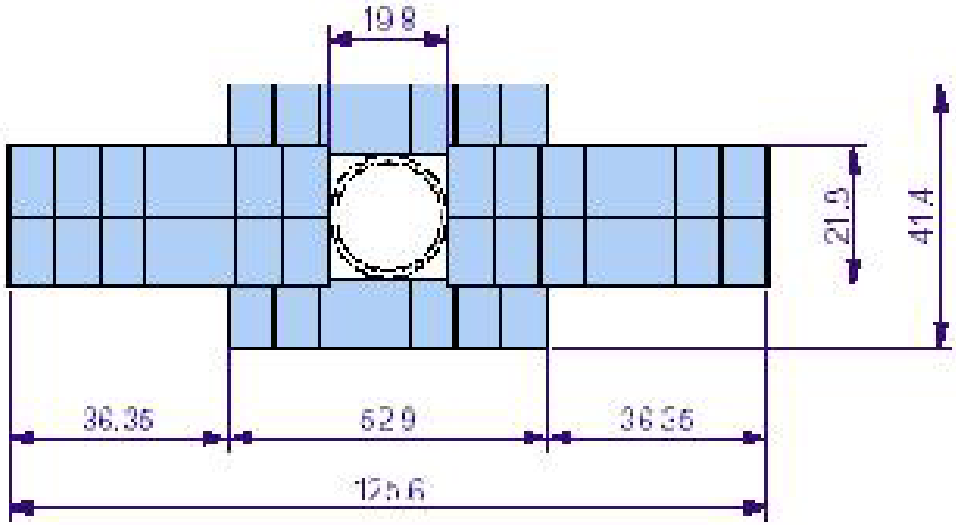
Prototype half-ladder under test

Silicon Tracker

Beam-test lay-out

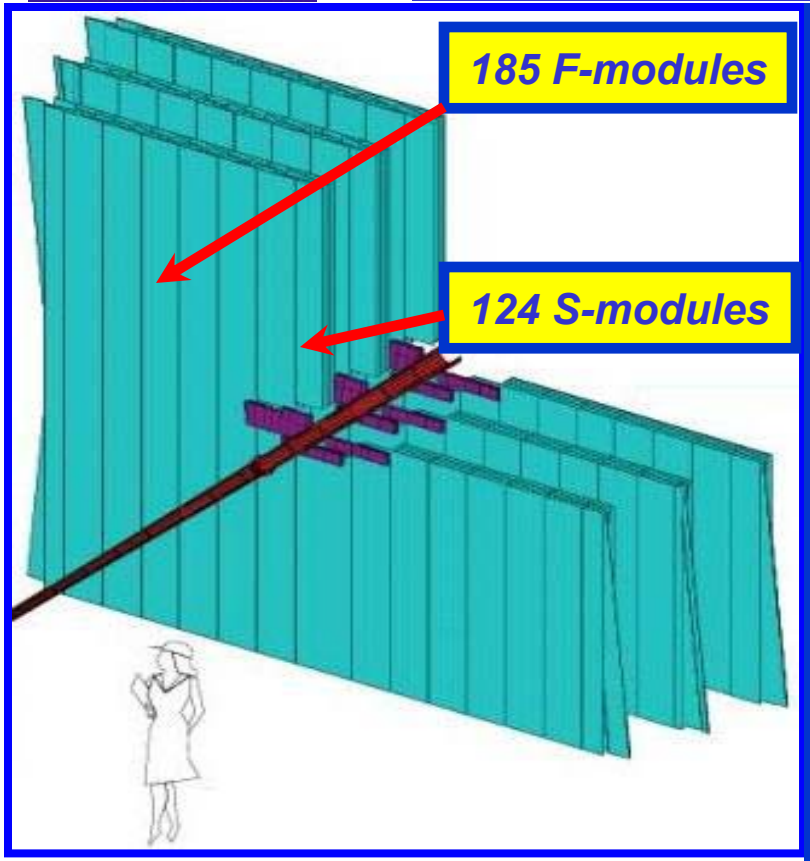
Inner Tracker





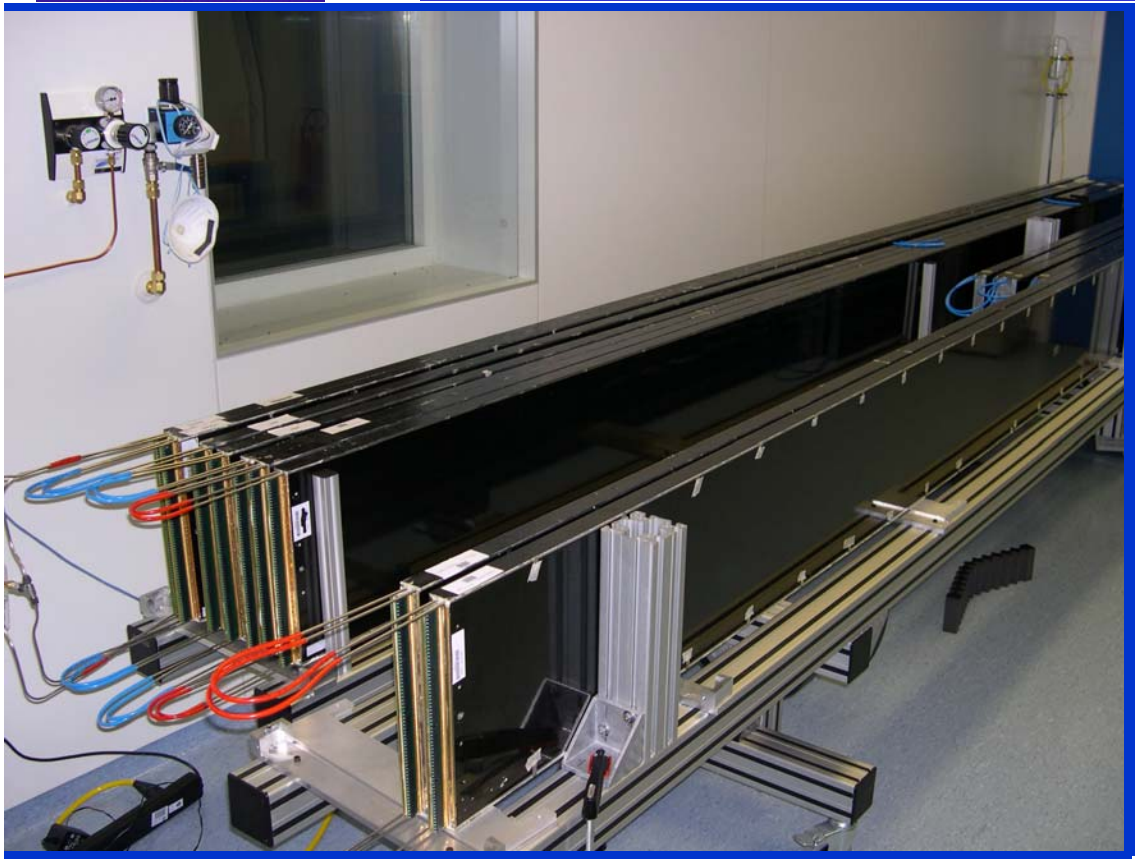
Finalizing details
Wafer production in 2005

Outer Tracker



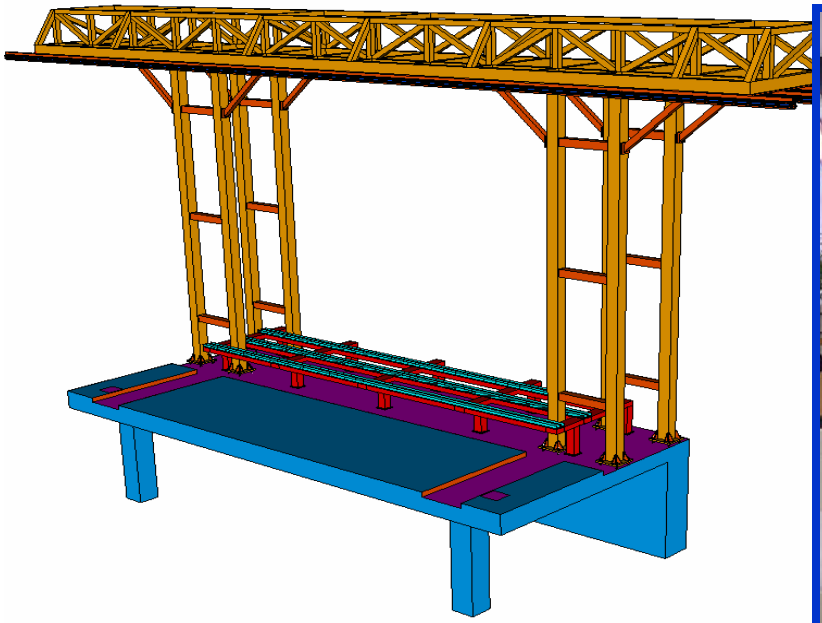
Three production facilities operational

Outer Tracker



Straw tube chamber production site

Outer Tracker

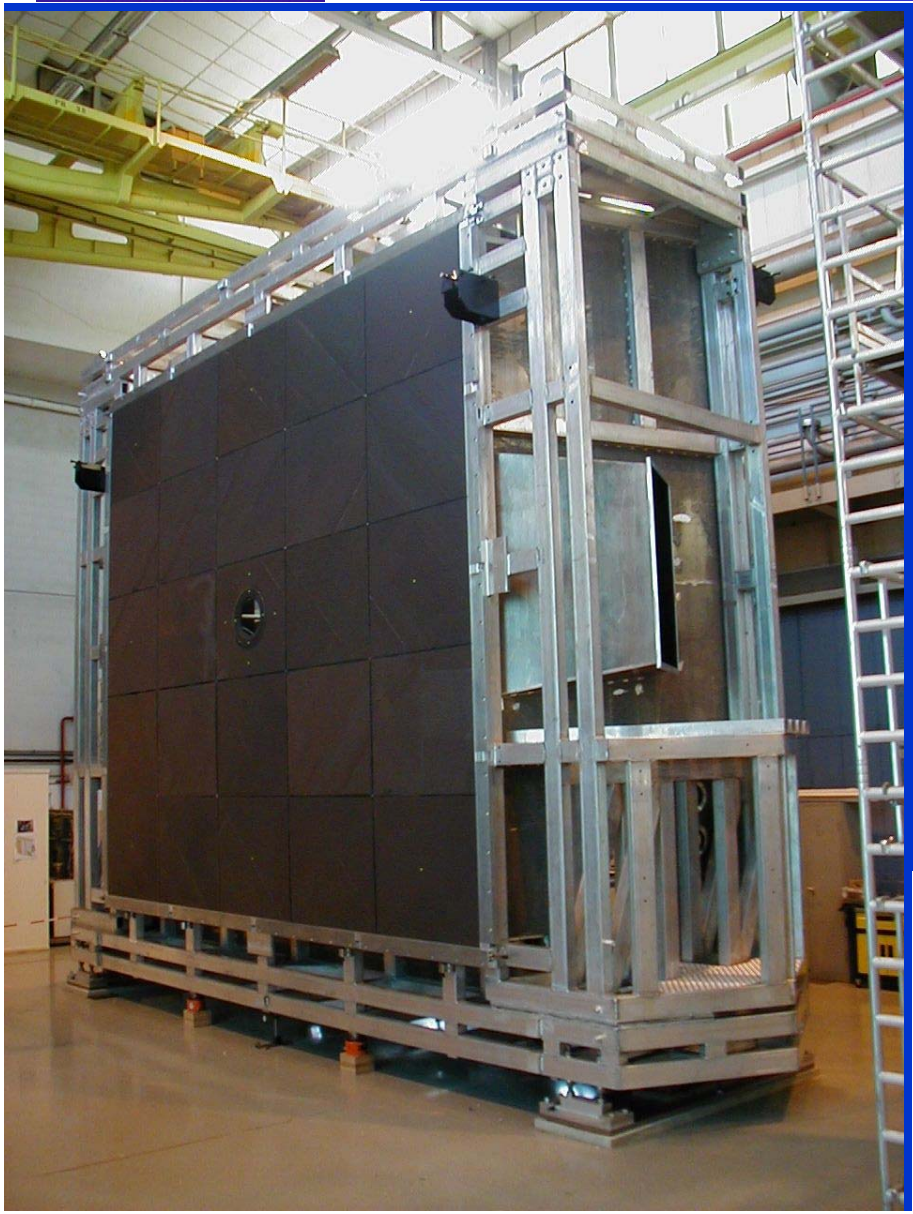


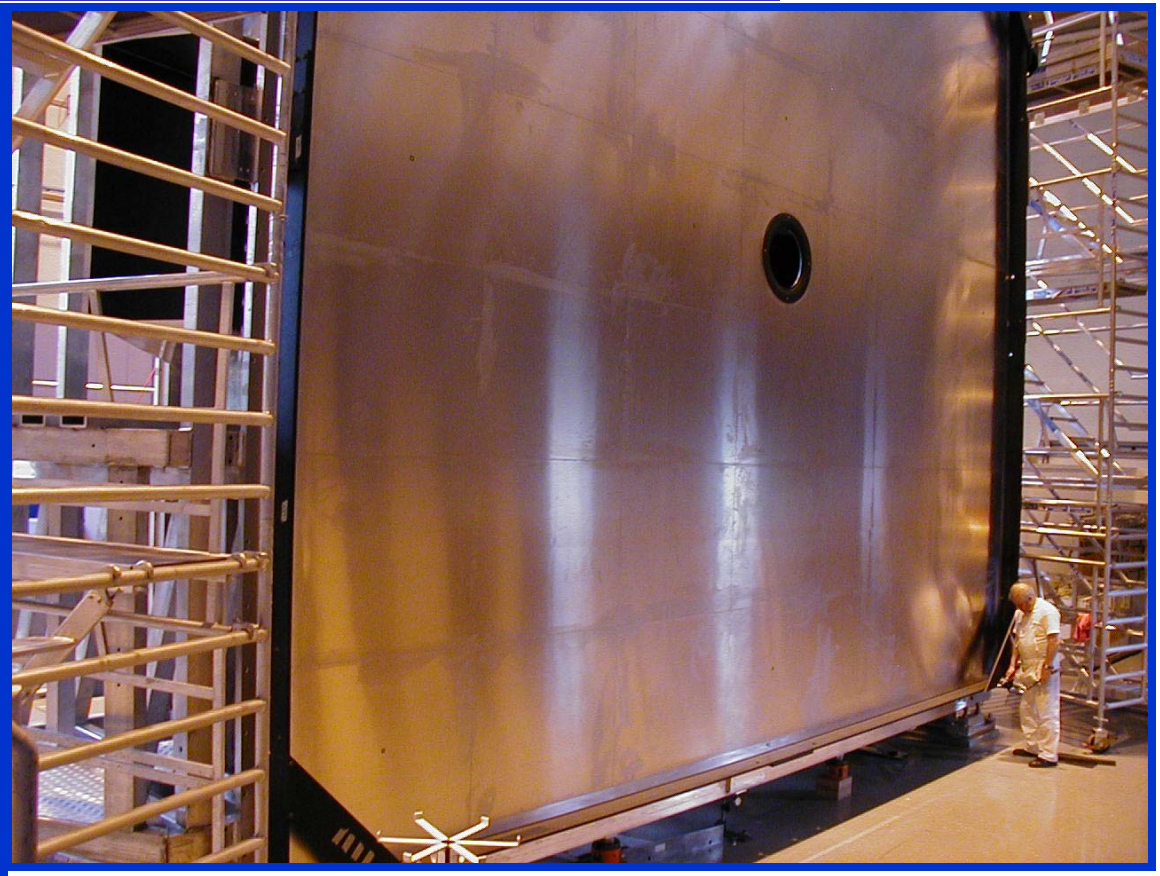
¼ medium station

Mass production achieve nominal rate at 3 sites,

completion in 2005

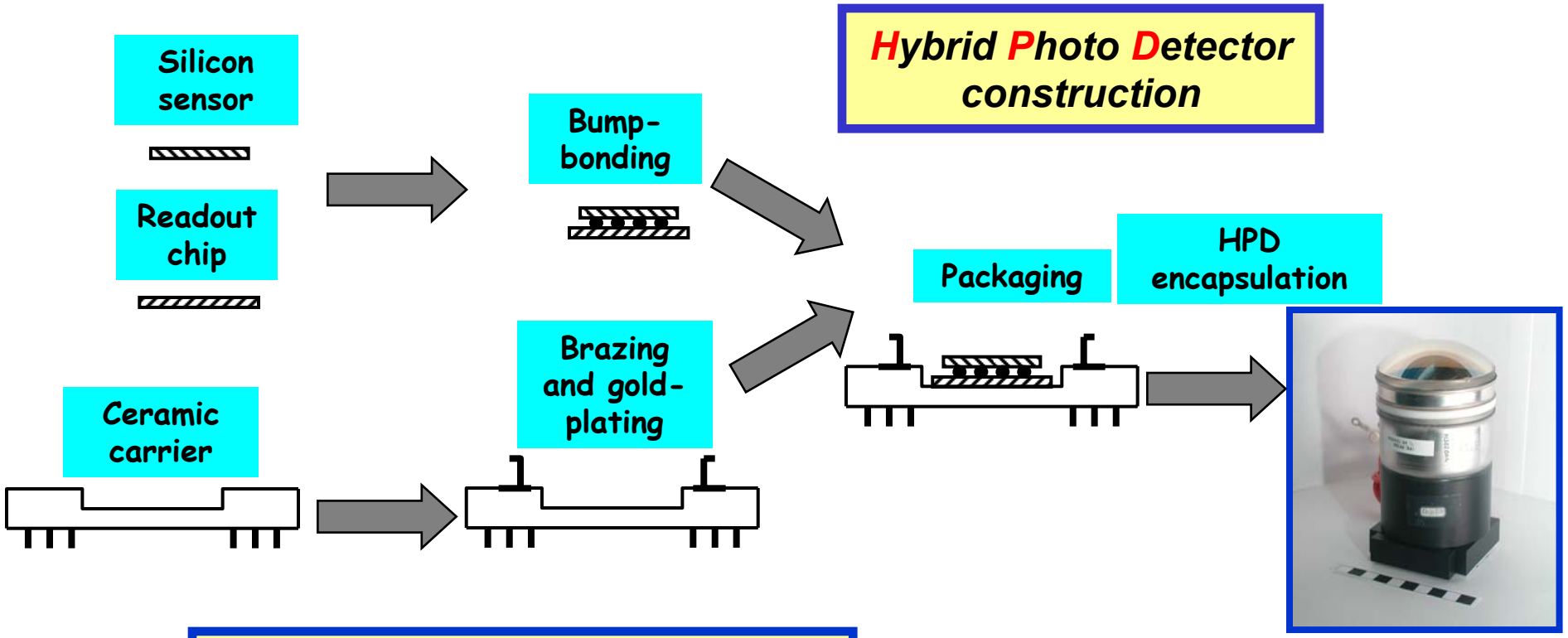
RICH 2





Construction of mechanics
Mirrors to be installed soon

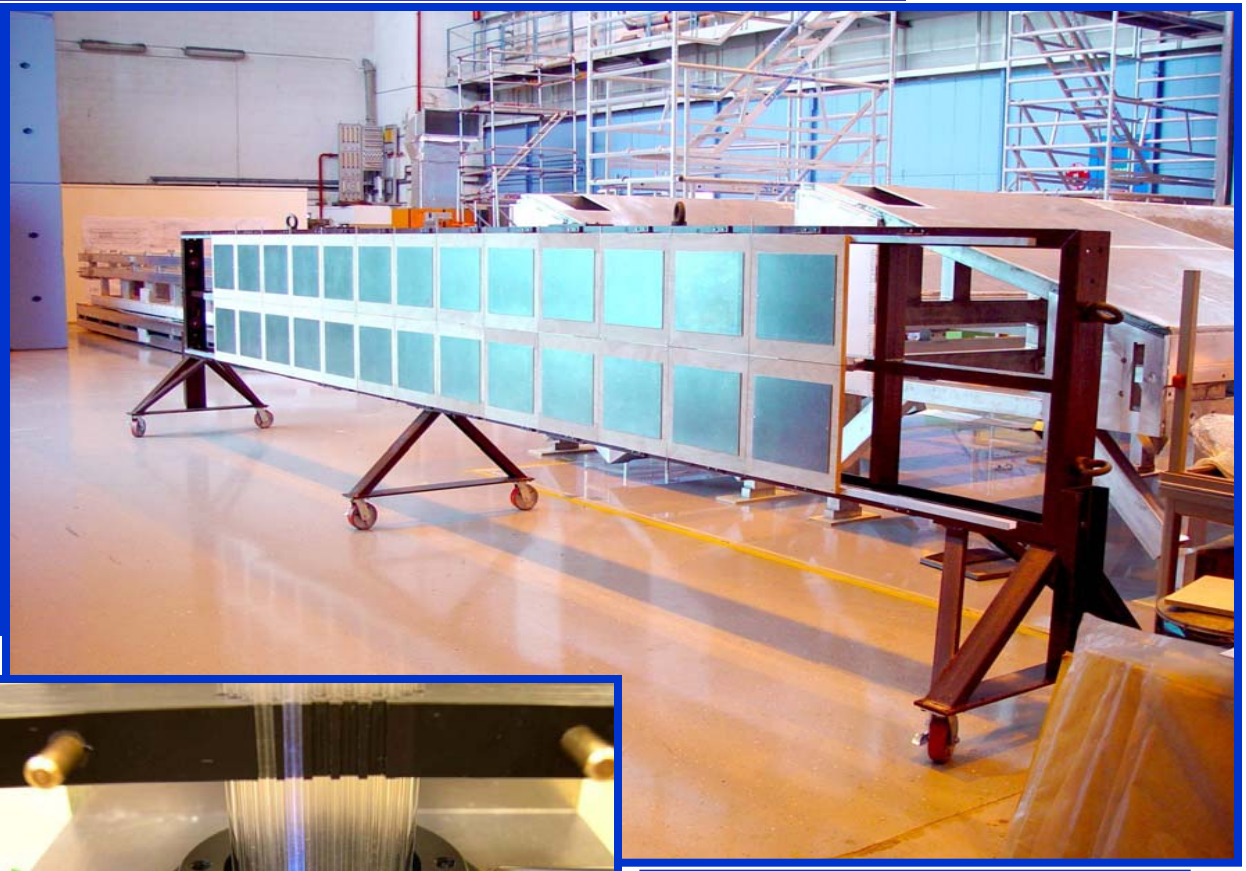
RICH 2

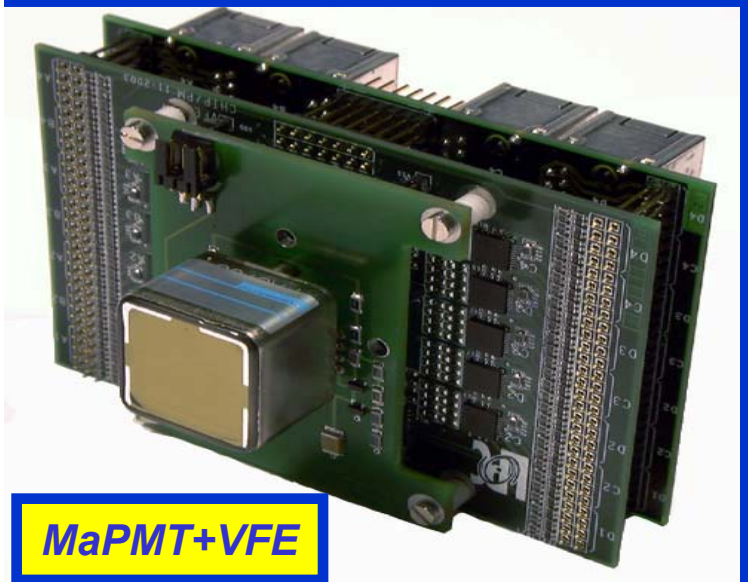


Prototype and technology verified
484 + spares HPD production started

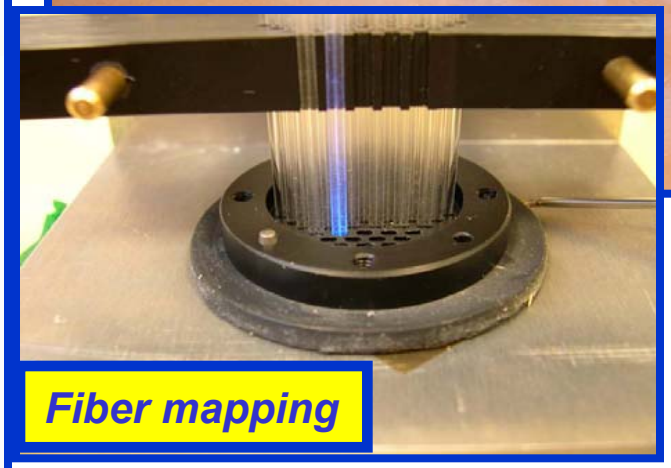
Calorimeters

Supermodule





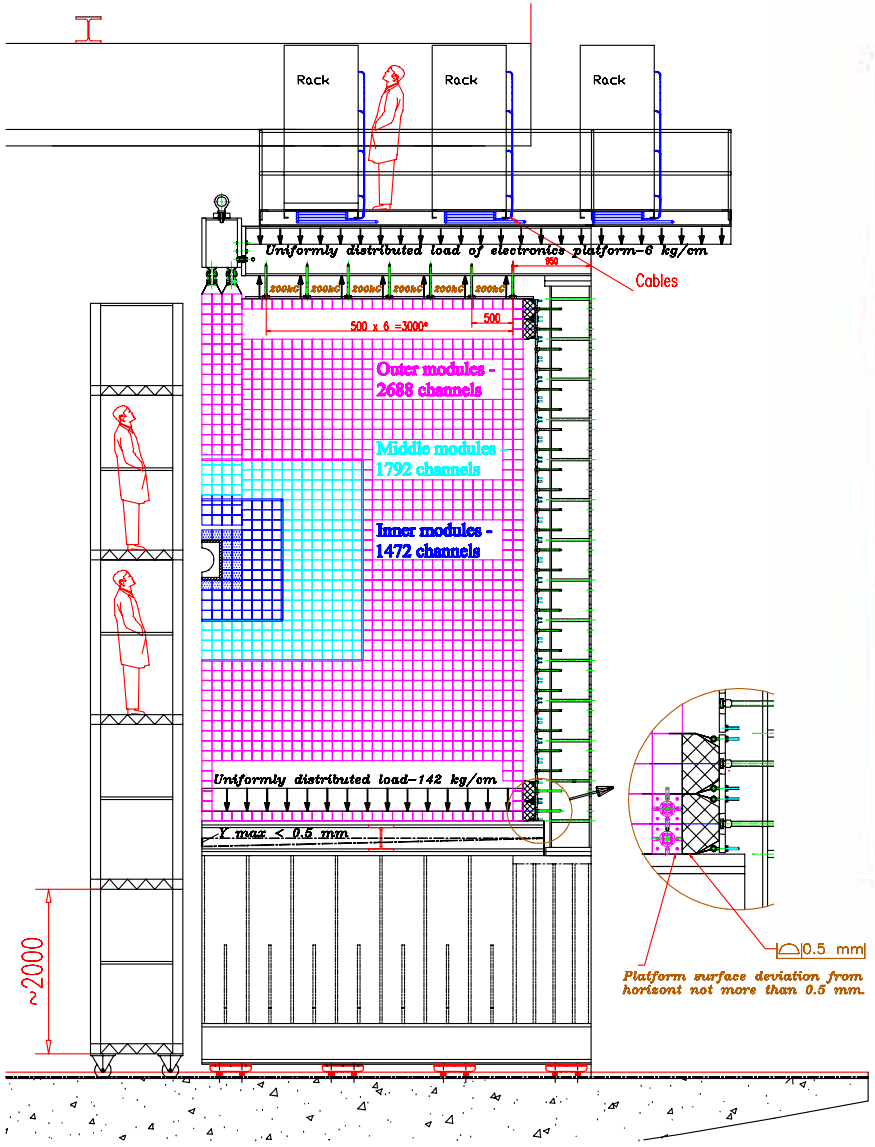
MaPMT+VFE



Fiber mapping

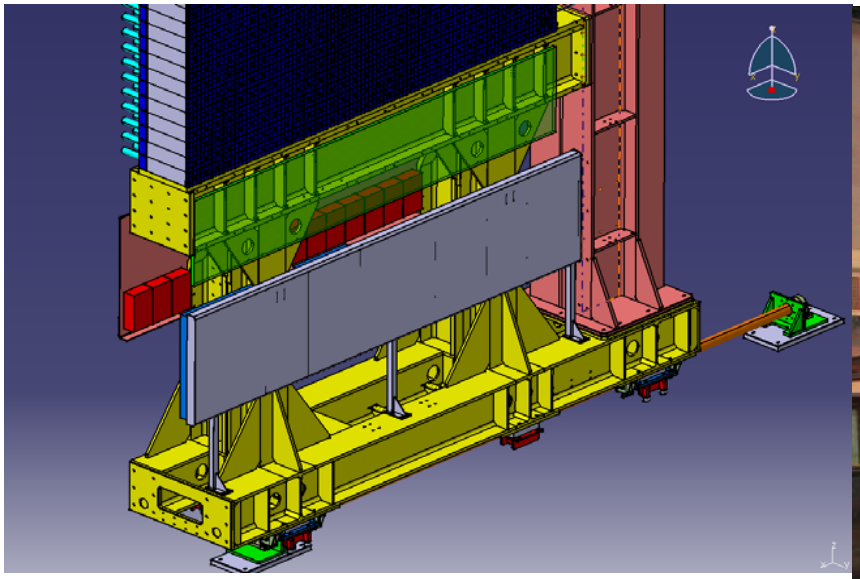
Single Particle Detector
and
Pre-Shower

Calorimeters *(ECAL)*



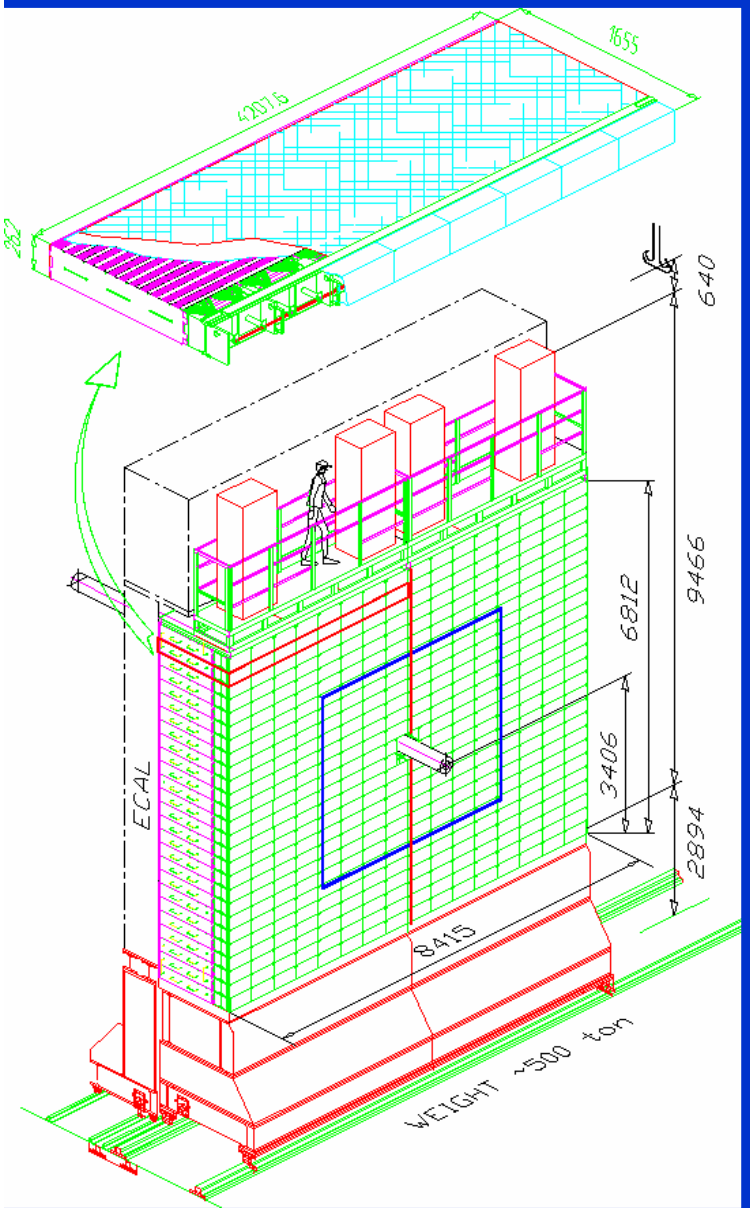
ECAL – 3300 modules assembly completed
Under cosmic test
Preparing for installation in 2005

Calorimeters *(ECAL)*



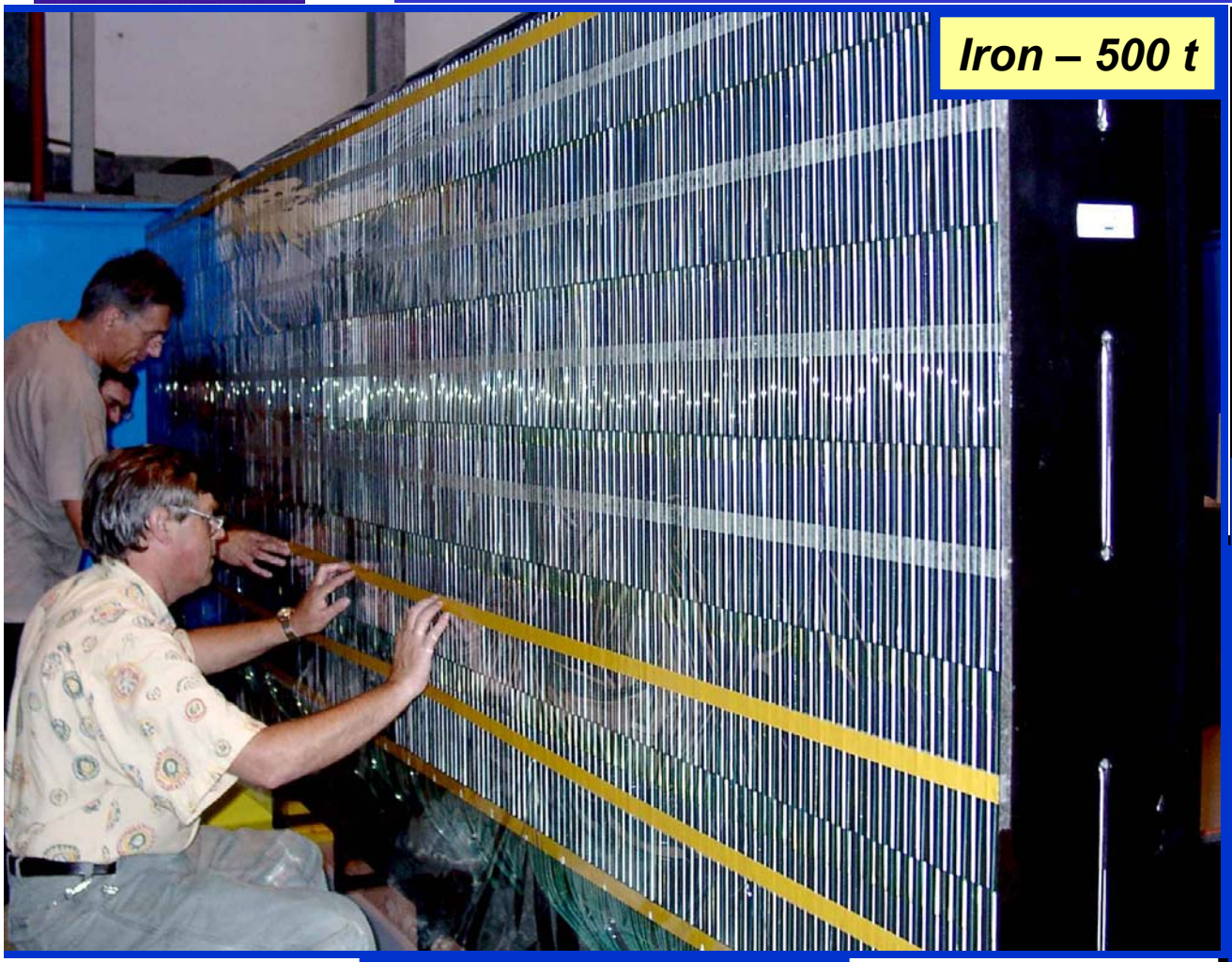
ECAL support construction

Calorimeters *(HCAL)*

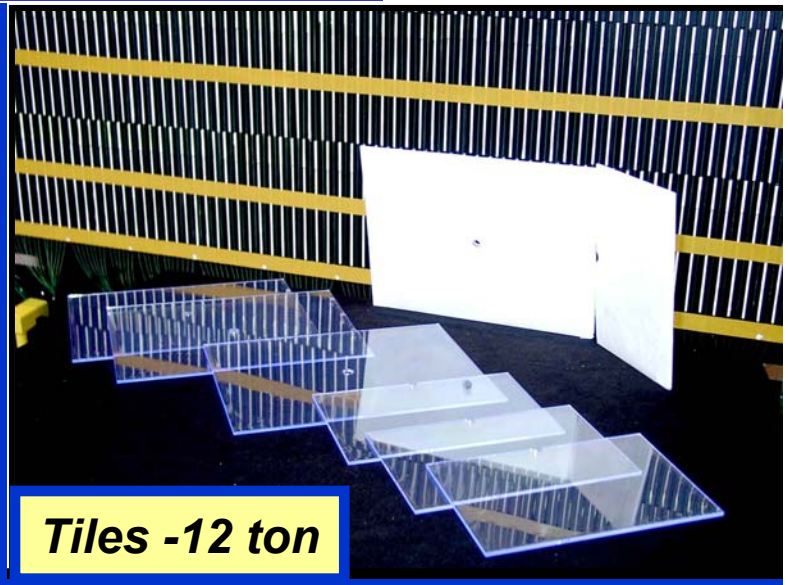


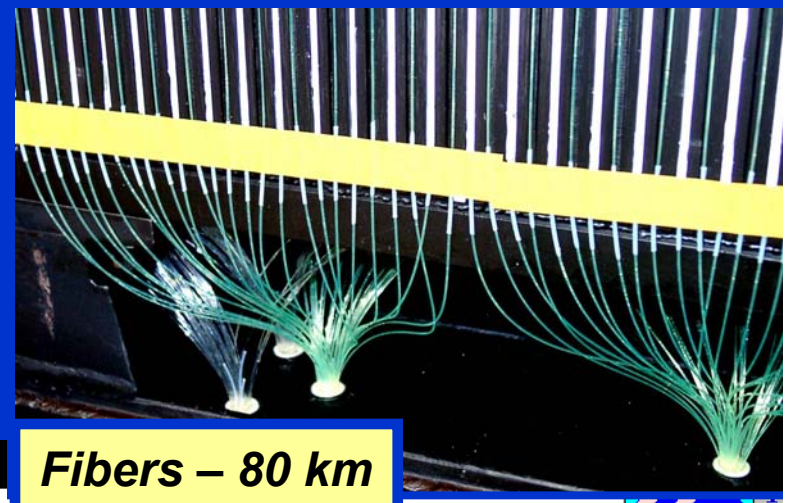
HCAL modules construction (completion in 2004)

Calorimeters *(HCAL)*

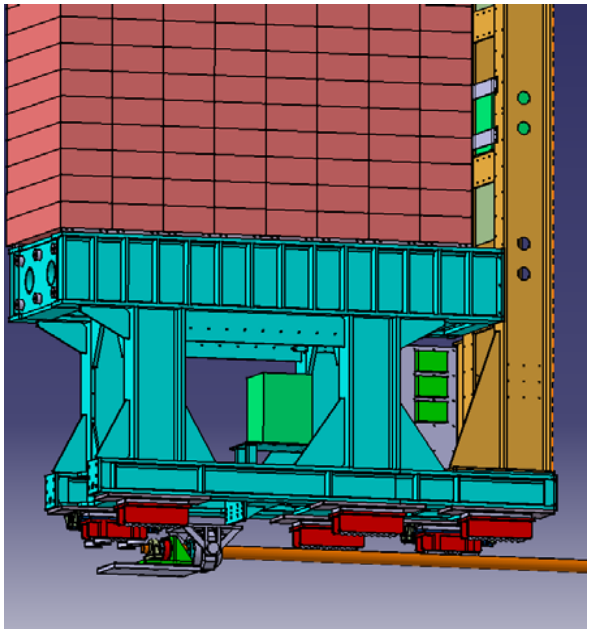


HCAL optics assembly



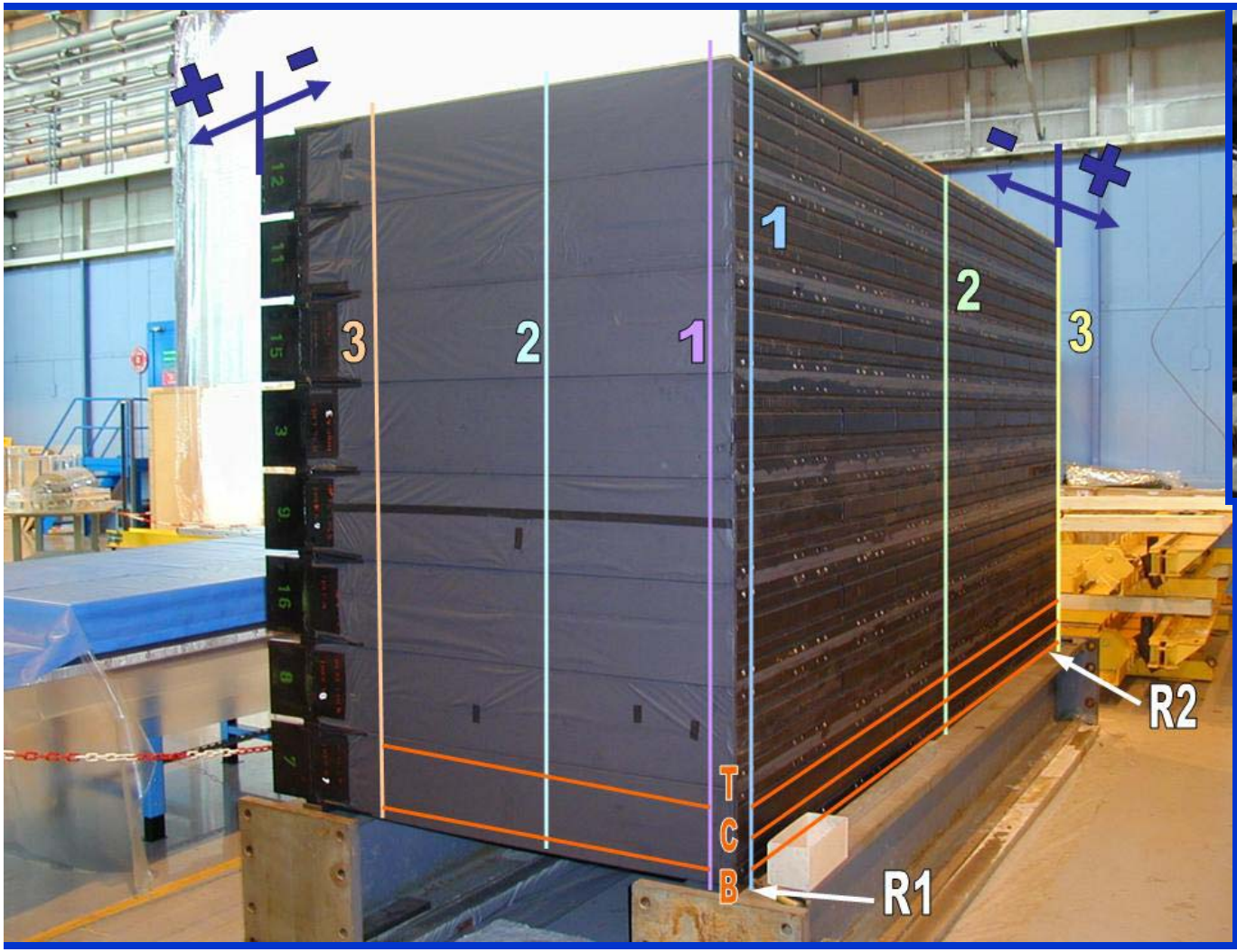


Calorimeters *(HCAL)*



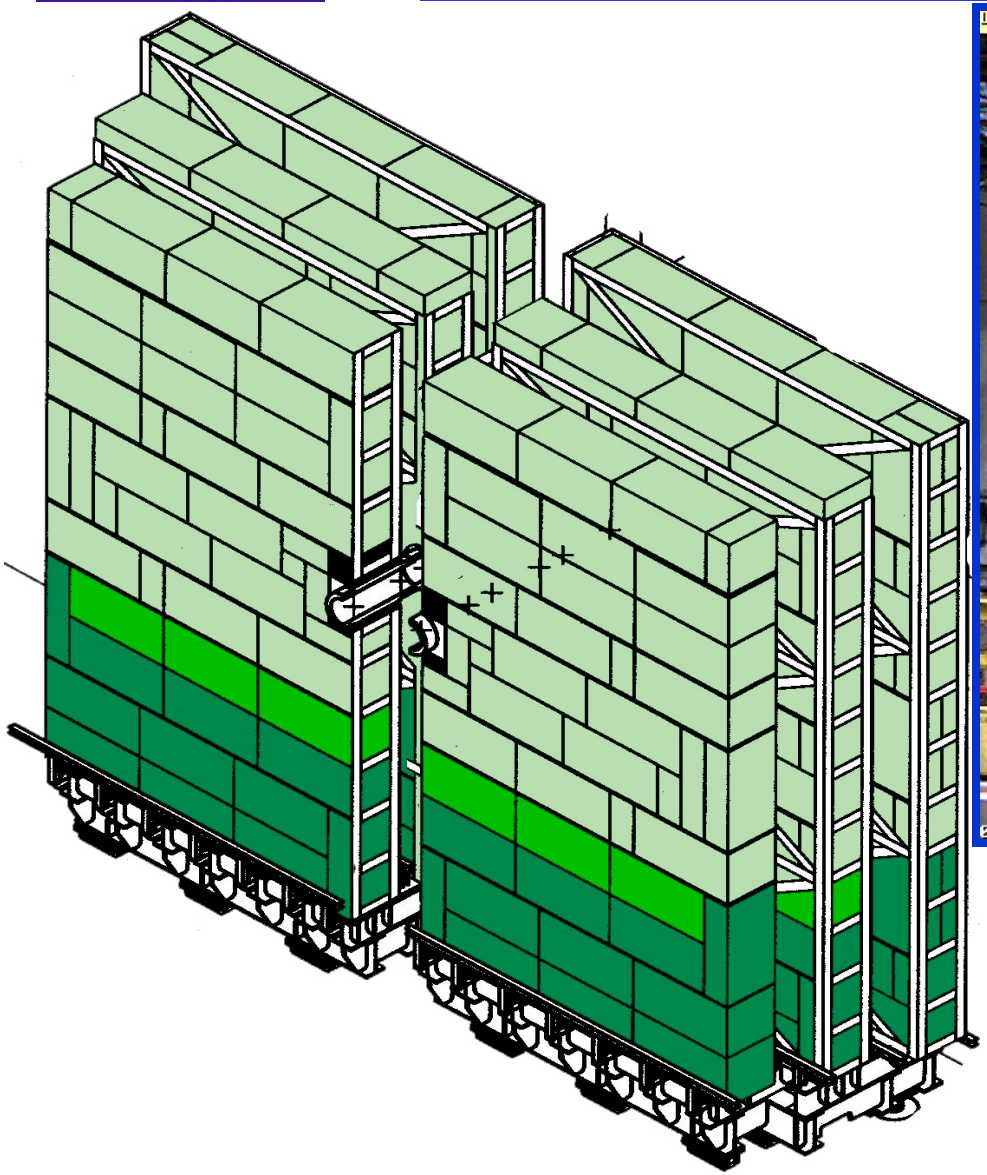
HCAL support construction
Delivery in 2004

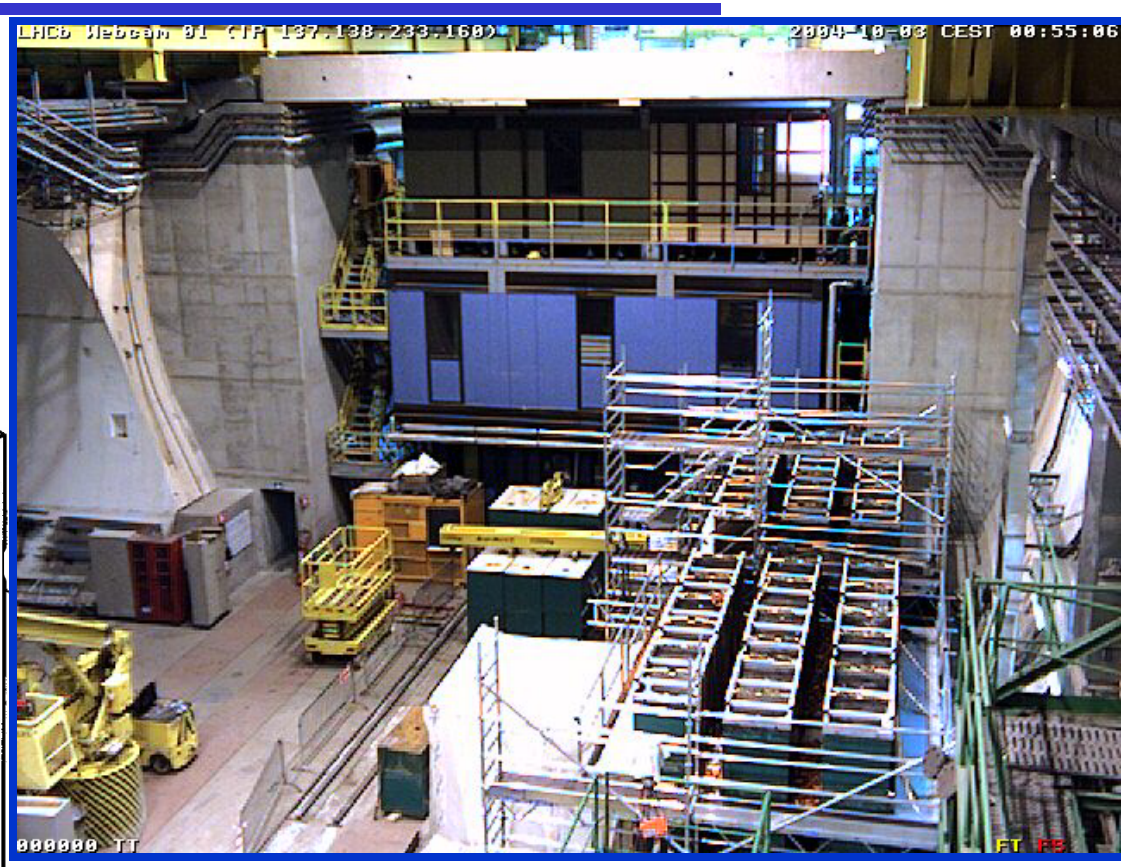
Calorimeters *(HCAL)*



HCAL modules (in total 52)
- ***test pile-up of 8 modules***
- ***cabling and final test***

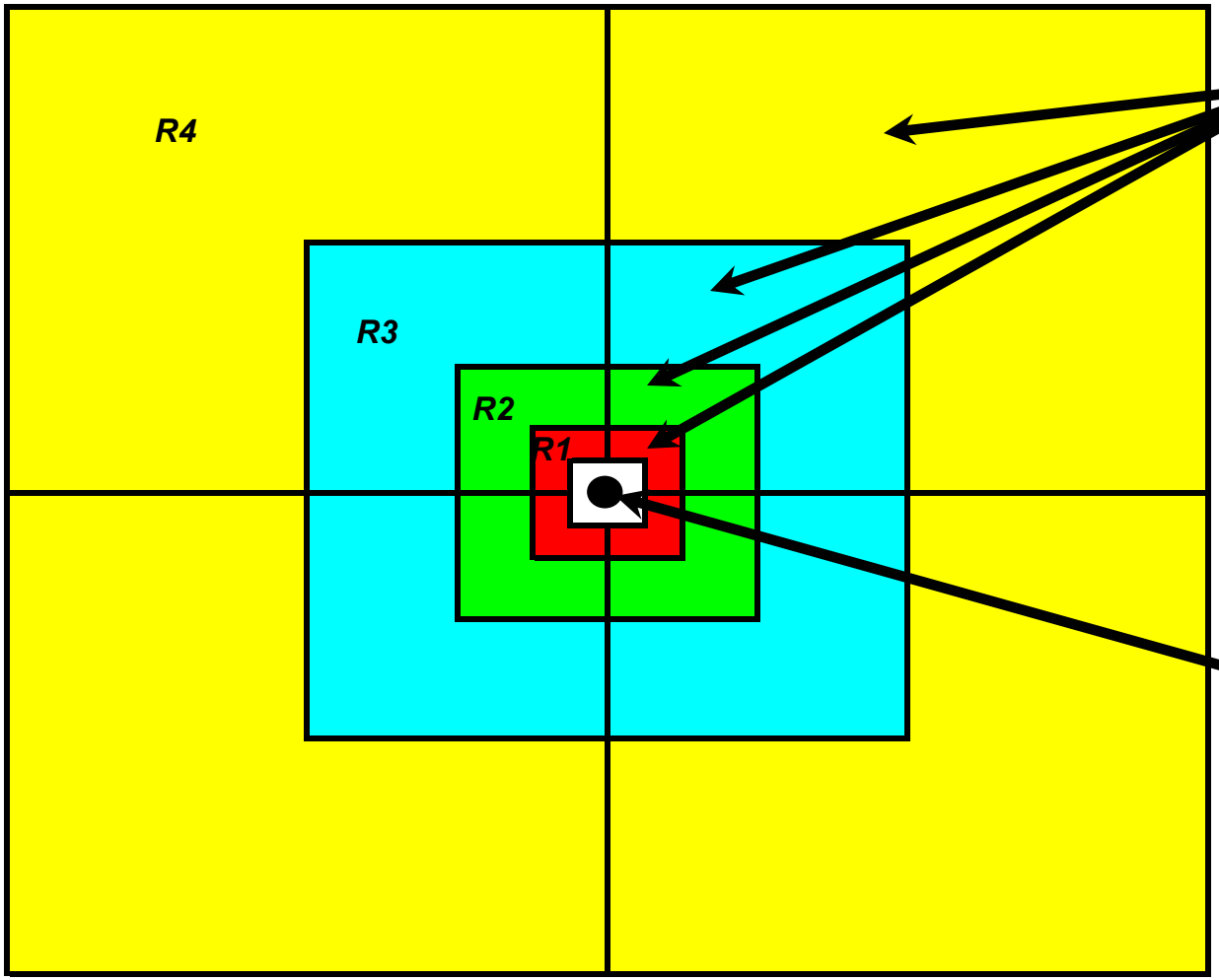
Muon System





Muon shield assembly in cavern (completion 2004)

Muon System



Regions in muon station

5 muon stations
4 regions in each

Beam pipe

Muon System

	M1	M2	M3	M4	M5
R4	192 CH W 968x200	192 CH W 1224x253	192 CH W 1320x273	192 CH W 1416x293	192 CH W 1512x313
R3	48 K 968x200	48 CH K 1224x253	48 CH K 1320x273	48 CH K 1416x293	48 CH K 1512x313
R2	24 CH P 484x200	24 CH WK 612x253	24 CH WK 660x273	24 CH K 708x293	24 CH K 756x313
R1	12 CH P 3-GEM 244x200	12 CH WK 308x253	12 CH WK 332x273	12 CH K 356x293	12 CH K 380x313

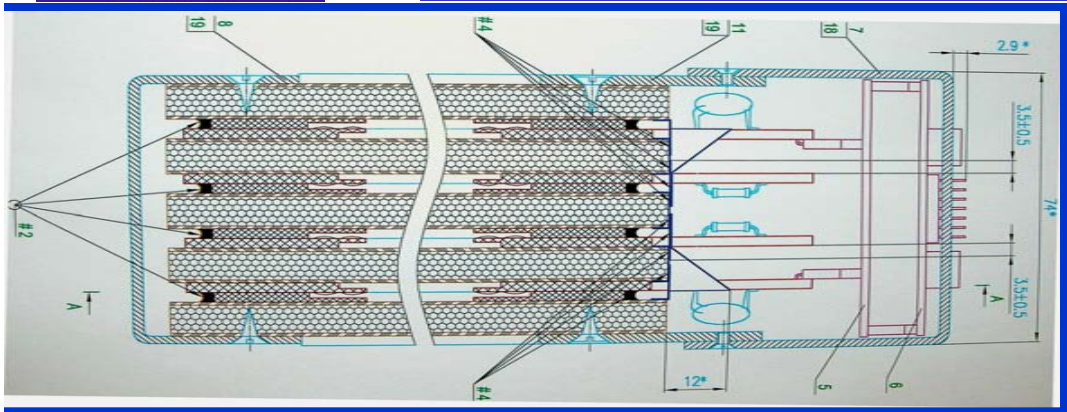
Total: 1368 MWPC + 24 3-GEM + Spares

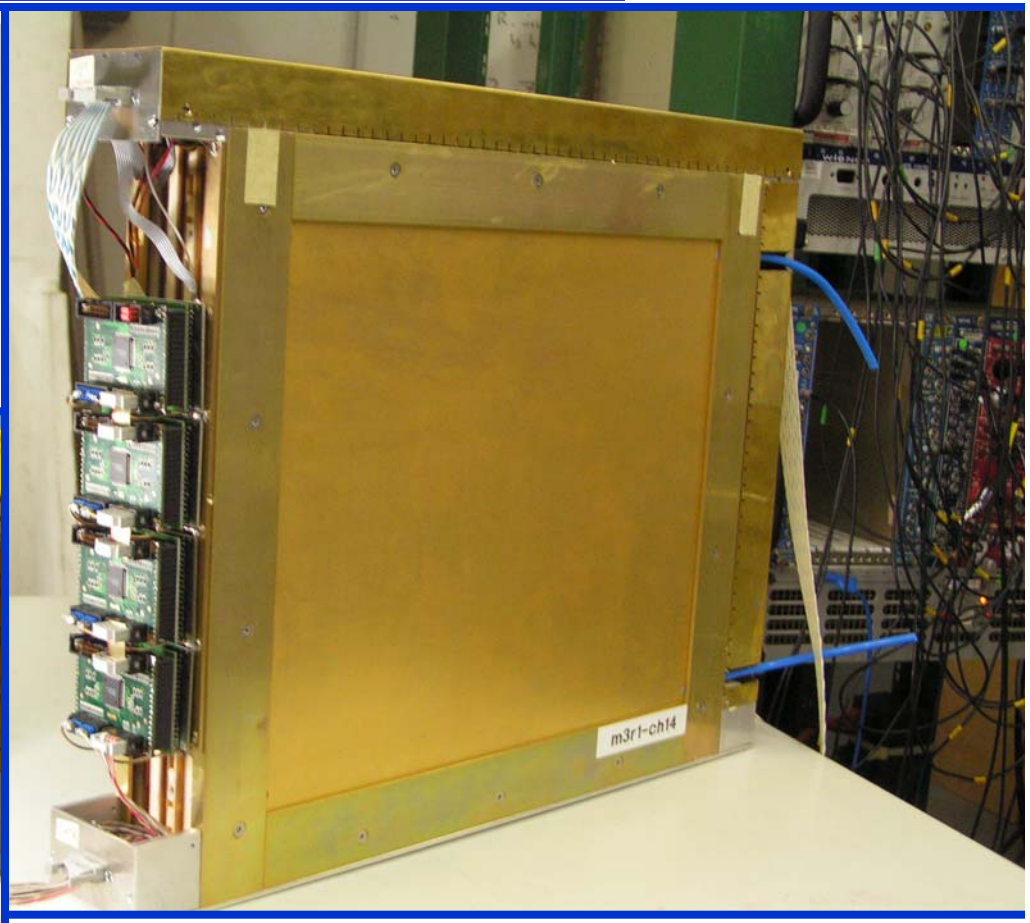
5 production sites in operation

Muon System

Muon MWPC production

Muon System





Summary

Detector construction is advancing well

Installation schedule
- *2004 – magnet, muon shielding*
- *2005 – calorimeters, RICH, supports*
- *2006 – trackers, electronics*

Meet physics goals with LHC start up in 2007