

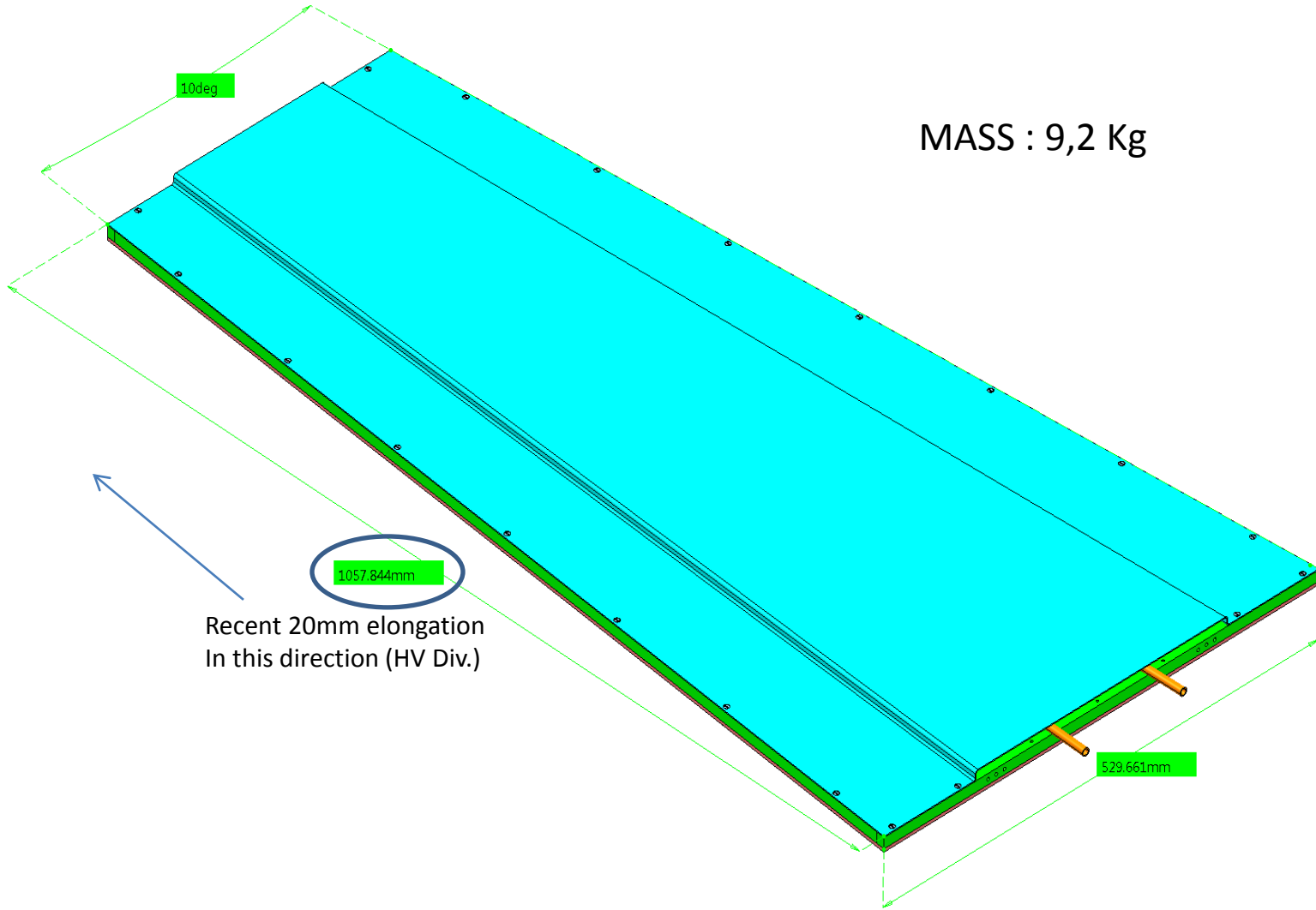


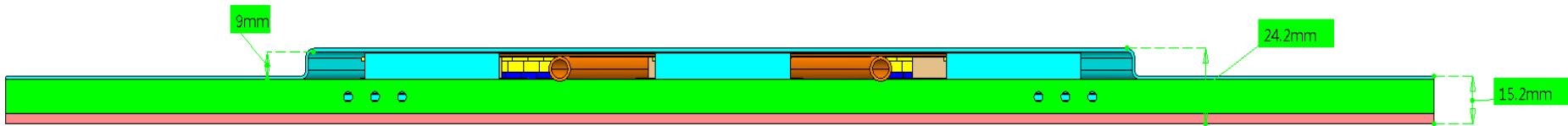
# CHAMBER MECHANICS & MECHANICAL INTEGRATION

Antonio Conde, PH-CMX



# GE1/1 CHAMBER & SC



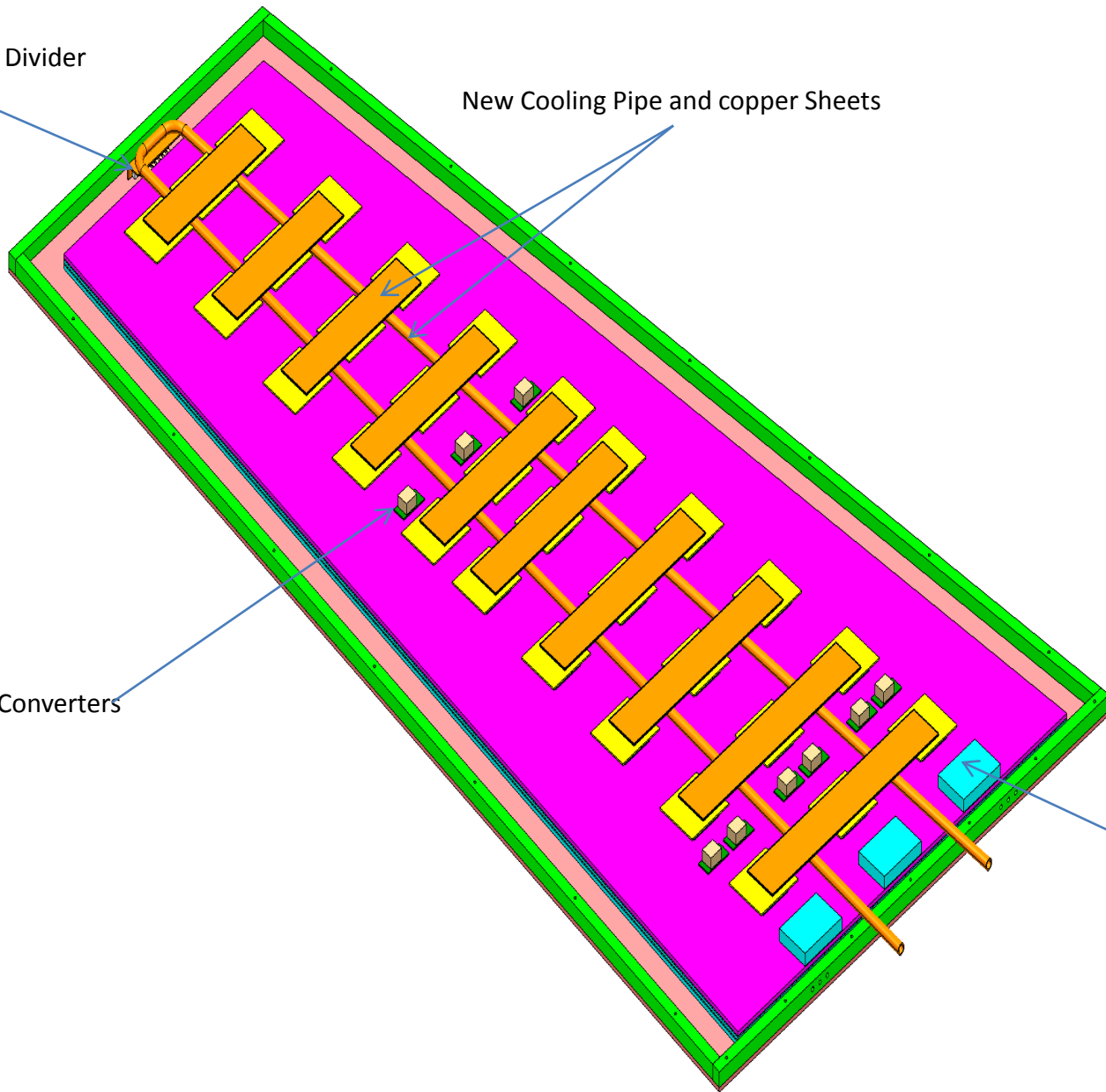


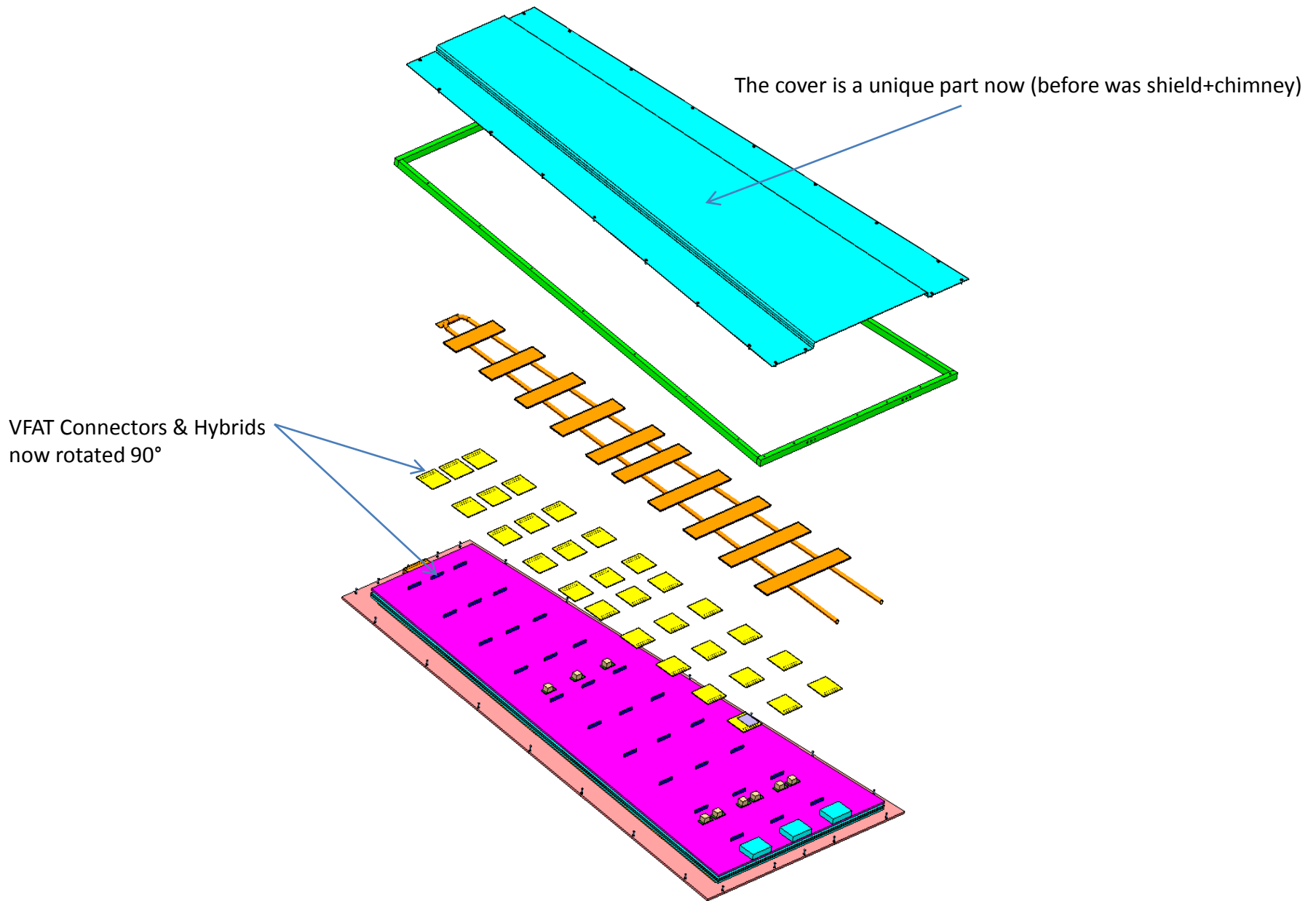
New position of HV Divider

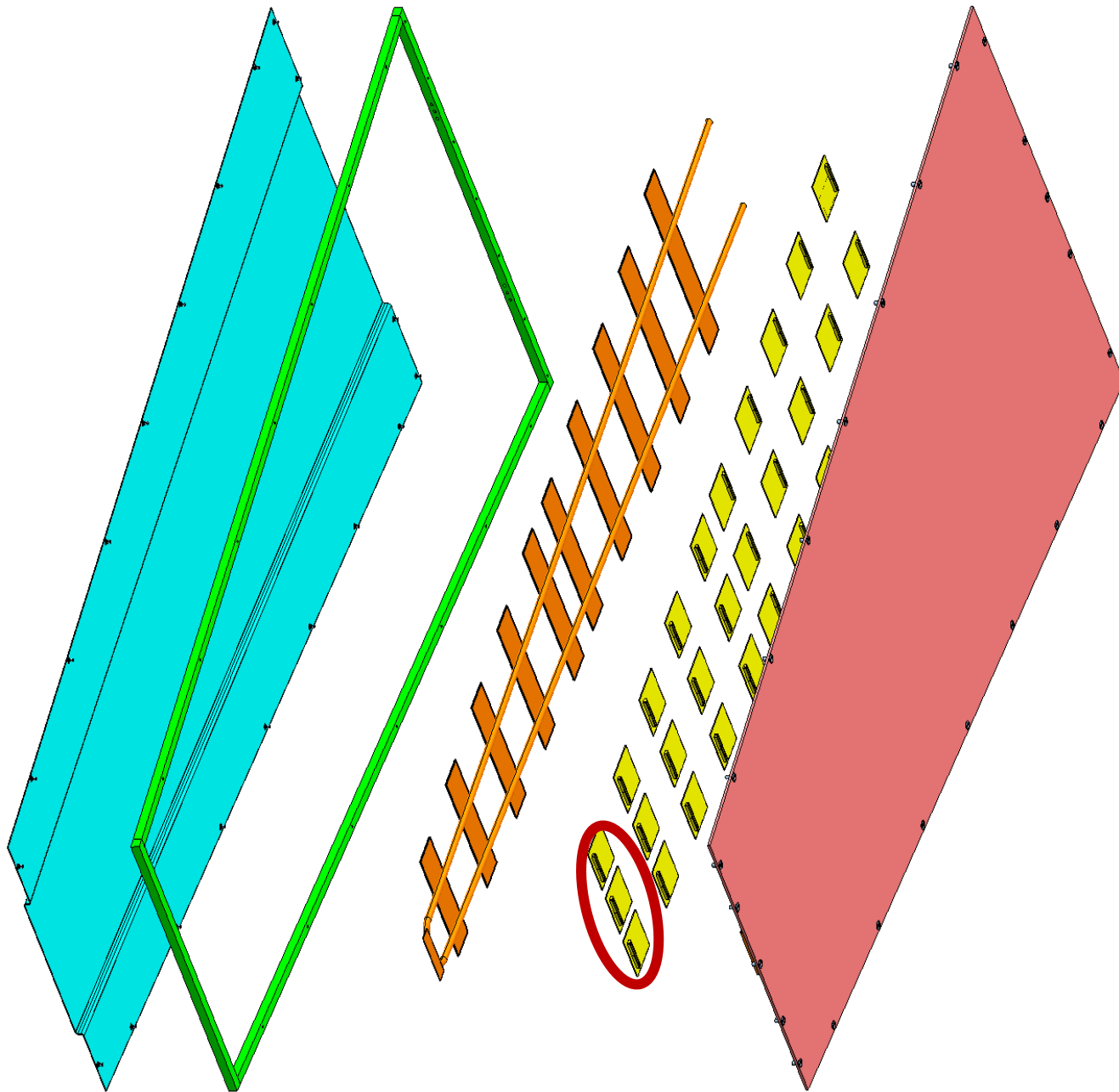
New Cooling Pipe and copper Sheets

DC-DC Converters

Electronic GBT's









EDMS NO. <b>1210304</b>	REV. <b>1.0</b>	VALIDITY <b>RELEASED</b>
REFERENCE <b>2012/109</b>		

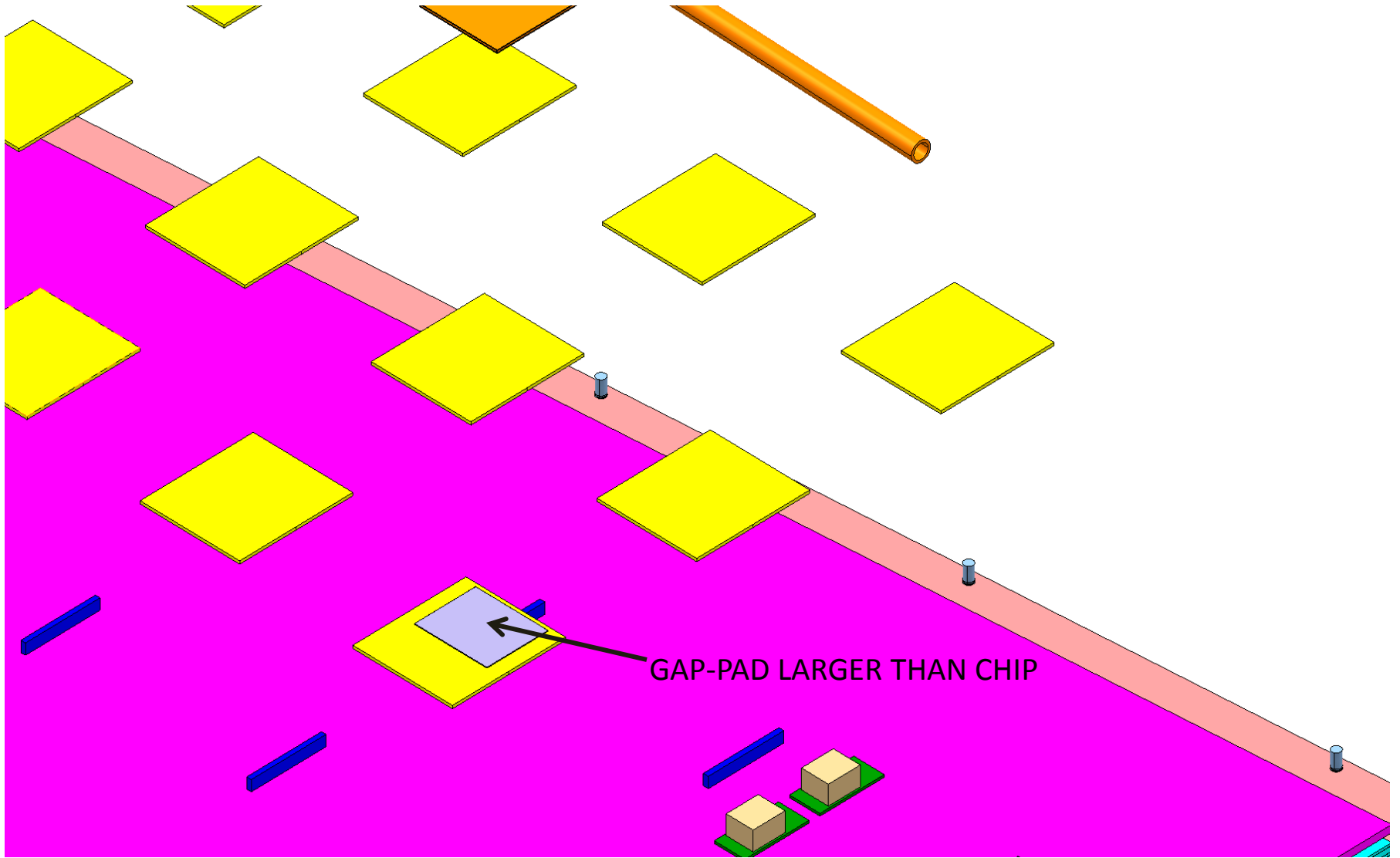
Date : 2012-04-05

PROJECT REQUEST

**CFD studies for GEM chambers**  
**CFD-2012-03\_GEM**

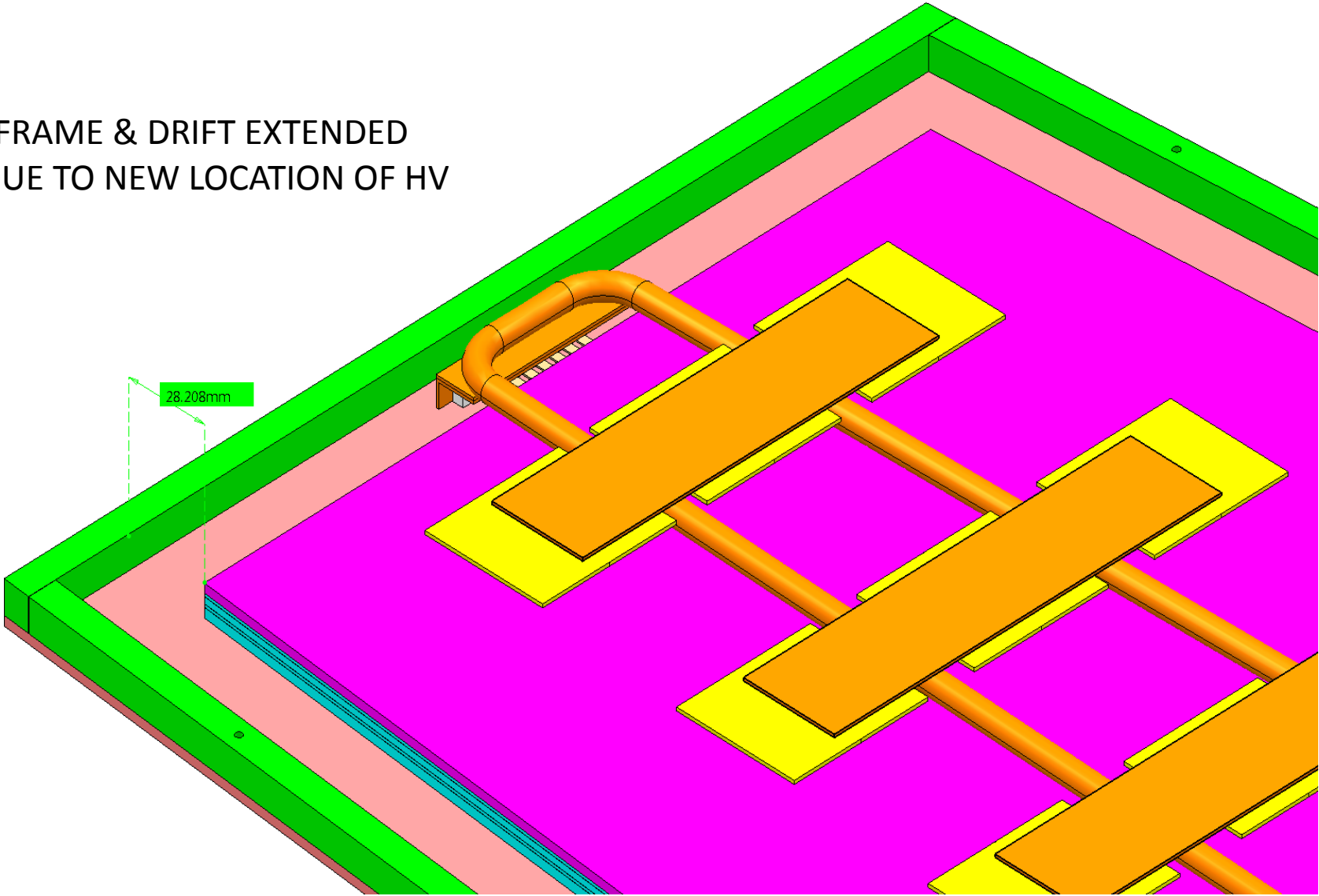
DOCUMENT REQUESTED BY: Archana Sharma (PH-CMX)	DOCUMENT PREPARED BY: Antonio Conde García (PH-CMX) Enrico Da Riva (EN-CV)	DOCUMENT APPROVED BY: Archana Sharma (PH-CMX) Michele Battistin (EN-CV)



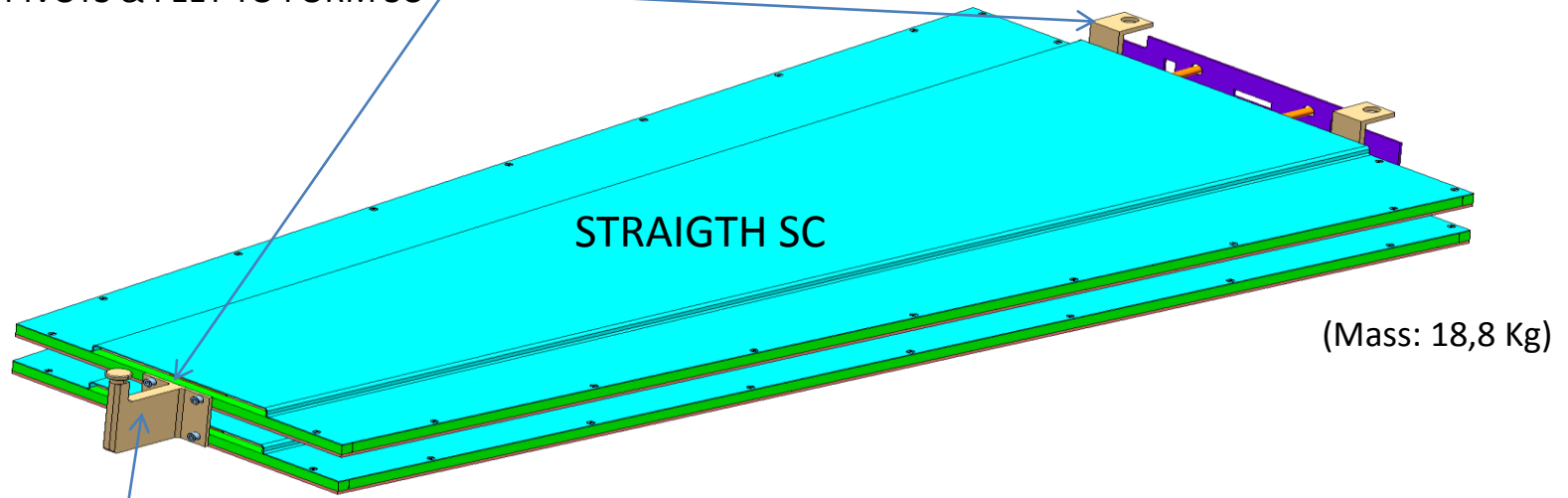


GAP-PAD LARGER THAN CHIP

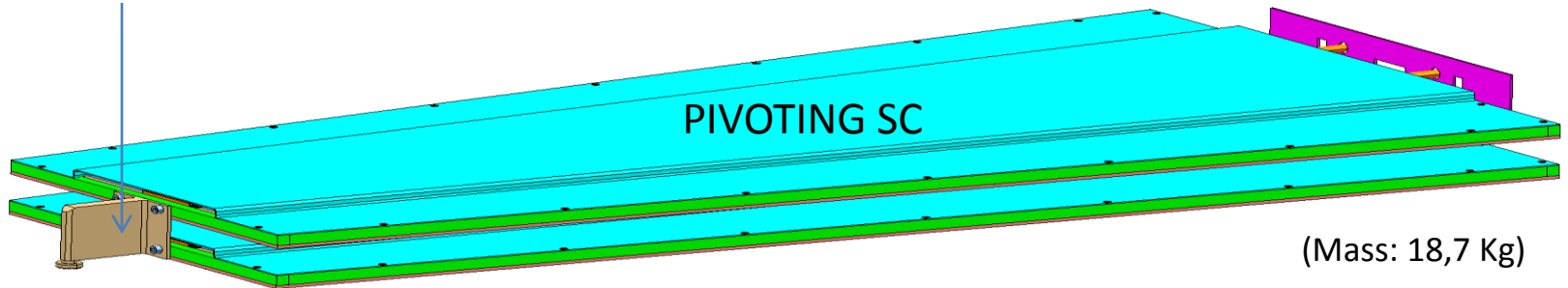
COVER, FRAME & DRIFT EXTENDED  
20mm DUE TO NEW LOCATION OF HV  
DIVIDER

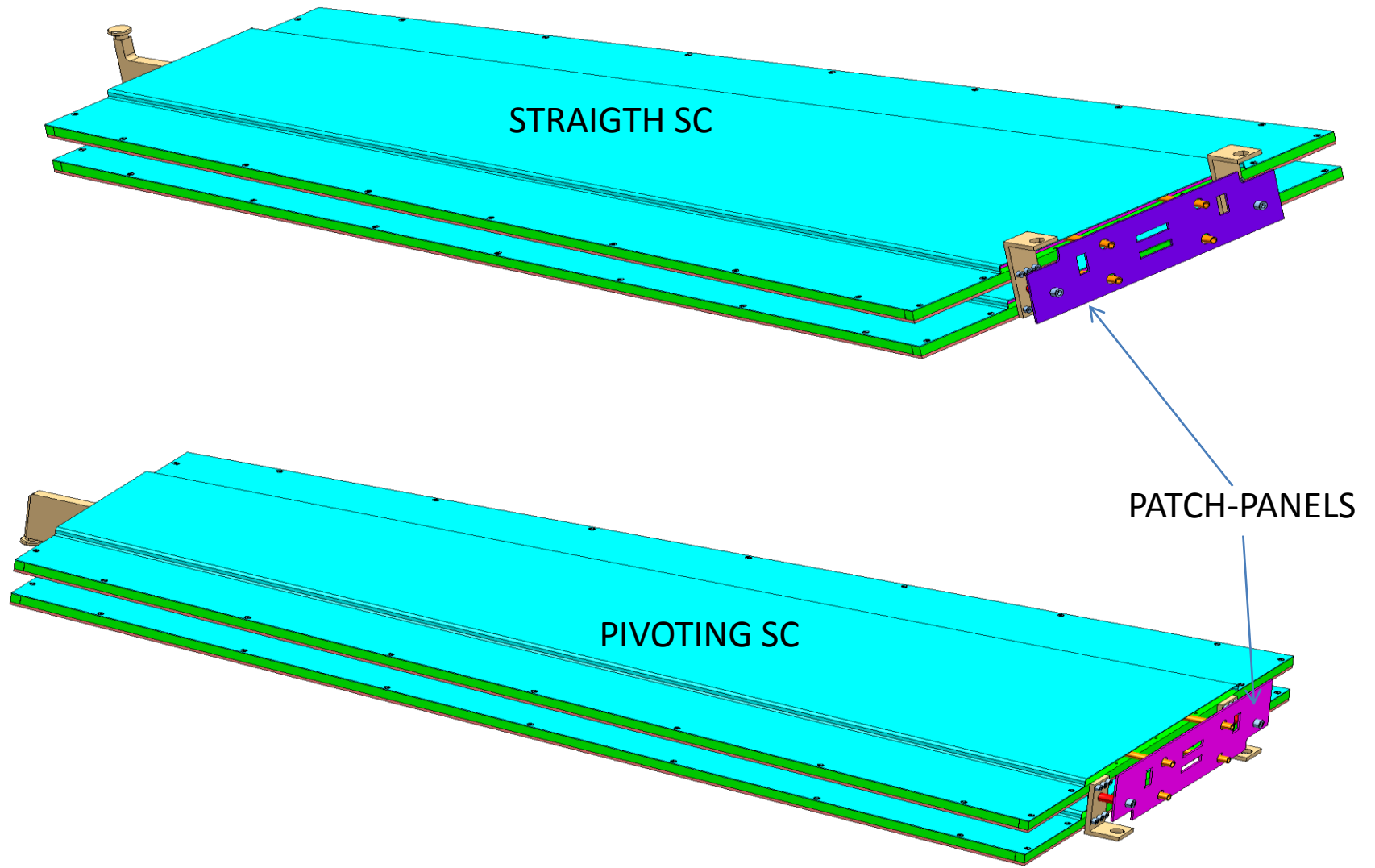


ADDING PIVOTS & FEET TO FORM SC



Pivots 20mm now shorter due to elongation of the Frame  
(Surface treatment for sliding needed)





## 7.1 Annex 1: Screw list (per SC)

Pos.	Description	Quantity	Material	Connexion	Tight. torque	Supplier	Ref., rule	Unit CHF	Total
1	CSK slot flat HD screw M4x10	48	Inox A2	Drift / Frame	TBD	BOSSARD	BN 654/ISO 2009		
2	Rivet Bush M2.5	32	Inox A2	Shield		TITANOX	CLS		
3	CSK slot flat HD screw M3x6	46	Inox A2	Shield/ Frame	TBD	BOSSARD	BN 654/ISO 2009		
4	Slotted cheese HD screw M2.5x3	32	Inox A2	Chimney/Shield	TBD	BOSSARD	BN 650/ISO 1207		
5	Screw CHC M5x12	4	Inox A2	Pivot/Frames	TBD	BOSSARD	BN 610/ISO 4762		
6	Screw CHC M4x16	12	Inox A2	Feet/Frames	TBD	BOSSARD	BN 610/ISO 4762		
7	Screw CHC M6x40	2	Inox A2	Patch Panel/Feet	TBD	BOSSARD	BN 611/ISO 4762		
8	Nut H style1 grade A M6	2	Inox A2	Feet/Patch Panel	TBD	BOSSARD	BN 628/ISO 4032		
9	Screw H grade A M12x25	2	Inox A2	SC/Back Flange	TBD	BOSSARD	BN 622/ISO 4017		

## 7.2 Annex 2: Materials list (per SC)

(the triple Gem assembly is not included)

Pos.	Description	Quantity	Material	Manufacturing	Surface treatment	Supplier	Dwg. SCEM	Unit CHF	Total
1	Frame	2	Aluminium		TBD		TBD		
2	Shield	2	Alu or SS		TBD		TBD		
3	Chimney	2	Alu or SS		TBD		TBD		
4	Pivot	1	Aluminium		TBD		TBD		
5	Foot	2	Aluminium		TBD		TBD		
6	Spacer	1	Aluminium		TBD		TBD		
7	Patch panel	1	Aluminium		TBD		TBD		

## 7.3 Annex 3: Tools

Torque wrenches and torque-limiting screwdrivers are needed.

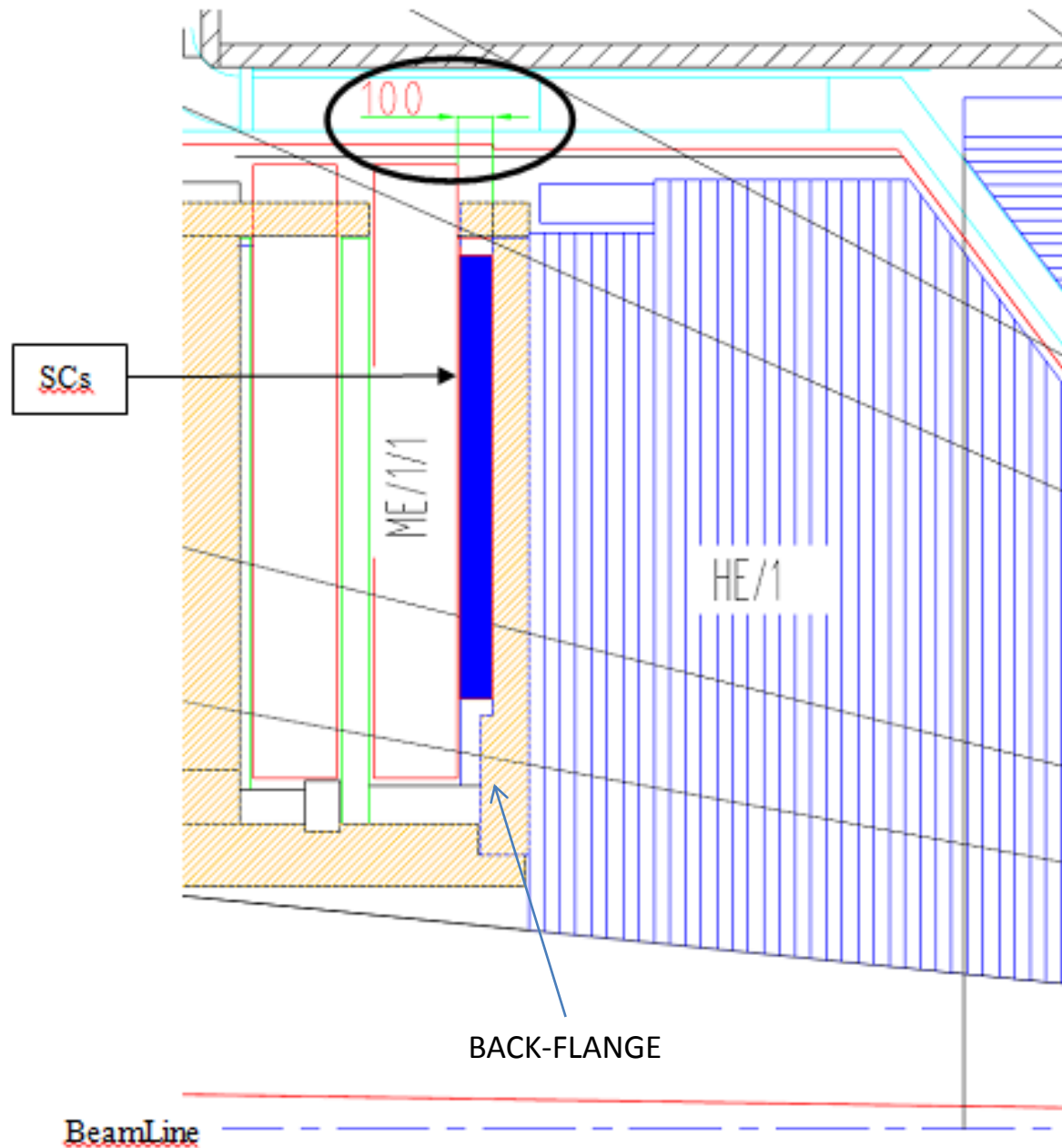
## 7.4 Annex 4: Surface treatment

To be defined for Aluminium parts (Aloidine?)

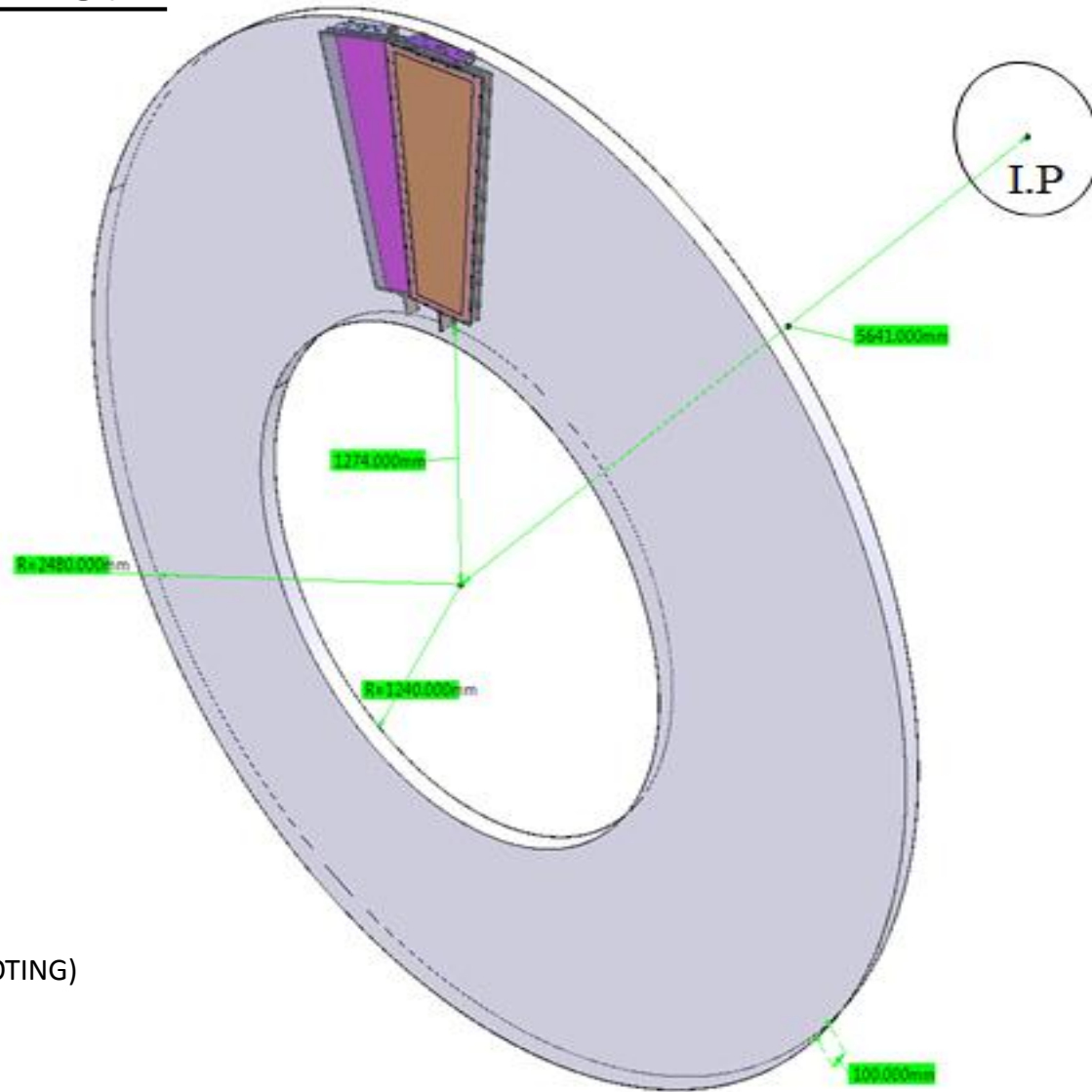
(lack cooling and gap-pad; cover unique part;  
some screws disappeared)



# GE1/1 INTEGRATION

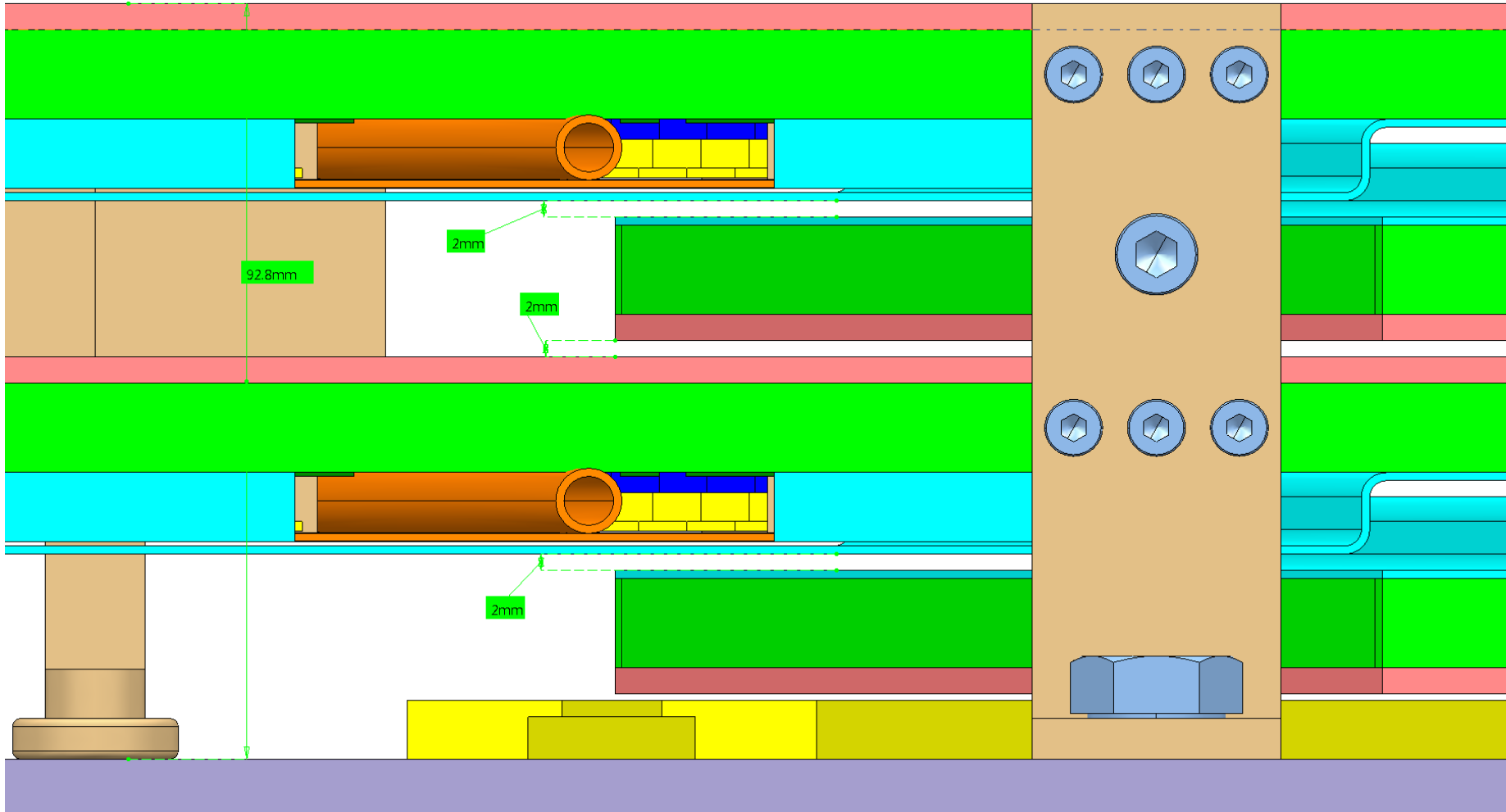


# DETECTOR ENVELOPE



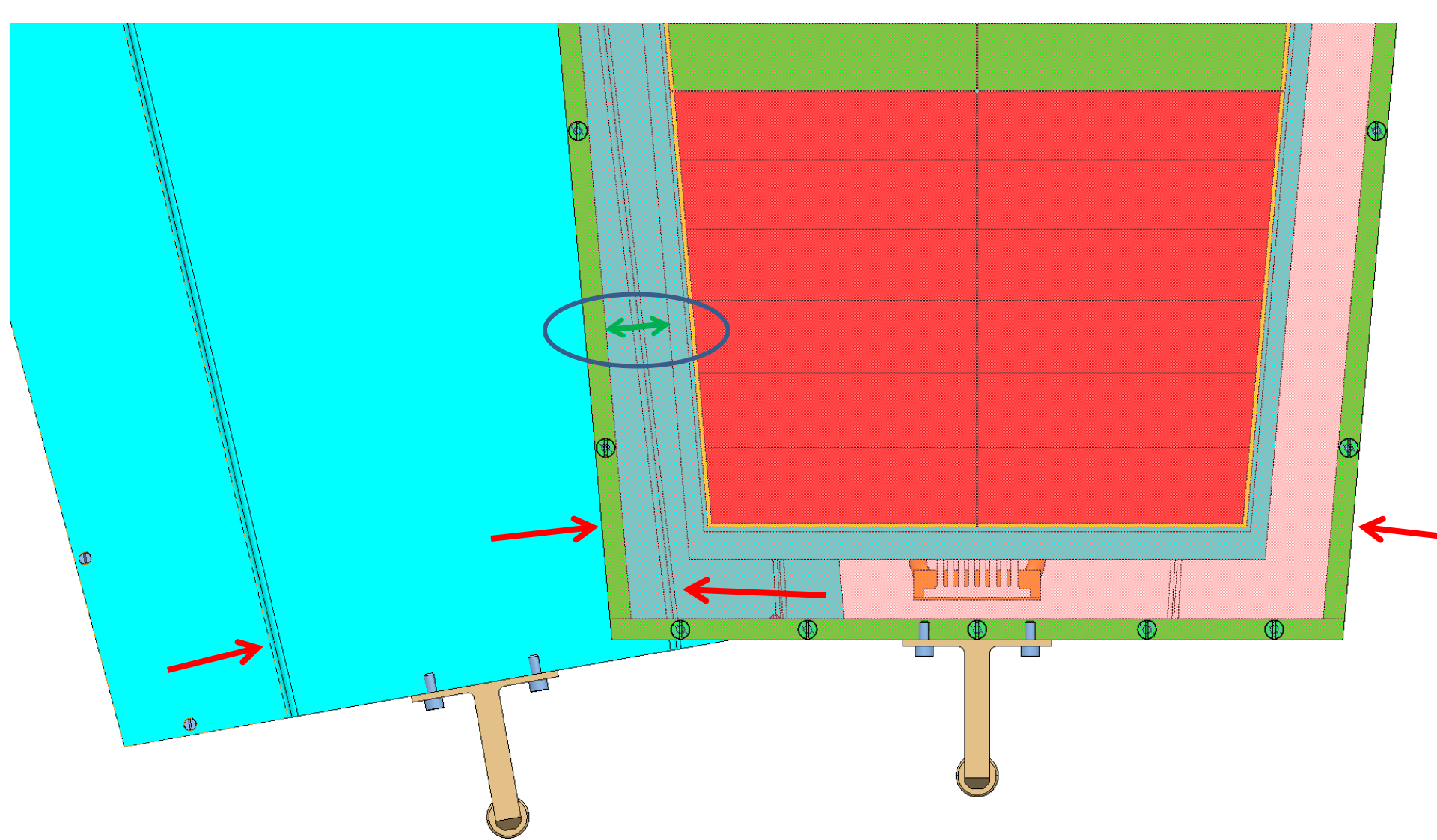
**36 SC PER SIDE**  
(18 STRAIGHT+18 PIVOTING)



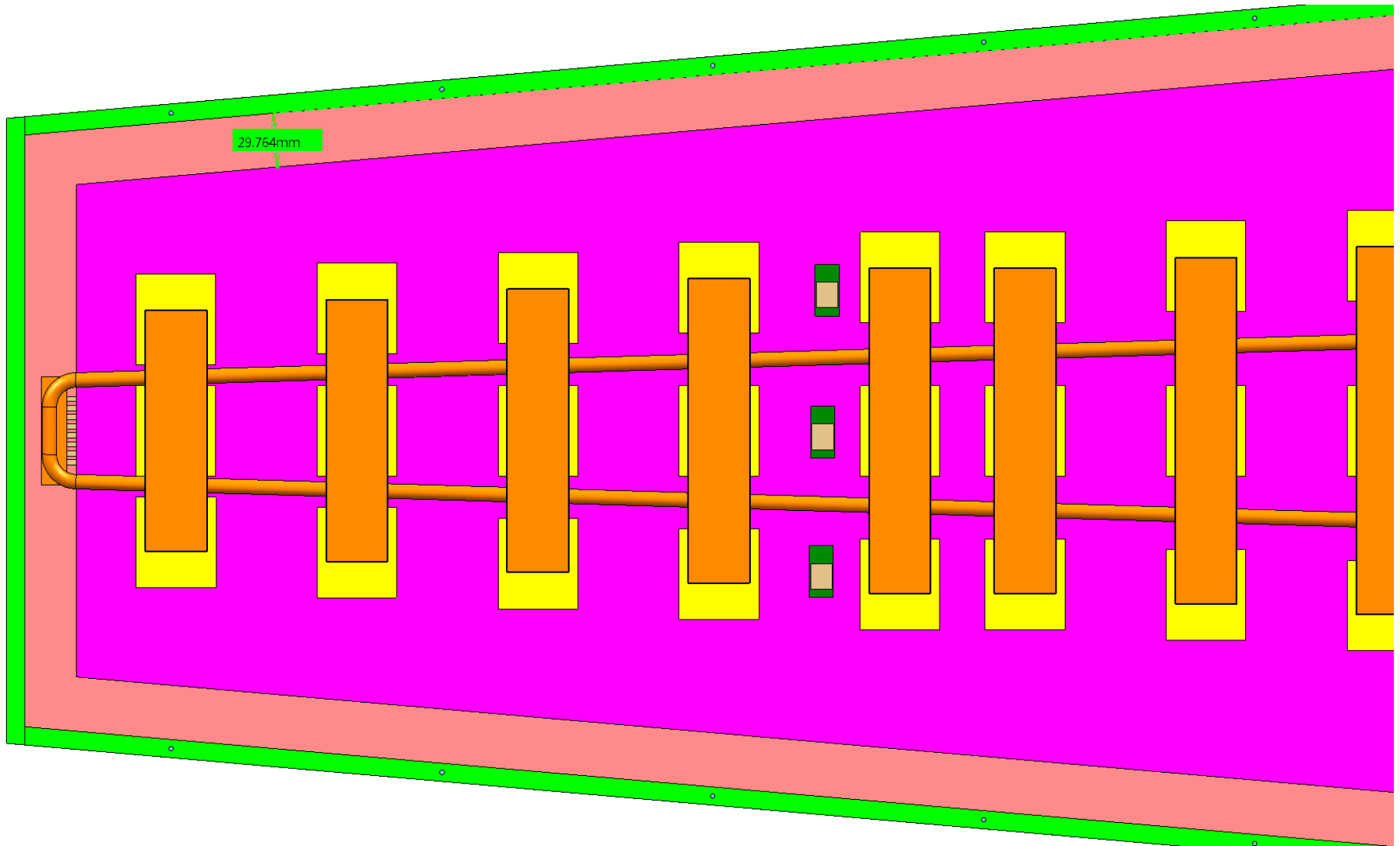


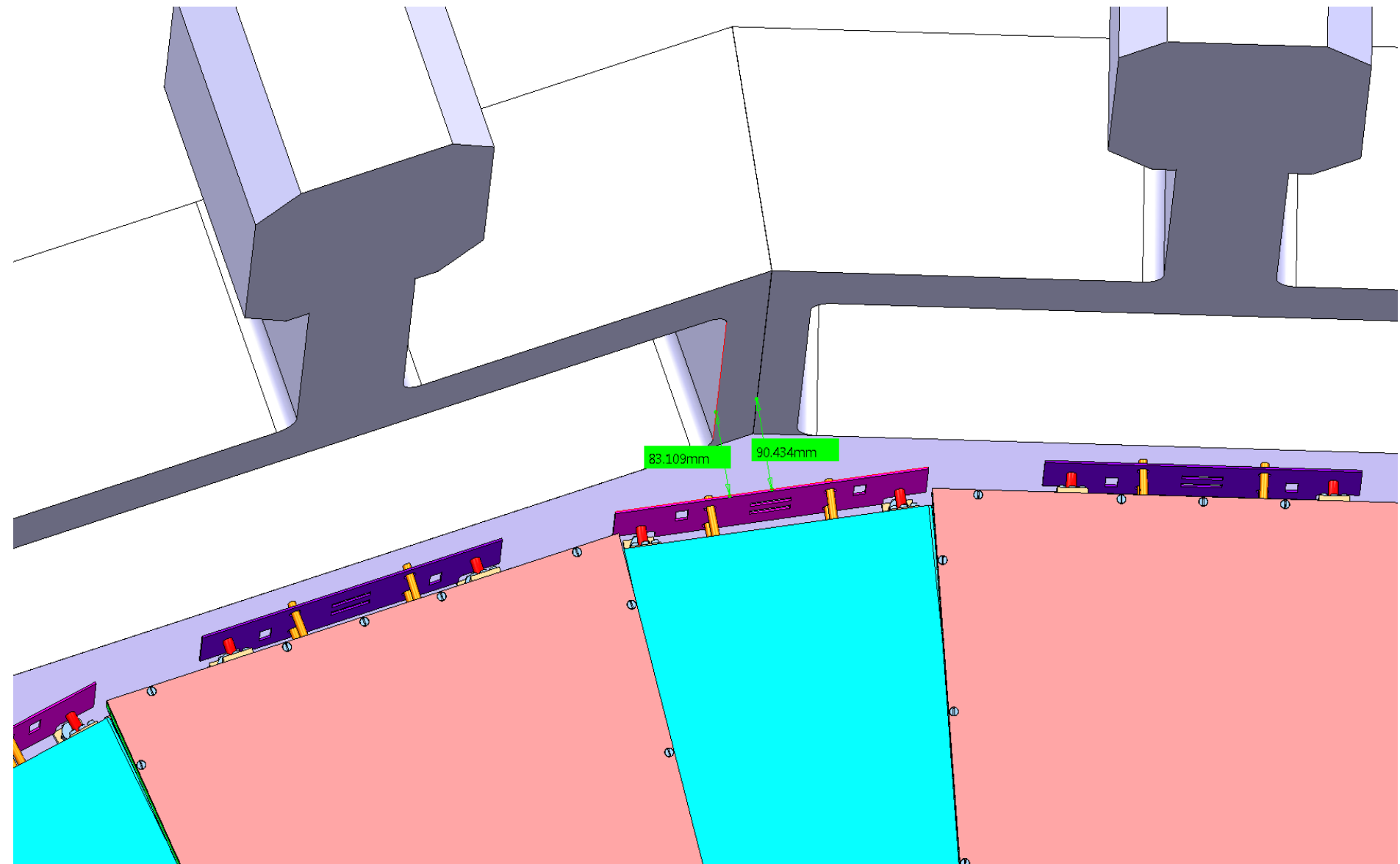
## QUESTIONS :

- INITIAL FLATNESS OF THE BACK-FLANGE ?
- BACK-FLANGE MAGNETIC DEFORMATION ?
- ARE THERE NON FORESEEN CABLES OR PIPES ?



**REDUCING STACKING HEIGHT IN 18mm TO BE STUDIED**



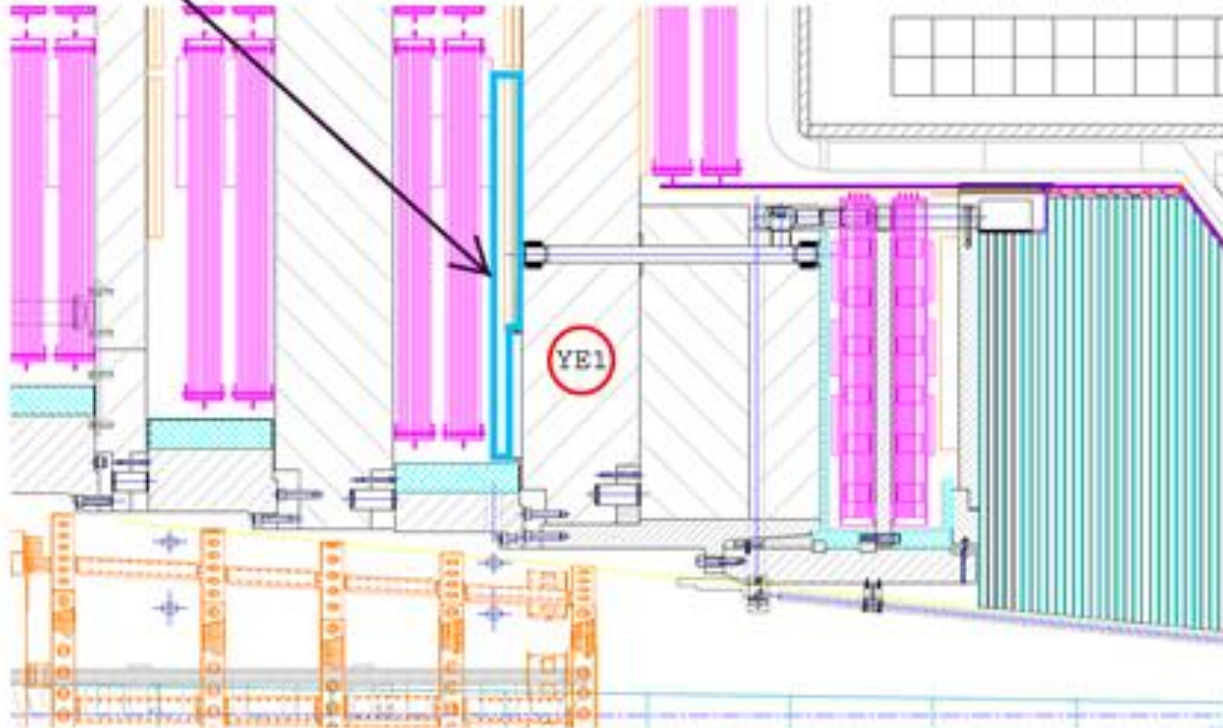




# GE2/1 INTEGRATION

WIDTH OF THE ENVELOPE : 150mm

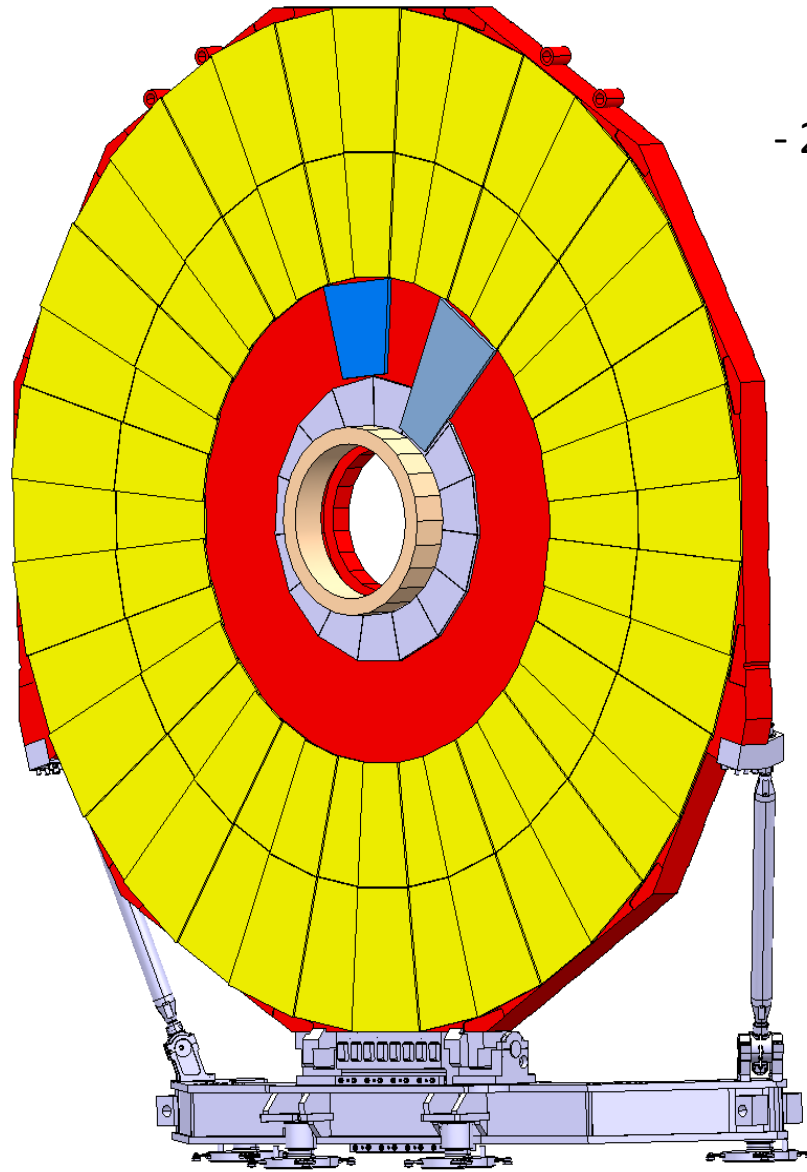
In blue: volume available for GE2/1







- 2 POSSIBLE GEOMETRIES





18 SUPERCHAMBERS  
PER SIDE

The diagram shows a cross-section of a dome with several layers. The outermost layer is yellow, followed by a red layer. Inside the red layer are 18 purple superchambers. A blue trapezoidal section is highlighted at the top with dimensions: 1250.74mm (width), 1281mm (height), and 20deg (angle). A grey trapezoidal section is highlighted on the right with dimensions: 1911mm (width), 1281mm (height), and 1281mm (width). A yellow section at the bottom has a dimension of 1960.026mm. The innermost part of the dome is a white archway.

**NEXT STEP : TO MODEL GE2/1 WITH ALL INTERNAL AND EXTERNAL COMPONENTS**



THANK YOU FOR YOUR ATTENTION

REMARKS / QUESTIONS ?