Status of IFR – Upgrade options update

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M. Benettoni

SuperB IFR
Upgrade options

Baselines to increase thickness to 920mm (from babar hware, 600mm doors, 650mm barrel):

•Partial gaps filling + add thickness outside (100 – 140)mm:

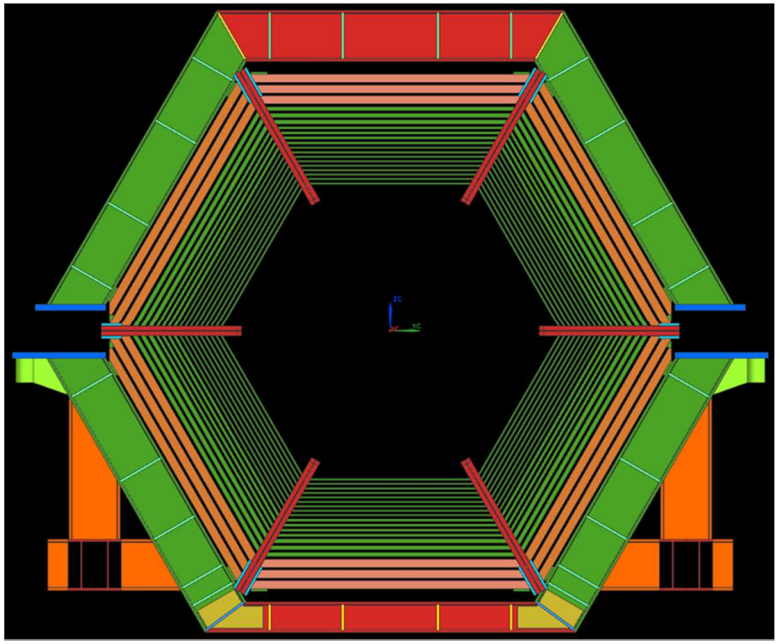
- PRO: Cheap, upgradable (some gaps remain available)
- CONS: increase IFR dimensions thus hall occupancy, requires major modification to inner wedges

• Filling available gaps with thicker (25–27mm vs. 22mm Babar) plates: compact, still some doubt on feasibility, can be cheap if new filling plates are steel or Ssteel

•Replace inner wedges: expensive, clean, compact (must have inner plates of stainless steel)

•Similar solution for doors, but 50 mm missing vs Barrel, thus add plate outside is mandatory seems of inner doors.

•All solutions require to create a gap for scintillators outside barrel between wedges and outer structure (cradle/arc)



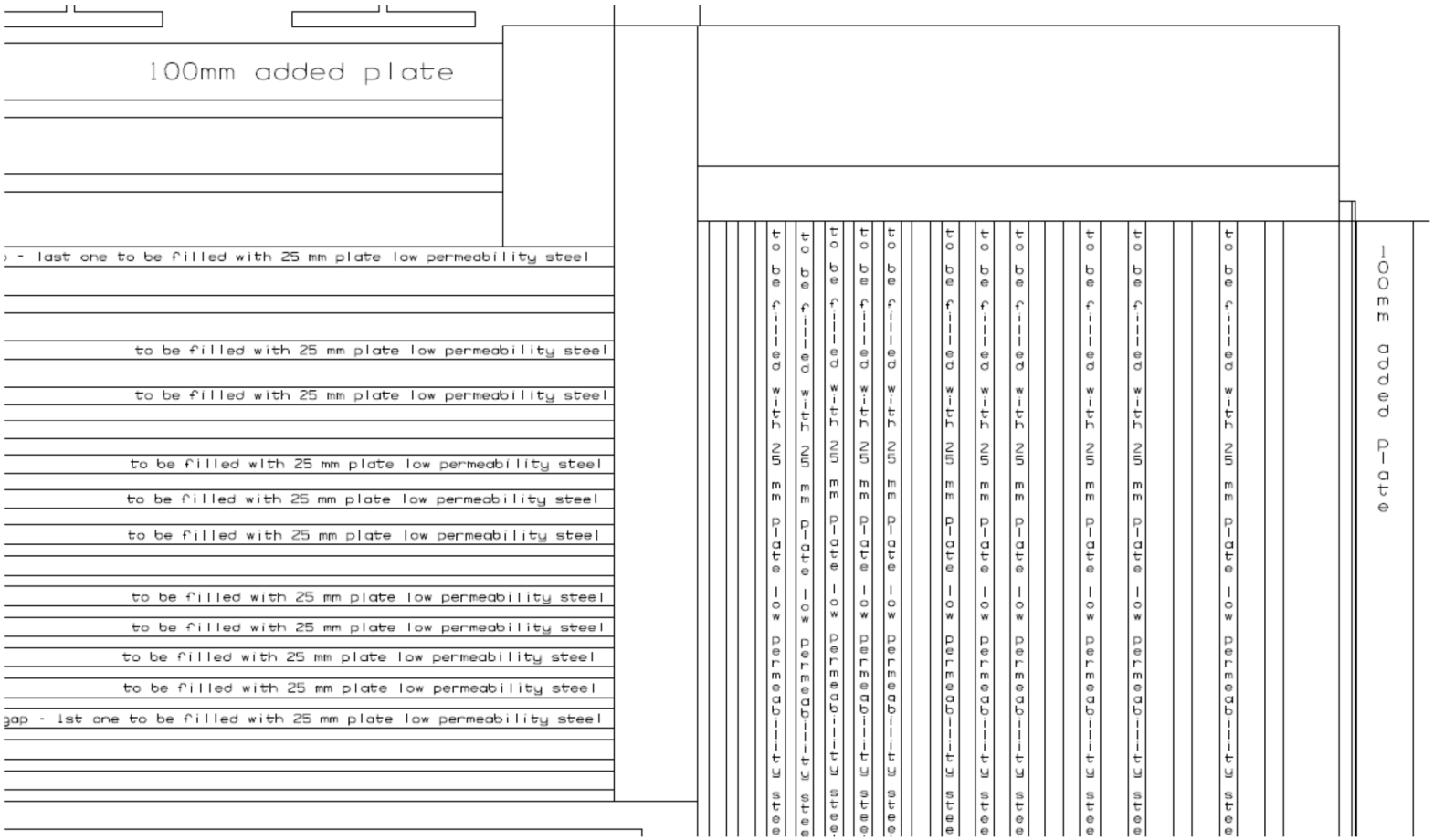
SuperB IFR
study of magnetic field vs upgrade options

Possible configurations transmitted to Pasquale Fabbricatore for magnetic field simulation

1) Babar + «amagnetic» filling (brass or Ssteel = Babar)

2) Babar + 100 mm added outward

3) Babar + ferritic filling of 11 gaps (as worst case)



SuperB IFR
Upgrade options cost update (barrel only)

	max equivalent thickness [mm]	new carpentry to buy [tons]	new layers of plates wrt Babar	new plates to insert [mm of thickness]	Filled layers Overall	Filling Metal	Density	Cost/t	Additional weigth [t] of filling wrt Babar	Overall weigth [t] barrel nut only	Costs [k€]							Missing thickness [mm]
											Transport	plates proc.	plates insert.	New carpent	Carpentr. modifications	Overall	Cost/Dmm (thick-785) [k€/mm]	
a1) Babar with modified cradle/arcs 2 wedges connection, 22 mm plates filled	872	0	4	89	10	steel	7,8	1,5	39,0	399	290	58	50	0	120	518	6,0	48
						S-steel	8,0	4,0	40,0	400	290	160	50	0	120	620	7,1	48
						Brass	8,4	8,3	42,0	402	290	348	50	0	120	808	9,3	48
a2) Babar with modified cradle/arcs 2 wedges connection, 22 mm plates filled	894	0	5	111	11	steel	7,8	1,5	48,7	409	290	73	50	0	120	533	4,9	26
						S-steel	8,0	4,0	50,0	410	290	200	50	0	120	660	6,0	26
						Brass	8,4	8,3	52,4	412	290	435	50	0	120	895	8,2	26
b) thicker(25 mm) plates filling	925	0	all	275	11	steel	7,8	1,5	120,7	481	290	181	50	0	120	641	4,6	-5
						S-steel	8,0	4,0	123,8	484	290	495	50	0	120	955	6,8	-5
b) thicker(25 mm) plates by hybrid* filling	920	0	5	137	11	S-steel	8,0	4,0	61,7	482	290	247	50	0	120	707	5,2	0
c1) Add 100 mm outward	928	60	2	44	8	S-steel	7,8	3,5	19,5	439	290	78	36	210	210	824	5,8	-8
c2) Add 140 mm outward	923	85	0	0	6		7,8	3,5	0,0	445	290	0	27	298	210	825	6,0	-3
d) Replace inner wedges	920,0	360	0	0	0		7,8	3,5	0,0	480	80	0	0	1260	120	1460	10,8	0
e) Replace all barrel	920,0	540	0	0	0		7,8	3,5	0,0	480	0	0	0	1890	0	1890	14,0	0

hybrid filling: fill 6 gaps with 22mm brass plates + thin 2 mm Ssteel sheet + the remaining 5 gaps with 25 mm thick Ssteel plates

SuperB IFR
Shipping quotation update

Got new quotation for main IFR parts: 540cbm/696 mtons

Pos	items	dims each	Tons/each	descr.
1	6	360x380x160 cm	40	wedge
2	2	940x390x350 cm	26	cradle
3	6	350x370x40 cm	18	plate
4	8	600x350x70	37	door

Pos 3-4 stackable only among them (3/3 - 4/4) and max up to 2 tiers
FCA Menlo Park CA >> DAP IT-00173 Roma
LUMPSUM € 540.000
Includono:
Precarriaggio Menlo Park / Palm Beach CA
Costo FOT/FOB LSD incluso
Doganali export/emission BL/corriere per rimessa originali
Nolo mare/BAF attuale (55%)/Canal
Costo Free OUT/FOT ns mezzi Savona
Doganali import (diritti e dazi esclusi)
Iva e dazio da anticiparci al momento dello sdoganamento
Nolo stradale Savona/DAP IT-00173

Means 0,8 k€/t or 1k€/m3. Baseline cost for 40' high cube container: 9000€/pc = >300 €/t or 150€/m3

SuperB IFR
Work to progress

- Check gaps with finer resolution (now ¼", should be 1 – 2 mm), needed due to some difference between Federico E. and Osier S. checks
- (Gap #2 of sextant #3 – bottom: Federico found gaps n.2, 3, 14 thinner than 25 mm; Osier only gap #2)
- Check with panels instead bars / tubes

- *Choose baseline !!*

- Setup reliable FEA analysis to check main modifications (gap to cradle/arc, increase diameter..)
  (Engineer(s) from Cracow University may contribute).
- Define Shipping specs and get shipping quotation (based on some assumption …)
- Seismic analysis and seismic costraints design
- New doors movements

- Some missing parts in the current model (thanks to Osier Shawn for huge modeling job):
  - magnet supports, SOB full magnetic shield
  - Bottom X –Z seismic brackets
  - Services platforms