

WP4 update

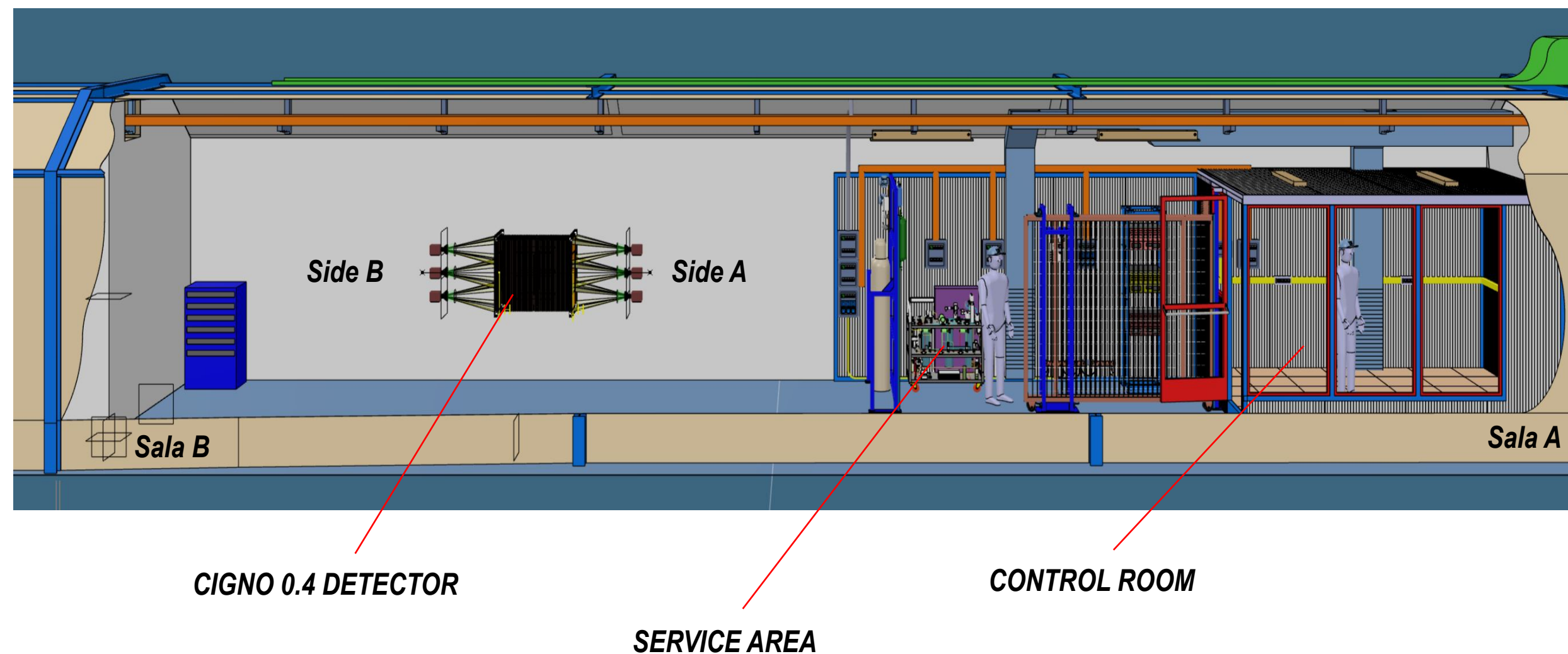
L. Benussi, S. Bianco, A. Biondi, C. Capoccia, A. Croce, M. Caponero, G. Dho, G. Maccarrone, G. Mazzitelli, E. Paoletti, L. Passamonti, D. Piccolo, D. Pierluigi, F. Rosatelli, A. Russo, G. Saviano, R. Tesauro , S. Tomassini and special guest D. Tozzi.

6/6/24 G. Mazzitelli

Hall F refurbishing

GENERAL SETUP SALA "F" - CIGNO 0.4 DETECTOR

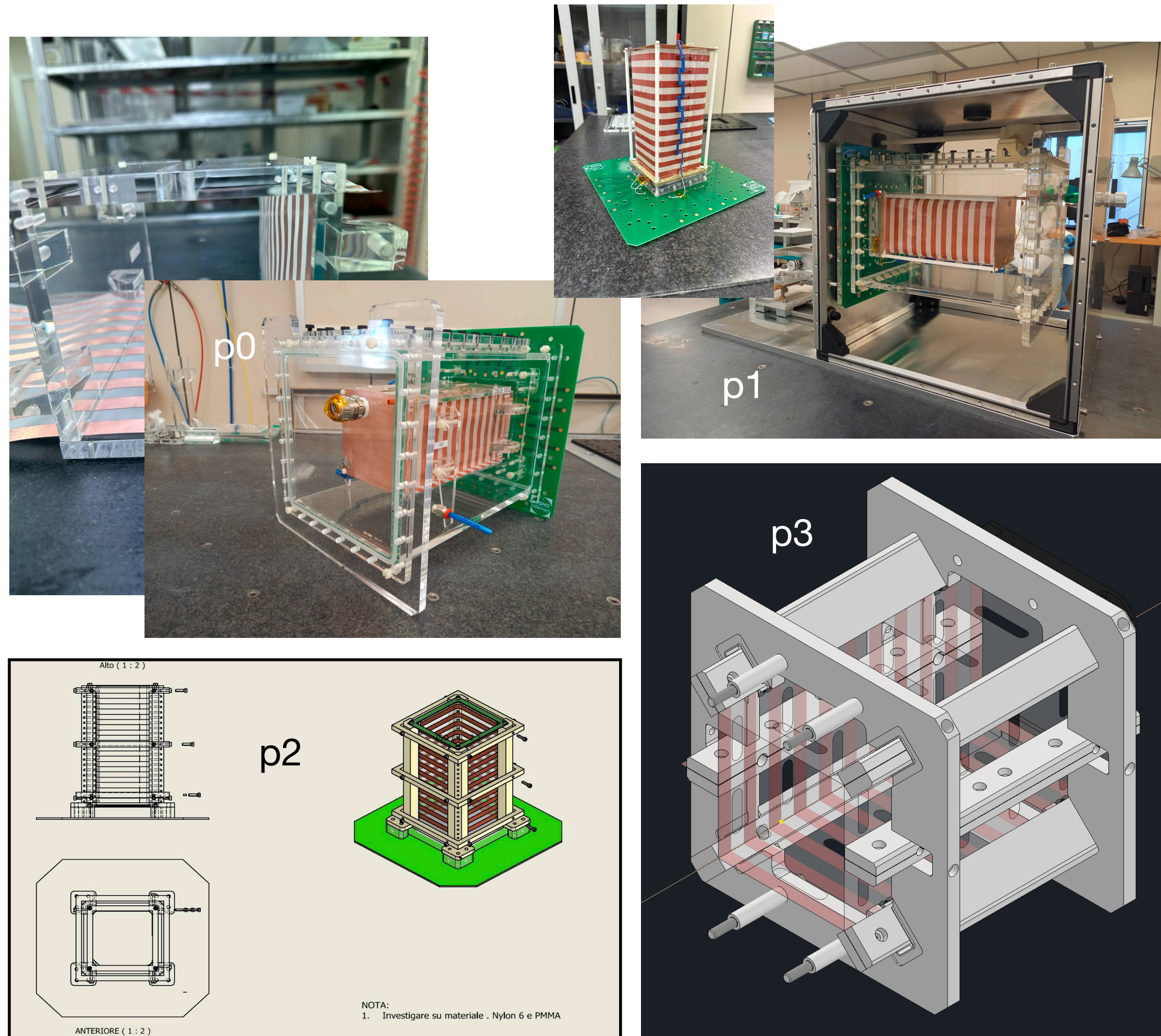
- POSIZIONAMENTO DETECTOR
- GESTIONE SPAZI
- IMPIANTISTICA
- ETC.



- **15/11/23** LNF provides all documentation to GSSI to assign the tender (<40ke)
- 7/3/24 LNGS-GSSI agreement was signed
- 23/4/24 (because nothing happened) we had a meeting GSSI-LNGS-LNF
- **7/6/24** it is **foreseen** another meeting and the tender is still not assigned...
- ...

validating components update

actually WP6 tasks, followed - partially - by LNF peoples

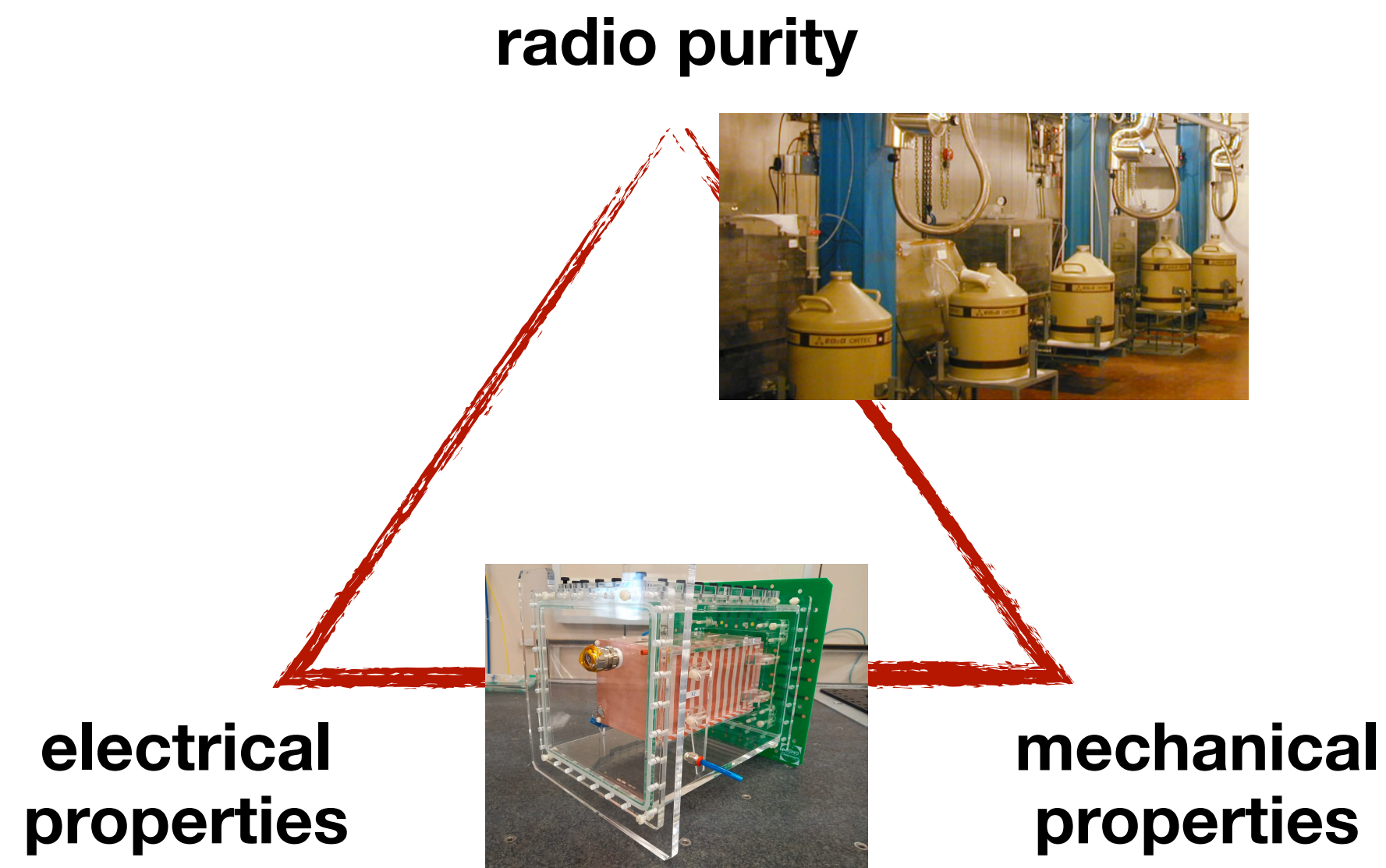


- GEM ok, Luigi is at CERN to acquire 4 (50*80) random segmented ones for side B
- FC test:
 - GIN2 tightness recovery (palazzi) ok
 - Frame p2 ready, frame p3 in production at LNF workshop; FC-PC arrived;
 - FC resistor for P2/P3 missed (GSSI)
- GIN measurements:
 - P0 failed moving on, P1 OK, Lomba cathode test partially ok (see Alex thesis)
 - long term data taking ongoing to monitor environmental parameters fit (Rita, Rita, Davide once do not match LNF data)
- FC aging tests
 - on going, no bad news



material choice

actually WP6 tasks, followed - partially - by LNF peoples

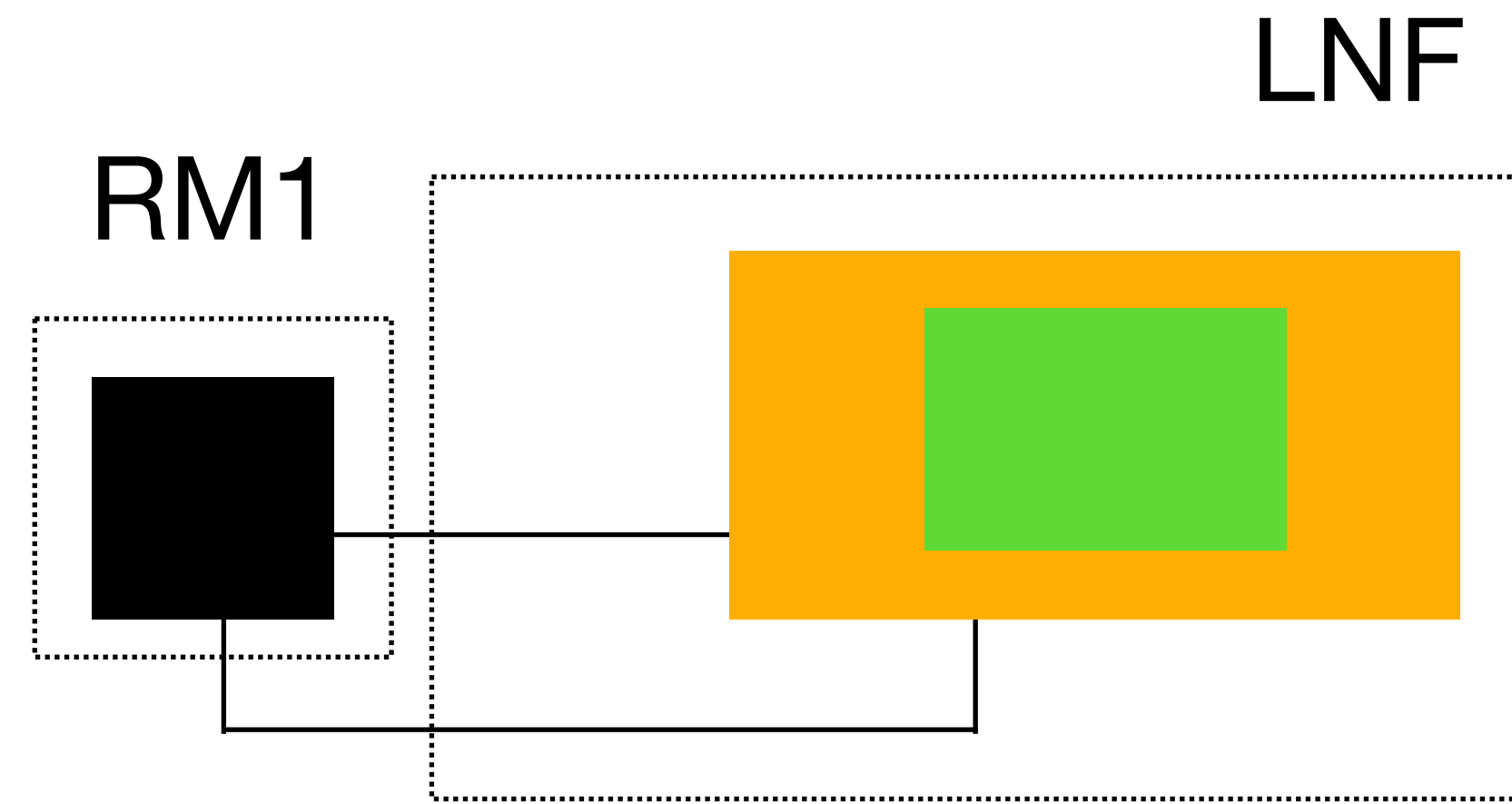


SAMPLE	STATUS		
	MEASURE	ANALYSIS	COMMENTS
kapton	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
PVC	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Matthias ha inviato i risultati
PVC no glue	<input type="checkbox"/>	<input type="checkbox"/>	
nylon6	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

- GIN is the facility to **validate** (WP6) electrical and mechanical (included gas/humidity behaviour) properties of the materials exploit for the construction of CYGNO04
- LNGS is the **only site** (Matthias-Adolfo talked about this, reiterating once and for all the conclusions of Calanca's thesis) where we can measure the radioactivity of the material chosen (*)
- D. Tozzi (PhD student RM1) is following this task (also analysing the data) since a couple of month. **it's not clear who is following/have to supervision her work**
- (*) NB: **all the material** we will use must be measured, possibly even afterwards. A **list of priorities** is therefore also essential

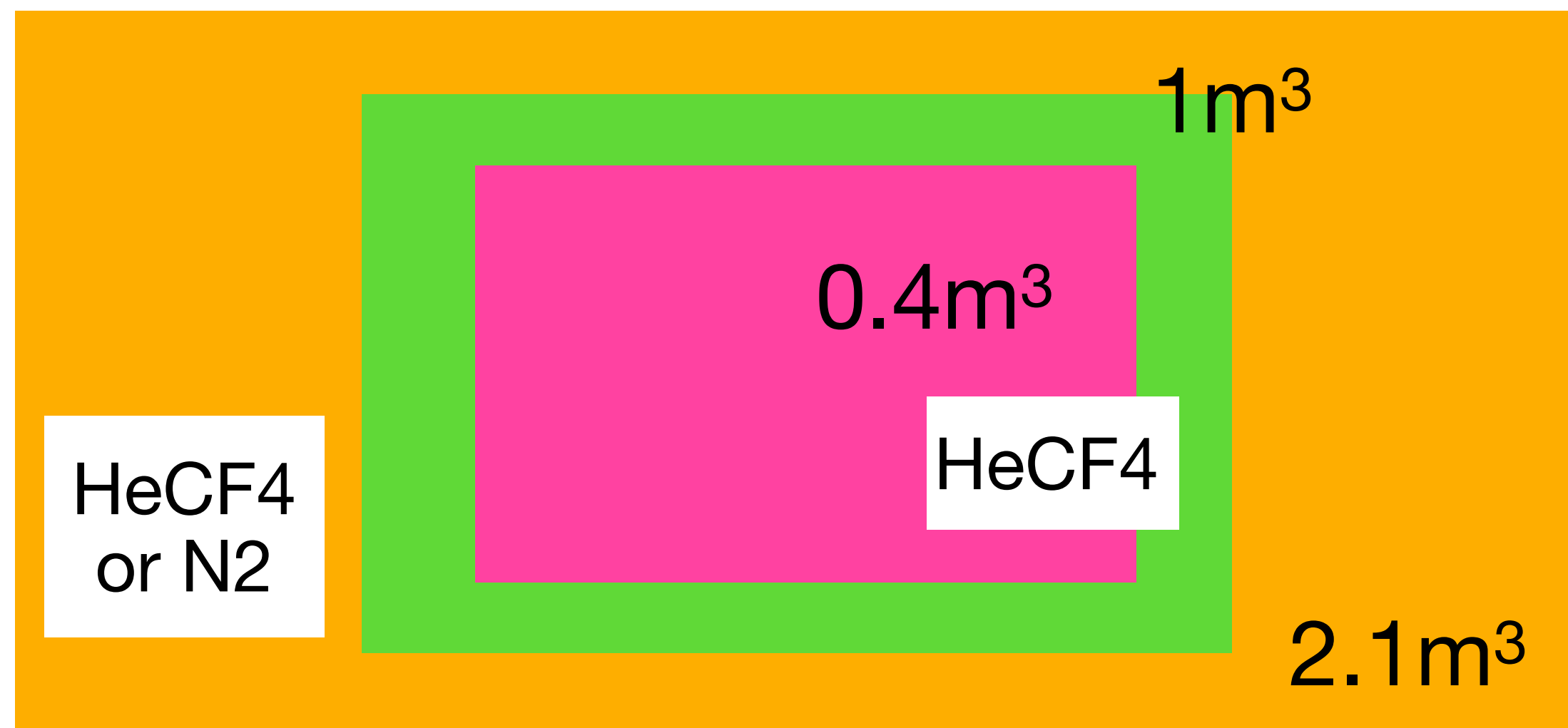
Detector Design (DD) strategy

double box gas tightness



technical requirements: *sufficient air tightness, mechanical and electrical capability, low radioactivity materials*

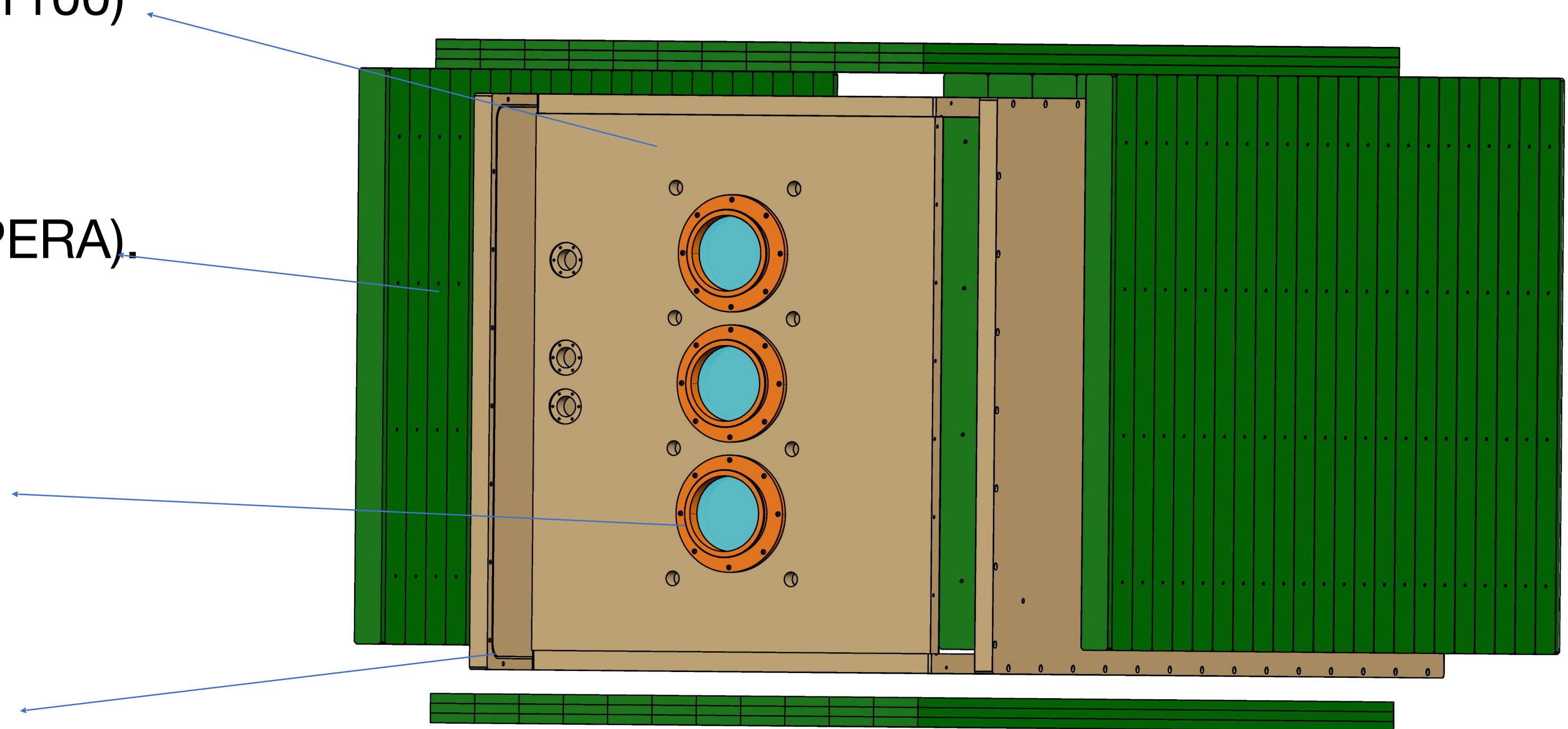
- gas system and diagnostic (RM1)
- gas pipe (requirements)
- detector tightness (requirements)
- “pass-through” connectors (requirements)
- gas consumption (requirements)



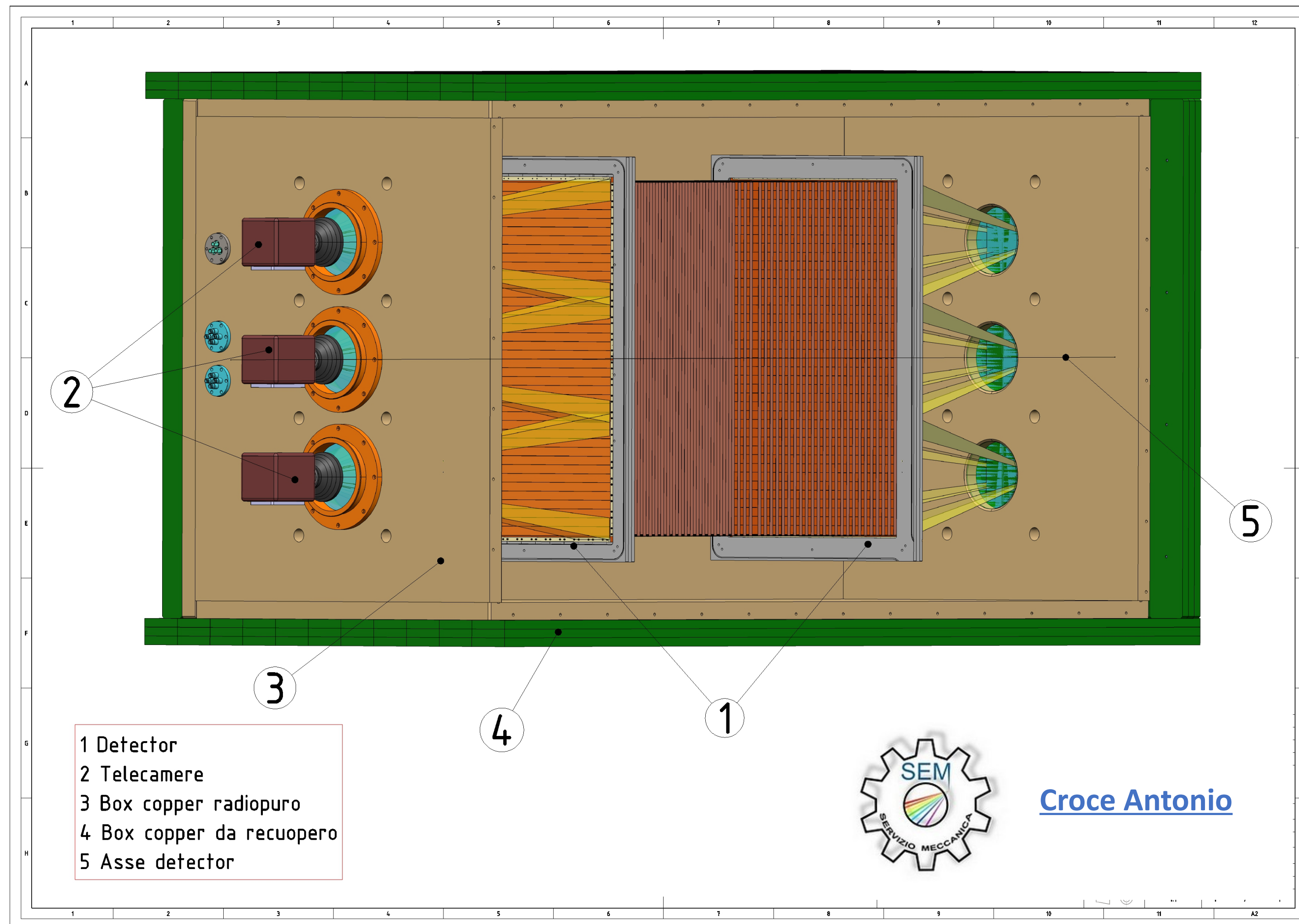
the solution optimized according to the requirements known so far is a double gas-tight container, one made of pure radio copper and one of PMMA of the smallest thickness necessary

Detector Design (DD)

- Box clean Cu (2260x900x1100)
- Box of Cu refurbished (OPERA)
- CAMERAs pass through
- O-Ring Cu for tightness



Detector Design (con't)

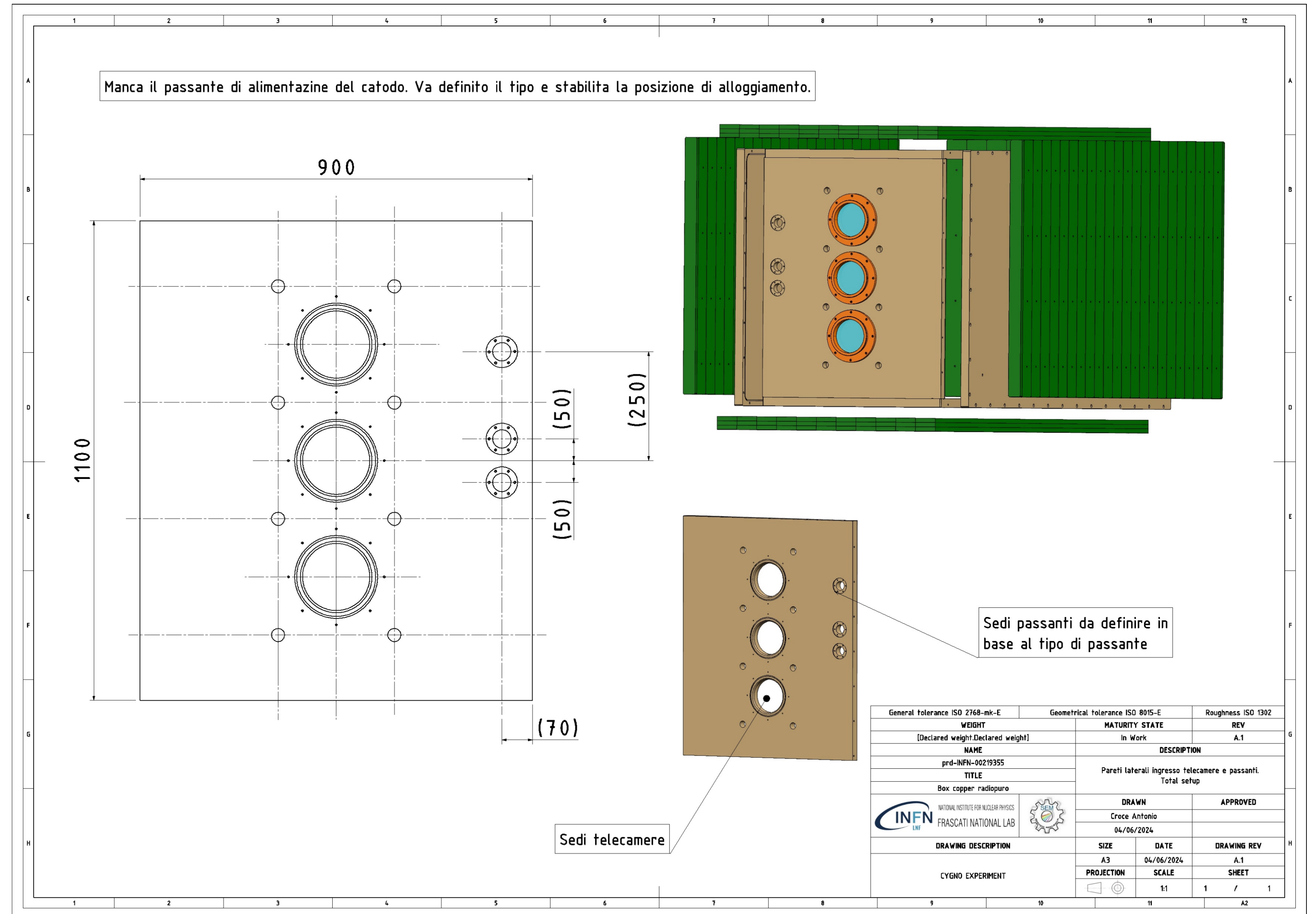


- 4t of radio-pure Cu (120ke); CAMERA sides and 50kV **processing** to be evaluate (5-10ke)
- 7t of OPERA Cu (4.5 ton available, the remanning from LIME or...) costs of **processing** to be evaluate (~10-20ke)
- “vacuum” feedthrough evaluated (~10ke) we are evaluating custom solution to be test with lower tightness, **specification are needed!**
- **PMTs and windows** specification

DD (con't)

required feedback:

- GEM connectors for signal HV specification;
- 50kV feedthrough specification.



[Croce Antonio](#)

“vacuum” feedthrough ceramic...

**COMPONENTI (PASSANTI)
PER VESSEL (TENUTA VUOTO)**
Upgrade 12/02/2024

Specifications		Dimensional Drawings	
Voltage (kVDC):	60		
Current (A):	3		
# of Conductors:	1		
Conductor Material:	Stainless Steel		
Conductor Diameter (Metric):	3.96		
Conductor Thread:	1/2-13		
Atm Side Termination:	Threaded		
Vac Side Termination:	Pin		
Insulator Material:	Alumina	Kurt J. Lesker Company	
Flange Mounting:	ISO100-K (5.12 in OD)		

allectra 241-BNC-K40-2
DN40KF BNC FEEDTHROUGH, 2 PINS CONNECTOR
Co-axial Feedthroughs

Price: 135.43€

allectra 120-VPG-C16
DN16CF STANDARD KODIAL GLASS VIEWPORTS
Viewports

Price: 90.00€

allectra 110-VPQZ-C100-UV
DN100CF FUSED SILICA VIEWPORT UV GRADE
Viewports

Price: 861.01€

QUARZO

allectra 110-VPQZ-C100-UV
DN100CF FUSED SILICA VIEWPORT UV GRADE
Viewports

Price: 145.53€

allectra Electrical Feedthroughs

- Multipin Feedthroughs with Plug Connectors
- Coaxial Feedthroughs
- Power and High Voltage Feedthroughs
- Thermocouple Feedthroughs
- Isolators
- Accessories

Cygn0 12.02.2023 Cesidio.Capoccia@Inf.infn.it

RT Roberto Tesauro
materiale per la riunione di domani
To: Giovanni Mazzitelli
Inbox - LNF 2 June 2024 at 19:27

Ciao,

giro a te così nel caso lo condividi a riunione.

Prima cosa domani vorrei dare un nome ai lati della box di rame dove sono le telecamere, West lato verso LVD ed Est lato XENON, dovrebbero essere quelli i cardinali corretti.

Per i feedthroughs c'è questa azienda <https://www.vacom.net/en/>, usata anche al CERN e penso acquistabile su EDH, ma non ho verificato.

Per il catodo c'è questo: <https://www.vacom.net/en/cf40-hv50s-ce-crs16.html>

fino a 50Kv con relativo connettore lato aria, c'è anche 70 kv e 100 Kv, ma diventa ingombrante e penso inutile per noi.

Ho allegato il catalogo, a pagina 130,131 trovi quello da 50kv nelle varie versioni (quelle che servono a noi è con flangia CF conflat).

Per Hv gem c'è questo a soli 6 pin <https://www.vacom.net/en/cf16-hv5-6-ce-am16.html#variants> o 4 pin, visto che sono su flangia da 16 potremmo usare 2 da 4 pin, comunque fanno anche versioni custom a richiesta.

Un pensiero al materiale del dielettrico che viene usato, non so quanto sia inquinante per noi.

Per il segnale gem uscire già BNC con questo <https://www.vacom.net/en/cf40-bnc-4-gs-se-ce-ss.html>, qui la flangia è da 40mm bisogna vedere l'ingombro, calcola che guardando il Cu da dietro le camere, i contatti hv delle gem dentro sono in alto a sx, zona in cui dovremmo posizionarci con i feedthrough

Per il cavo/cavi Hv gem ... noi su Lime usciamo dal modulo gem con radial e passiamo a redel...ariviamo nella scatola di derivazione dove si divide in altri due redel, quindi con due cavi da fare nuovi intestati redel da un lato, andiamo alle rispettive gem... da verificare se il connettore radial sul modulo fu fatto per 7 o 14 canali (non penso a 14 perché non serviva a lime, ma forse quello a LNG5 è a 14).

Pensare se c'è spazio sul rame per ancorare la scatola col filtro Hv davanti al feedthrough relativo.

Ciao

Roberto Tesauro
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Divisione Ricerca
Reparto Sviluppo e Costruzioni Rivelatori
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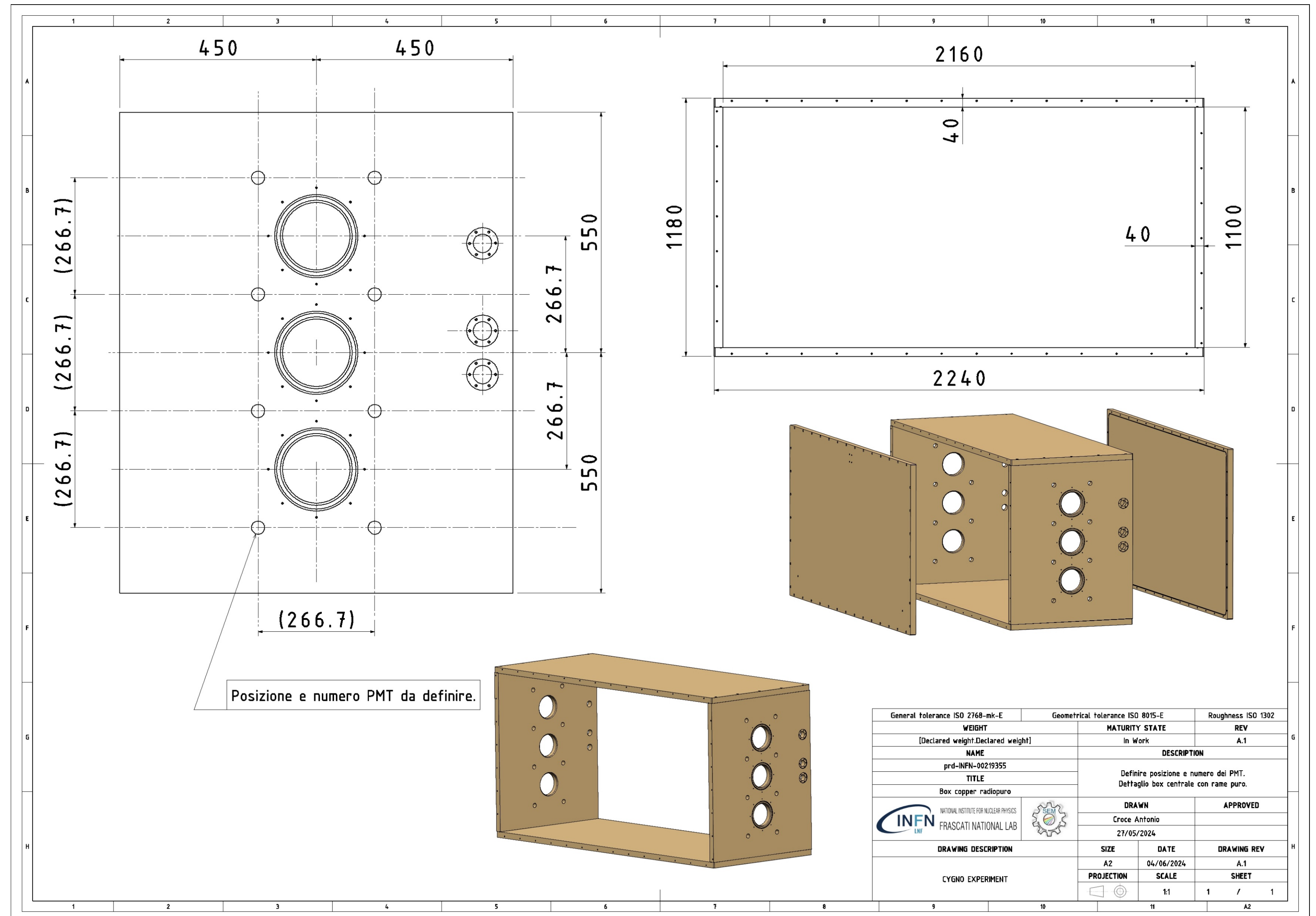


VACOM_Catalog_Electr...21.pdf

DD (con't)

required feedback:

- PMT's specification;
- PMT's final position.

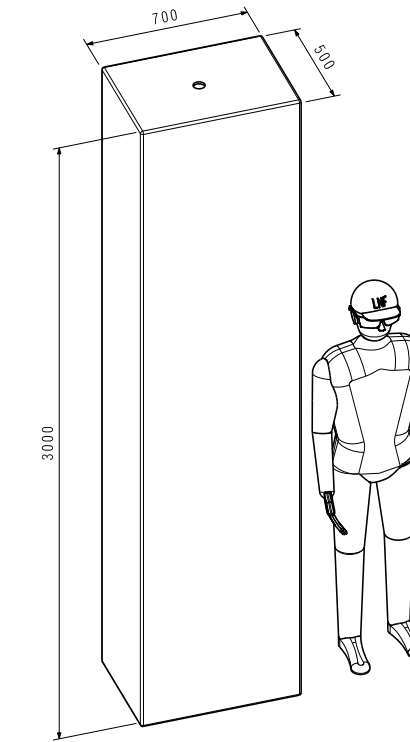
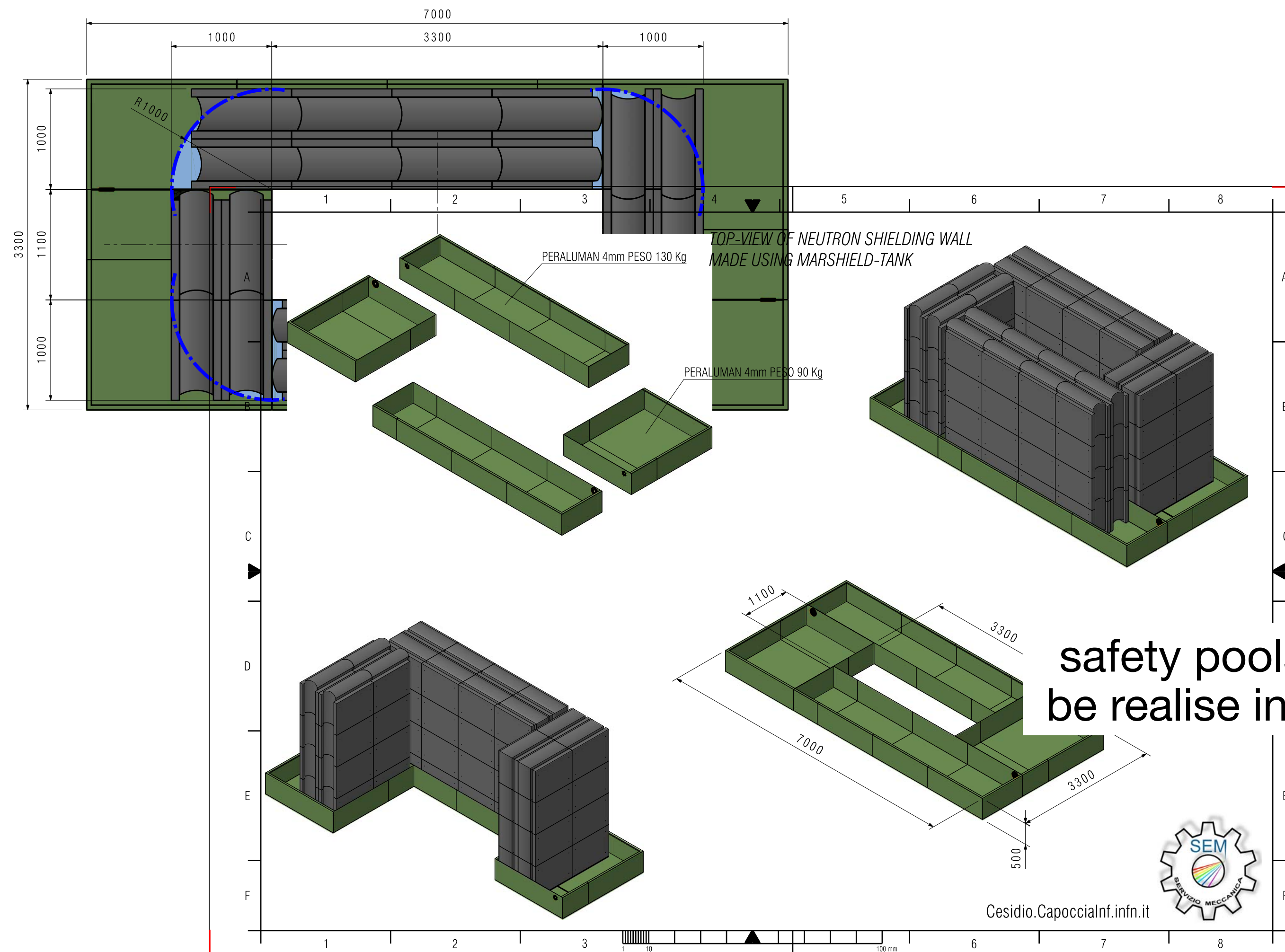


[Croce Antonio](#)

General tolerance ISO 2768-mk-E		Geometrical tolerance ISO 8015-E		Roughness ISO 1302	
WEIGHT		MATURITY STATE		REV	
[Declared weight/Declared weight]		In Work		A.1	
NAME		DESCRIPTION			
prd-INFN-00219355		Definire posizione e numero del PMT. Deflaglio box centrale con rame puro.			
TITLE		DRAWN		APPROVED	
Box copper radiopuro		Croce Antonio			
INFN NATIONAL INSTITUTE FOR NUCLEAR PHYSICS FRASCATI NATIONAL LAB		27/05/2024			
DRAWING DESCRIPTION		SIZE	DATE	DRAWING REV	
CYGNO EXPERIMENT		A2	04/06/2024	A.1	
		PROJECTION	SCALE	SHEET	
		1:1	1	/ 1	

DD (con't) water tanks study

preliminary evaluation of prêt-à-porter/custom solution



PREVENTIVO

Preventivo nr. 100/2024
Data: 31/05/2024

All'attenzione di
Istituto Nazionale di Fisica Nucleare
- INFN

Via Enrico Fermi, 40
00044 Frascati (RM)
Italia
CF: 84001850589



LORCA di Luca Battistutta e Francesco Nicora SNC

Via Pitagora 32
30020 Noventa di Piave (VE)
Italia

P.IVA: 04644620272
CF: 04644620272

CELL: 3272597339
MAIL: info@lorcasolutions.com

Descrizione	Prezzo	Quantità	Importo netto	IVA 22%	Importo totale
SERBATOI CUSTOM IN HDPE OFFERTA BUDGETARIA INDICATIVA PER LA FORNITURA DI N°24 SERBATOI SU MISURA CON LE SEGUENTI CARATTERISTICHE: - Realizzati in HDPE 300 Naturale atossico - Spessore pareti 15 mm - Dimensioni 700x500xH3000 - N° 1 flangiatura nella parte superiore - Paratie interne strutturali (Da definire)	€ 1.500,00	24,00	€ 36.000,00	€ 7.920,00	€ 43.920,00
			Imponibile		€ 36.000,00
			IVA 22% su € 36.000,00		€ 7.920,00
			Totale dovuto		€ 43.920,00

CONDIZIONI DI FORNITURA:

- Validità preventivo: 30 gg
- Tempi di consegna: Da concordare
- Trasporto e imballaggio: Esclusi
- Pagamento: Da concordare

open issues

- **missing item:**
 - PMTs specification (WP4-RM1);
 - Cu cleaning requirements (WP2-GSSI/RM1)
 - external flow tightness (above gas qualification usage WP1/WP2-GSSI/RM1);
 - validation of all detector components (electromechanical and radio-purity) (WP6-RM1)
 - optics requirements (windows, diffraction in multi medium, WP4-WP6)
 - calibration source specification (provide a final decision, simple and avoiding to use source to monitor gas quality, this must be done with gas system diagnostic WP5-RM1)
- **tender:** the lesson learn from the infrastructure suggest that we have to proceed being Cu radio-pure shielding (**ready for pre-offer**), the water tanks (**~ready for pre-offer**), PMMA radio pure (**we thought was already order**)