ELI EGS-IFIN Meeting

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SUMMARY

- Status
- Proposal
- New integration
- Budget
- Who do what

STATUS

We have proposed a two phases project.

The first will be surely assured by an EGS-IFIN collaboration

The second should be the object of a new MoU for a future facility

The main characteristics were resumed in the following table:

Parameter	Phase 1	Phase 2
N Bunch/pulse	1	16/32/64 tbd
Repetition frequency	10 Hz	100 Hz
Charge per bunch	100 pC	3 nC@ 32 pulses
Average current	1 nA	10 μA
Max beam energy	100 MeV	150-200 MeV tbd
Total beam power	0.1 W	1.5-2 kW tbd
Gun Gradient	80-100 MV/m	80-100 MV/m
S band accelerating gradient	20 MV/m	20 MV/m
C Band accelerating gradient	25 MV/m	25 MV/m

STATUS

- For a long period we worked together with the IFIN colleagues on the hypothesis of the new machine integration in the old cyclotron Hall
- Unfortunately this scenario is now postponed, and the building renovation is delayed of many years.
- So the new proposal is to go back to the main ELI building
- After some discussion we have a installation proposal (to be discussed later , see C.Pectu talk)

Proposal

- The new proposal is to install the stage 1 machine inside the accelerator hall (the one in which it was foresee the ELI NP GBS installation)
- This has to take into account some aspects:
- 1) The zone is partially occupied by the installation of the LynceanTech linac. We will work sharing the tunnel
- 2) The external halls are now partially occupied, so the eventual use form EGS (racks, clean room, control room) has to be evaluated.
- 3) The eventual support form IFIN will be shared with the other installation activity
- 4) In this configuration I suppose that Nuclear Authorities authorization will be easier.
- 5) The alternative is to install in the Annex room, but this seems to us very, very challenging

New integration

- We have to establish a new plan for the machine integration
- This has to be synchronized with the other linac installation
- We must explore what aspects can be shared with the other linac (accesses, radioprotection, control system…)
- We have to foresee, ASAP, an accurate phase of tests of the elements stored in Magurele

Budget

- Our old estimation for the additive budget is pretty independent from the new site. It remains to be evaluated the impact of the new positioning, as far as the optical lines, cables and RF lines are concerned.

Estimates NOT INCLUDING THE SUBSTITUTION OF DAMAGED ELEMENTS

Dump(s) with eventual current measurement		IFIN	50000 + 15000
Final vacuum chamber (different angle)		EGS	15000
Final elements of all the RF power lines		EGS	40000
Different elements of the laser transport line (with shielding and relative supports)		EGS	60000
Final connections for the cooling systems		IFIN	30000
Cables acquisition and pulling		IFIN	1500000
Network and control system modifications (tbe)		EGS	200000
Network configuration		IFIN	tbe by IFIN
Laser clean room modifications (tbe)		IFIN	175000
Gaussian beam system (tbe)		EGS	0
Beam delivery diagnostics (tbe)		EGS	0
Machine protection system modifications (tbe)		EGS	250000
LLRF modules		EGS	50000
MPS system		EGS	compreso sopra
Modulators filters (tbe)		EGS	0
Fast valve with gauge		EGS	20000
IOC Controls updates		EGS - COSYLAB	compreso sopra
Beam screen cameras		EGS	10000
YAG screens		EGS	10000
Cameras supports		EGS	10000
1 BCM at the end of the line		EGS	20000
SF6 management tool		EGS	20000
RF Loads (to be checked)		EGS	25000
			2435000

60-90 kEuros has to be added to the radioprotection system if the EGS one will be used

Plants and other civil infra has to be evaluated by IFIN

MISSIONS

- Missions have to be evaluated after the final decision on the task sharing. One mission cost (one week) close to 1200-1700 Euro (depending on the EGS partner)
- Taking into account one year (12 months) integrated in the EGS partners, with four people per mission with an average price of 1500 euros: around 300.000 euros.

WHO DO WHAT

- Already a list was agreed in the case of the cyclotron hall.
- To be more efficient in the expenses and in the sharing I have a proposal (to trigger the discussion)
- EGS will:
- Install the modules and connect them
- Connect the tubes for the cooling systems
- Align the machine
- Connect vacuum system, bake the system and pump down
- Install the modulators and testing with the support of IFIN crane operators
- Connect the RF Systems and conditioning of the RF elements (guides, sections…)
- Install the laser systems
- Design and install the new optical line
- Test the optical systems
- Test all the components and debug the control system
- Install and test the diagnostics
- Install and test of the Machine Protection System
- Machine commissioning and training
- All these and the other phases will be followed by the EGS experts, especially the cooling systems connections.
- If this is done rapidly this could be an excellent training for IFIN to install the other machine

DISCUSSION