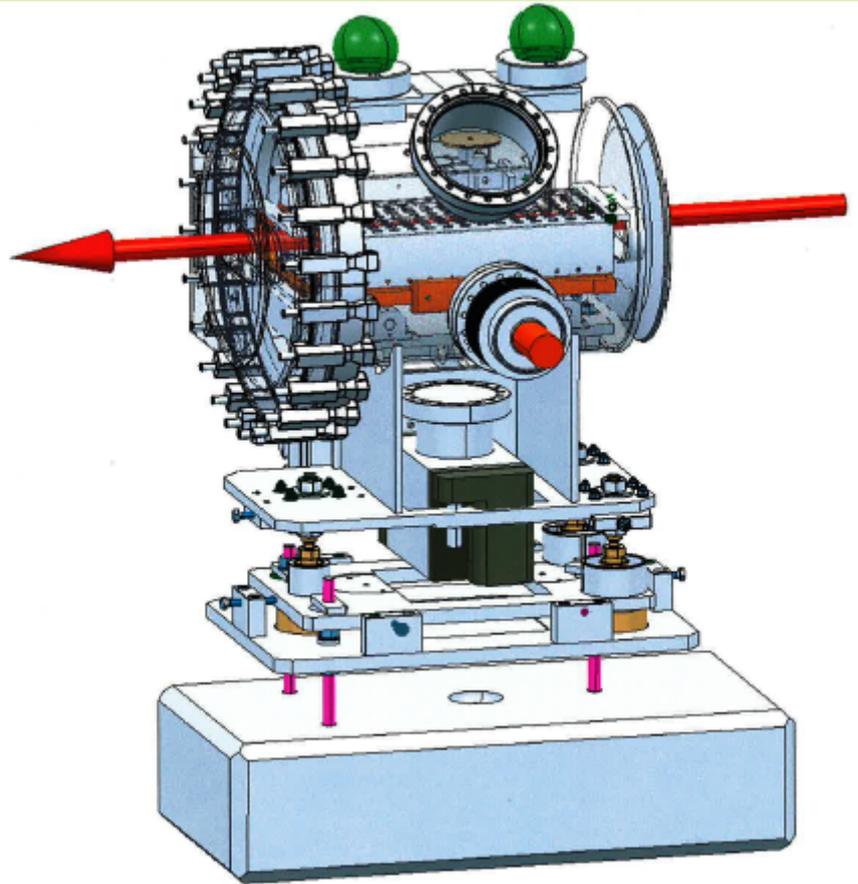# DUMMY 15: EXTRA PUMP STUDY
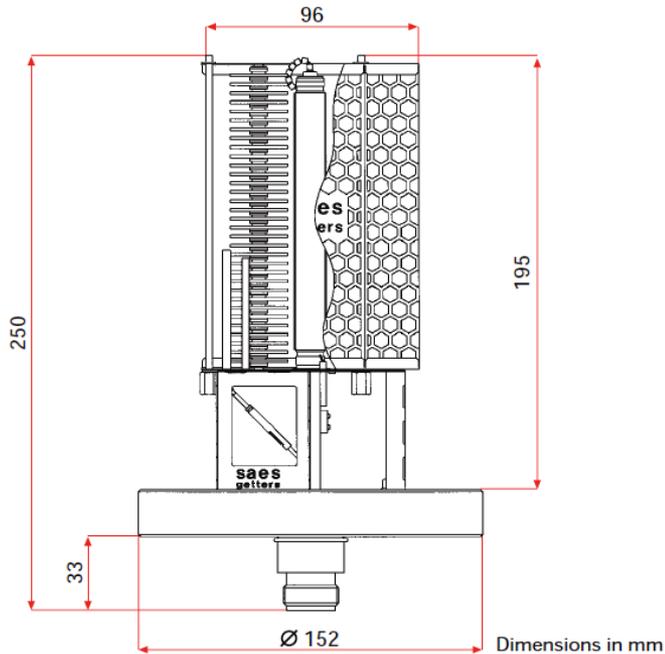
C. Pasquino, P. Chiggiato, P. R. Demarest, J. Hansen
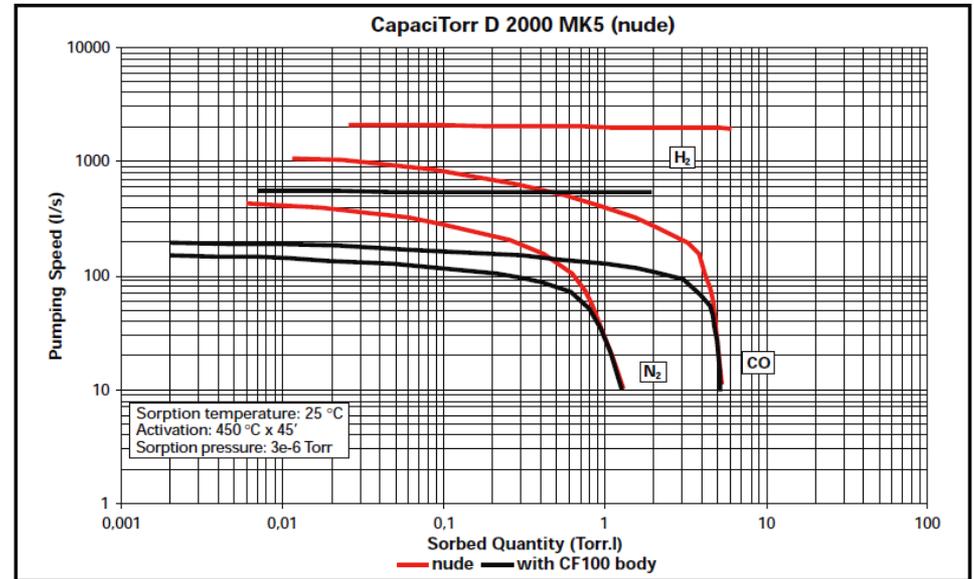
Under the tank there is room only for a SIP of 75 l/s...
What if we install a NEG pump?
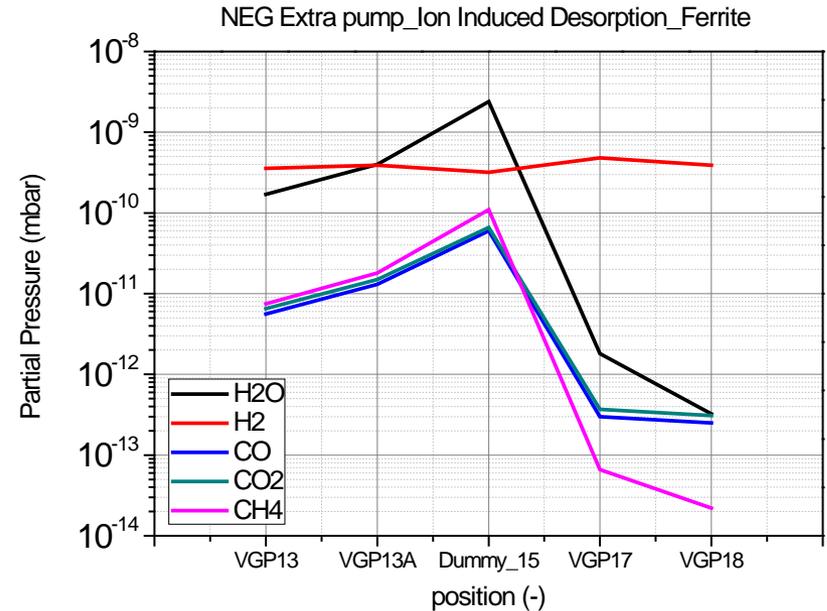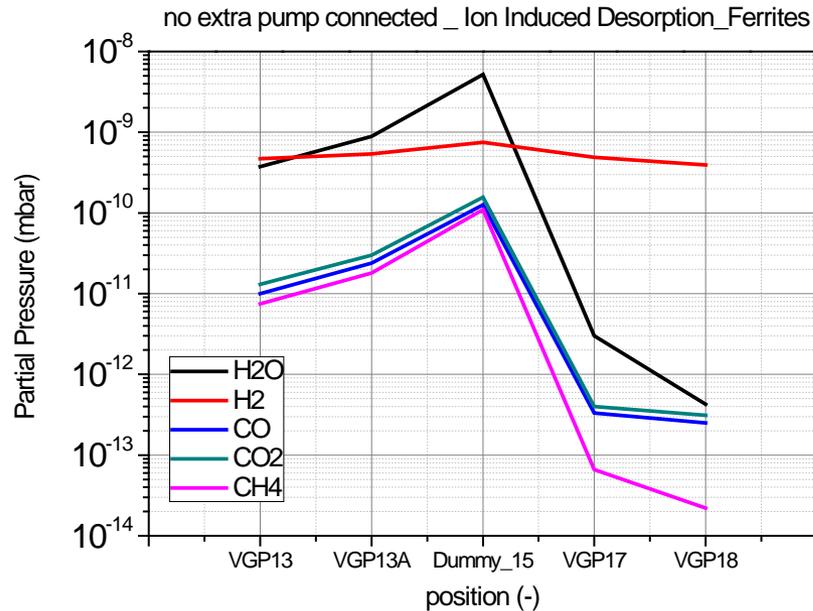
Consider ≈ 15 cm more for cabling, and that we have to make sure it is radiation resistant!!!
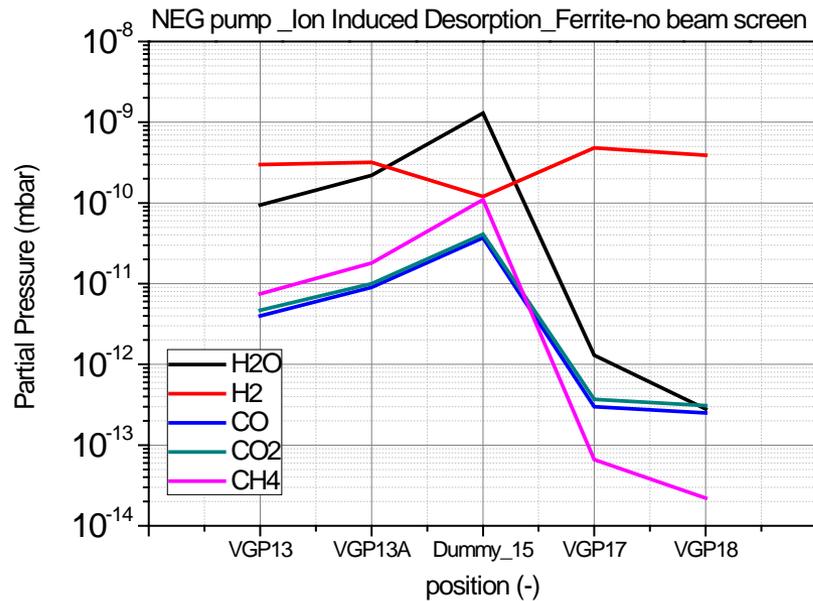

- Chemical pumping (Activation, Saturation)
- Non Evaporable Getter cartridge;
- Compact;
- It suffers saturation;
- Possibility of reactivation through electrical feedthroughs;

no extra pump connected _ Ion Induced Desorption_Ferrites
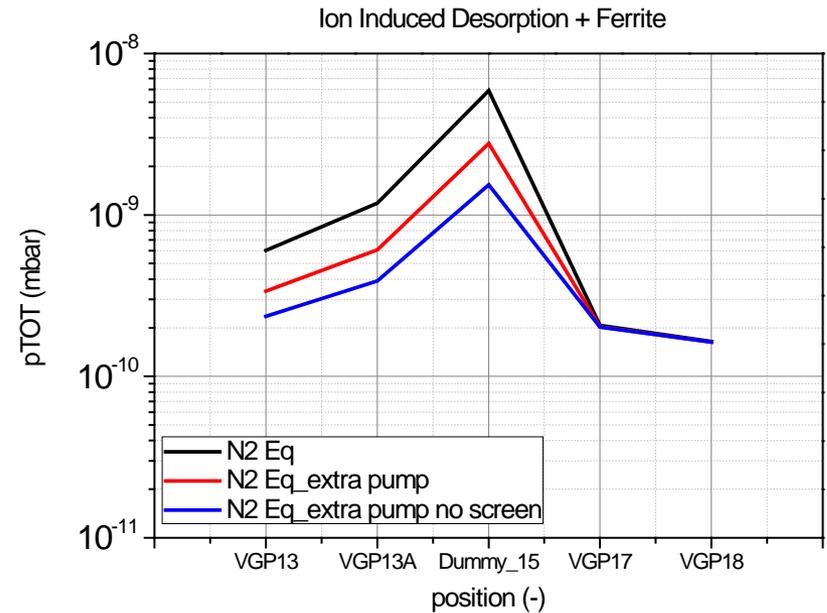
NEG Extra pump_Ion Induced Desorption_Ferrite

- Ferrite desorption (based on measurement for Linac4), water equivalent at 10 hours of pumpdown, 1000 cm² of surface;
- Ion induced desorption with η=10 per gas species;
- H_2 from bulk metals;
- SIP + Sublimators;
- CH4 NOT PUMPED BY THE NEG.

NEG pump _Ion Induced Desorption_Ferrite-no beam screen
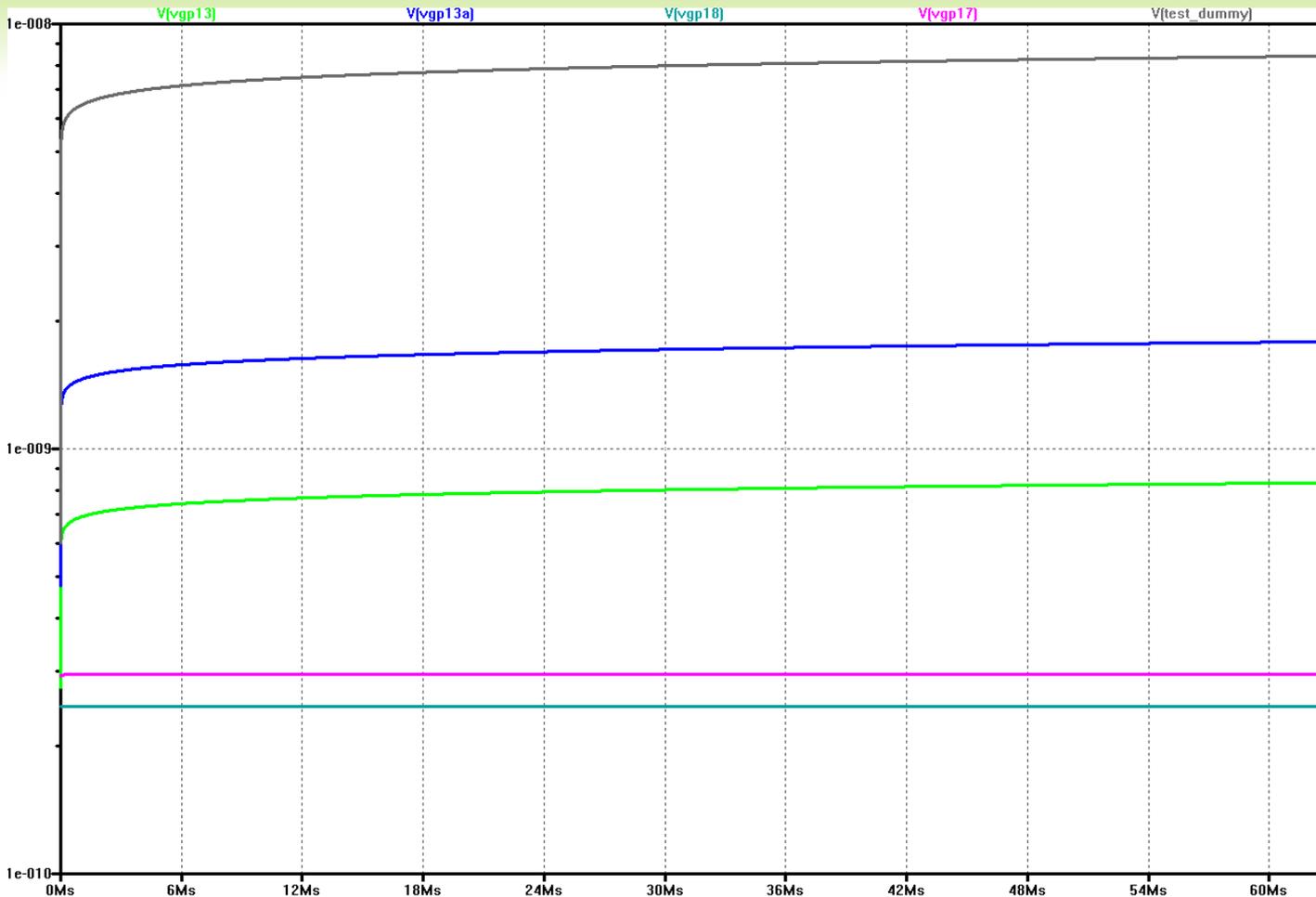

Ion Induced Desorption + Ferrite

- There is an effect of the beam screen on the dummy 15 pressures profiles.
- But IF its installation is necessary it is not going to prevent working in the low 10^{-9} mbar range.

- The Ferrite is affecting the pressure profile along the machine (Ptot_no ferrites= $2*10^{-9}$ mbar);
- Consider that these are preliminary results and that I've considered a surface of 1000 cm^2.

What happens in 2 years time?

All gas loads have been considered as CO, in order to evaluate the effect of the saturation.

Conclusions

◎ The NEG pump installation on the dummy 15 has been studied: this pump fits vacuum requirements and space requirements as well;

◎ We have be careful about the cables that must be radiation resistant;

◎ We need cabling up to the vacuum control rack, in order to reactivate the pump with no access to the tunnel;

◎ The eventual installation of Ferrites must be more defined (how much surface is exposed to the vacuum?), and a vacuum acceptance test before installation is compulsory.