

Gamma Blockers Kick-Off Meeting

Vacuum Interface

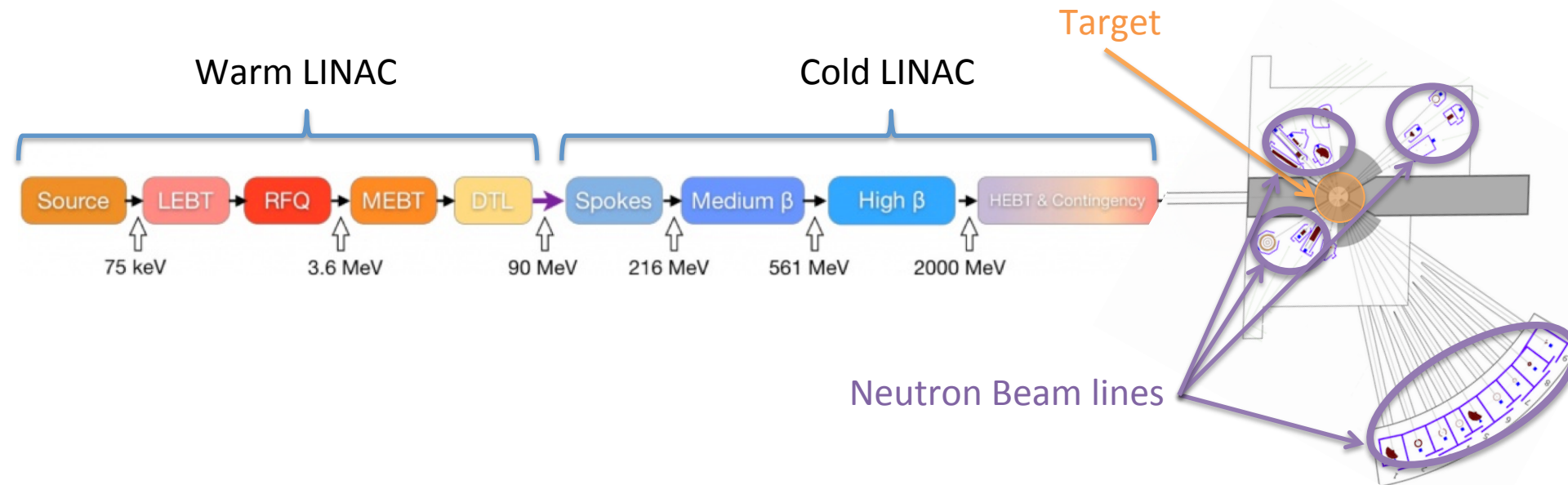
Fabio Ravelli
Vacuum System Engineer

www.europeanspallationsource.se
November 9th, 2016

Fabio Ravelli, Vacuum Sys Eng

- Joined ESS on June 2nd, 2016
- Physicist with more than 20 years experience in vacuum technology:
 - 2 years in Fusion research: JET Abingdon, RFX Padova, FTU Frascati
 - 10 years in development/engineering/operation of semiconductor vacuum deposition tools (PVD, PECVD, CVD, etc.): Applied Materials, International Rectifier, Oerlikon Balzers
 - 8 years in development/engineering of HV-UHV pumps (TMP, SIP, Non-evaporable Thin Film Getter Pump) with Varian Vacuum technology

ESS Vacuum Lay Out



The ESS vacuum is very dynamic, ranging from 10^{-5} mbar (Source) to 10^{-10} mbar (Cold LinAc, particle free) up again to 10^{-3} mbar (? Target) and higher pressure in the neutron beam instrumentation chambers and beam lines. As such we will make use of a wide selection of vacuum pumps (primary pump oil and dry, turbo-molecular pump, sputter ion pump, getter pump) as well of instruments and component. In addition, the construction needs to be radiation resistance, thus metallic or EPDM elastomeric sealing need to be used.

ESS Vacuum Group Responsibility



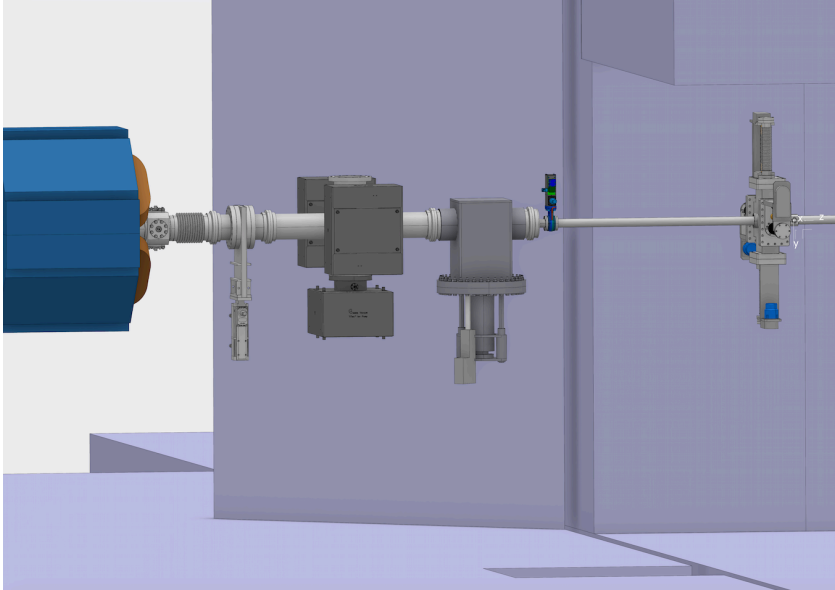
The ESS organization charges the ESS Vacuum Group (VG) with the responsibility for all ESS vacuum systems including not only the Accelerator, but also Target and Neutron Beam Lines and Instrumentation.

The main task of the ESS VG is to support the in kind contributions on the vacuum system and the **integrated vacuum design** of the ESS complex.

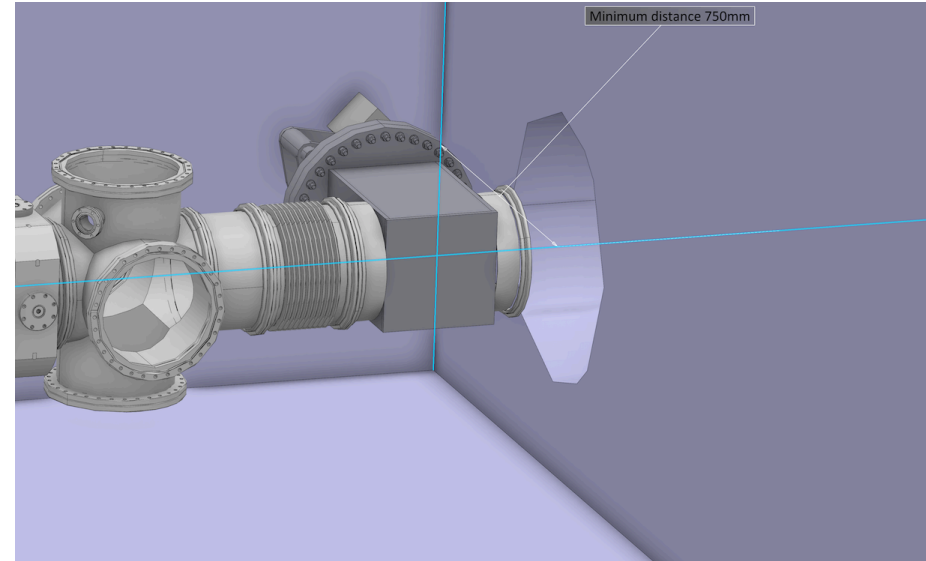
For this purpose we have edited guidelines for vacuum construction, our vacuum handbook:

- ESS-0012894 ESS Vacuum Handbook Part 1 – General Requirements for the ESS Technical Vacuum System
- ESS-0012895 ESS Vacuum Handbook Part 2 – Vacuum Equipment Standardization
- ESS-0012896 ESS Vacuum Handbook Part 3 – ESS Vacuum Design & Fabrication
- ESS-0012897 ESS Vacuum Handbook Part 4 – Vacuum Test Manual

Gamma Blockers Installation Spots



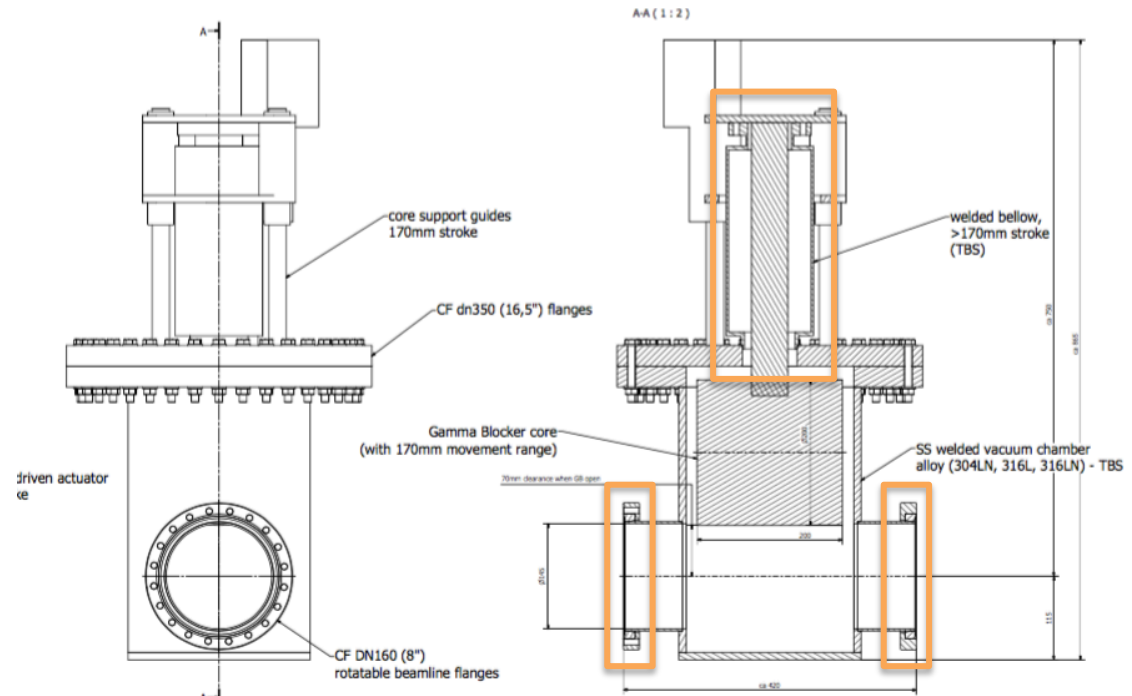
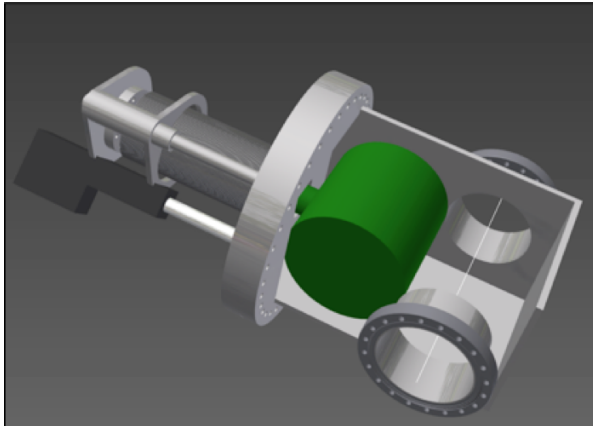
A2T



Dump

Vacuum requirements not very demanding 10⁻⁷ mbar, however those are very hot places!

Gamma Blockers Lay Out & Interfaces



- Flanges: NW160 Quick CF from MKT <http://www.mkt-tschann.com> , see <https://ess-ics.atlassian.net/wiki/display/VG/3D+model+exchange> NW 160 STP
- For the mechanical F/T, use COMVAT edge welded bellows, see <http://www.comvat.com/> , std catalogue here http://www.comvat.com/fileadmin/dokumente/comvat_components_2014-08_en_web.pdf And a design instruction manual here <http://www.comvat.com/fileadmin/dokumente/abe0108en.pdf>

Thank you for your attention!

