

E-cloud measurement tools in SPS after LS2

Moving from BA5 to BA1:

SEY drum

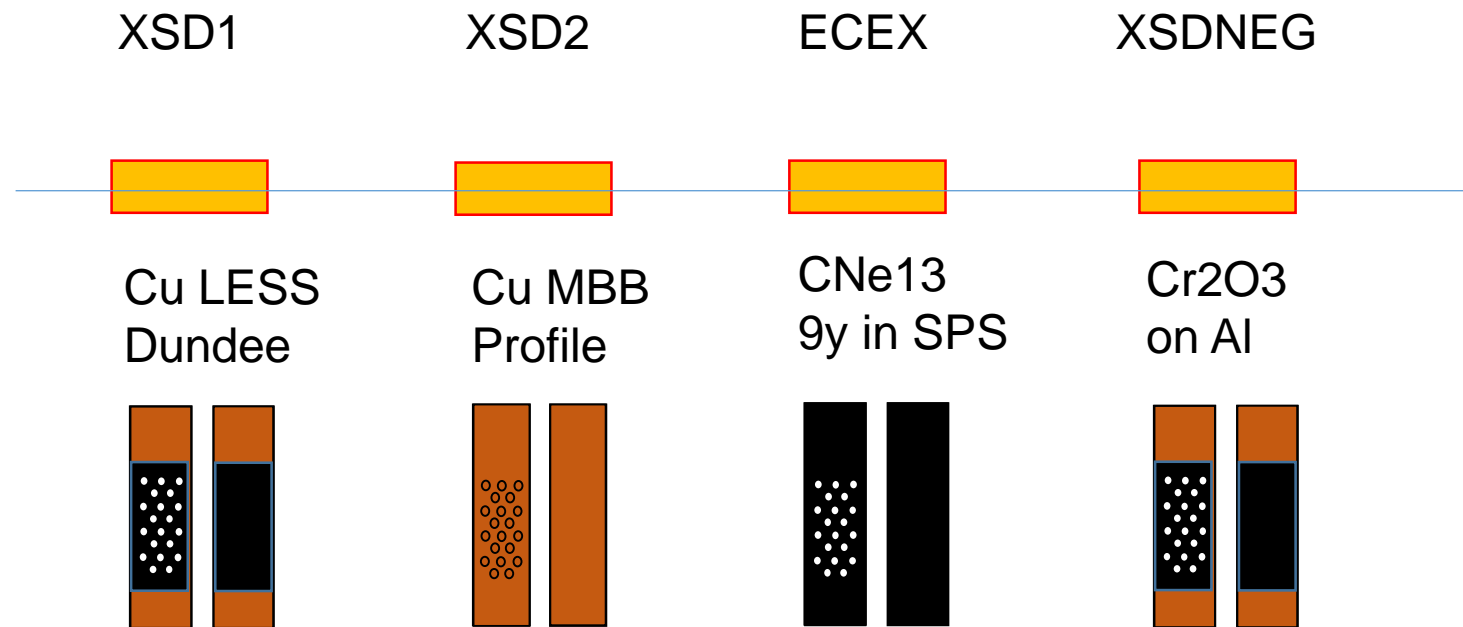
4 e-cloud monitors

Mobile sample

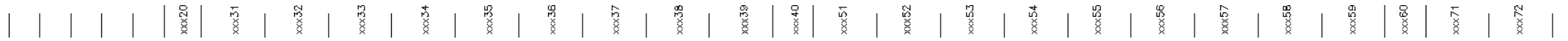
Residual gas analyser

Present E-cloud monitor configuration in the SPS

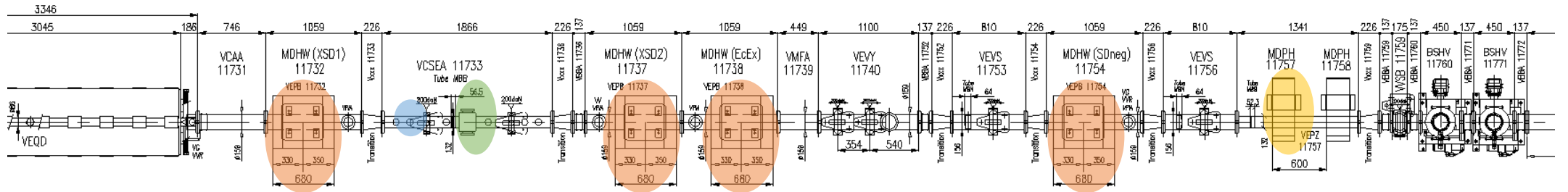
E-cloud monitors with liners in sextant 5 since 13. March 2017



New layout in BA1



Half Period 11710-11810 - Version after LS2



Drawing number: SPSLNINS0142

- E-cloud monitors
- SEY drum
- Mobile sample, can be transferred under vacuum for SEY and surface Analysis (XPS)
- RGA

Improvements during LS2

For the e-cloud monitors

- New electronics (BE-BI, Jan Gerrit Focker, Lars Jensen)
- Investigations about channels in short circuit and distorted signals
- New software interface (Lars Jensen)
- Automatic amplifier gain adjustment

Gas composition

- Reinstallation of a RGA to measure gas composition during beam operation

Proposal E-cloud monitor Liner configuration

Dismantling BA5 installation starts 15th of January 2019. E-cloud monitors will be vented and stored at the surface under atmospheric pressure (protected Aluminium foil and plastic covers) with the vacuum chambers (the monitors) in the magnets. Reinstallation at BA1 in spring 2020.

To be discussed:

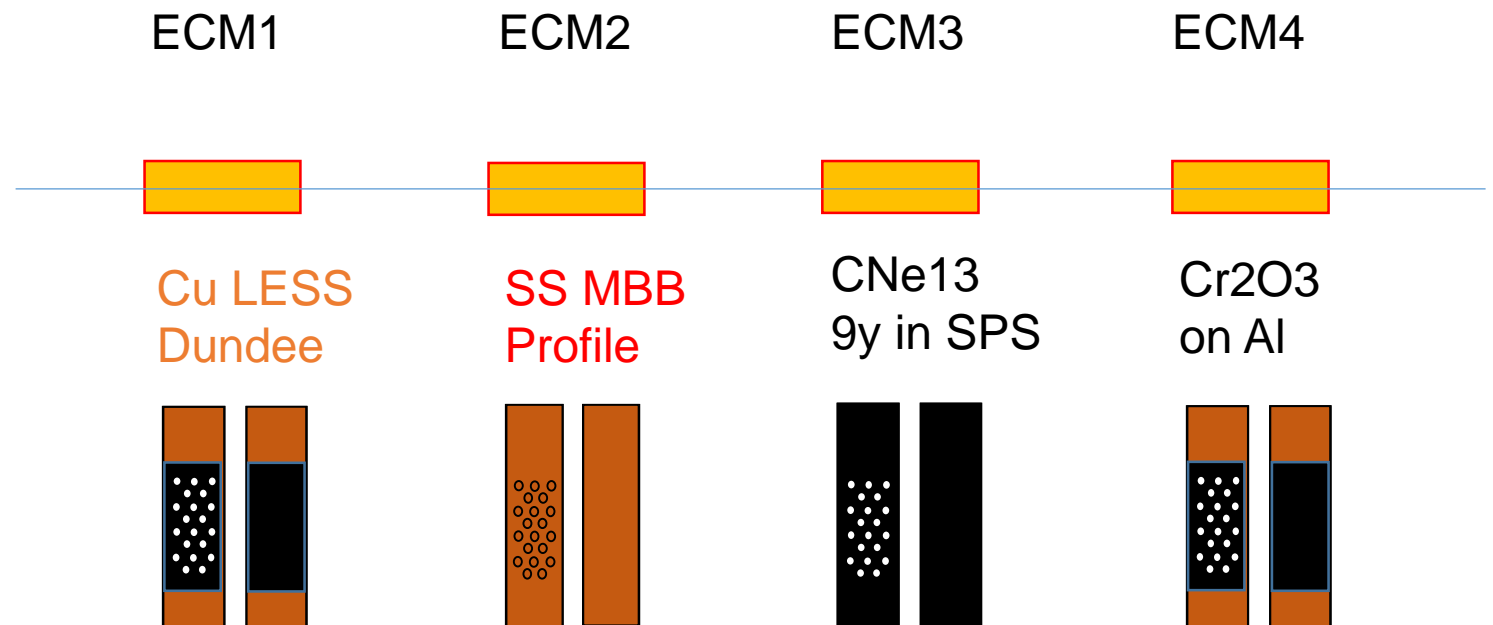
ECM1: long term stability LESS, *maybe replaced with something more usefull?*

ECM2: *a new Stainless steel (304) liner* to compare to SPS' vacuum chambers

ECM3: CNe13 long term stability a-C coating

ECM4: Cr2O3 coating still to be remeasured (Mike Barnes)

Mobile Sample: Stainless Steel (304)



Possible improvements

- Allow magnets (MDHW 11732, MDHW 11737, MDHW 11738, MDHW 11754) to be switched on during operation (Interlocked now, only on for MD) allowing e-cloud measurements at any given moment and conditioning always the same part of the liner with all beams instead of only during MDs
- Keep magnet MDPH 11757 and 11758 always on to have consistent conditions on mobile sample (reminder: mobile sample allows to measure surface condition by XPS without exposing to air)
- Who should be asked for these interlock changes?
- Transport system for mobile sample : Improve the vacuum to UHV with a new pumping group (7000Euro) and NEG cartridge (4000Euro)