

Integration of fast-ion diagnostics in AEN21

OP2.1/2.2?

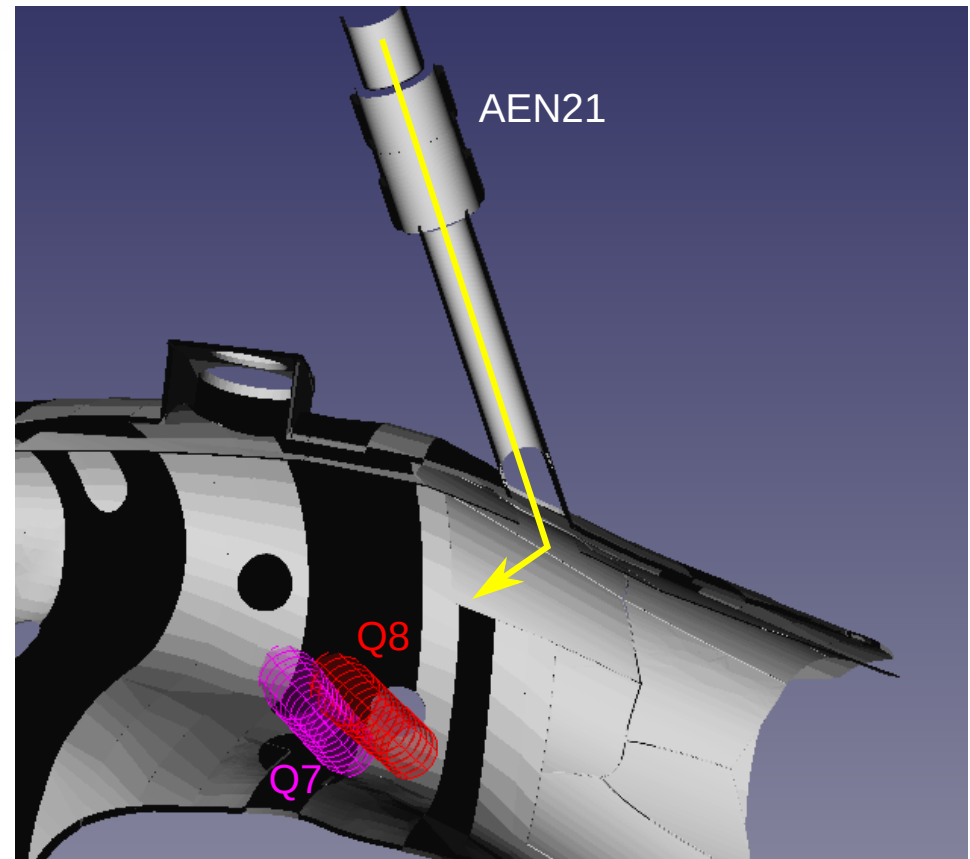
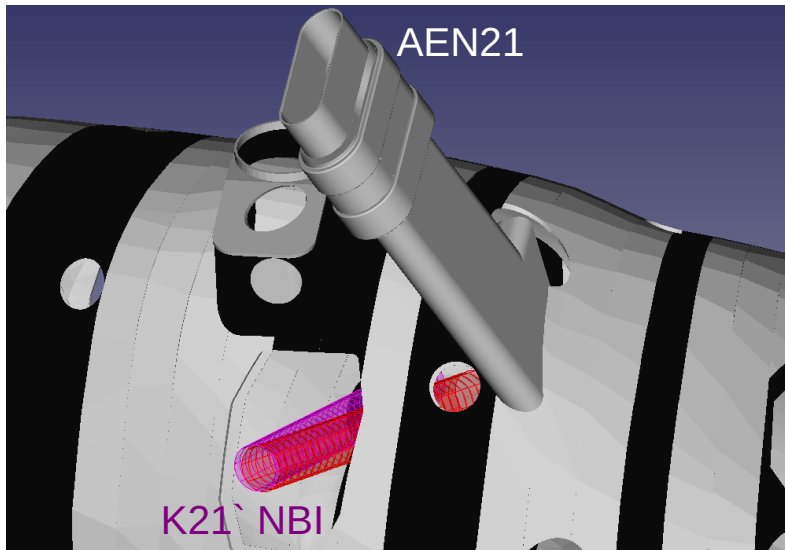
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Fast ion diagnostics in AEN21

- AEN21 currently reserved for old project QSY - 'Visible Vector Tomography' (unlikely to ever be realised)
- AEN21 can view NBI-K21, albeit around a corner.
- Propose to use the port for tests of NPA and fast ion loss diagnostics in OP2.1.
- NPA - Need to see the beam
- Fast ion loss - Don't need to see the beam, (but good to be in same module ??)

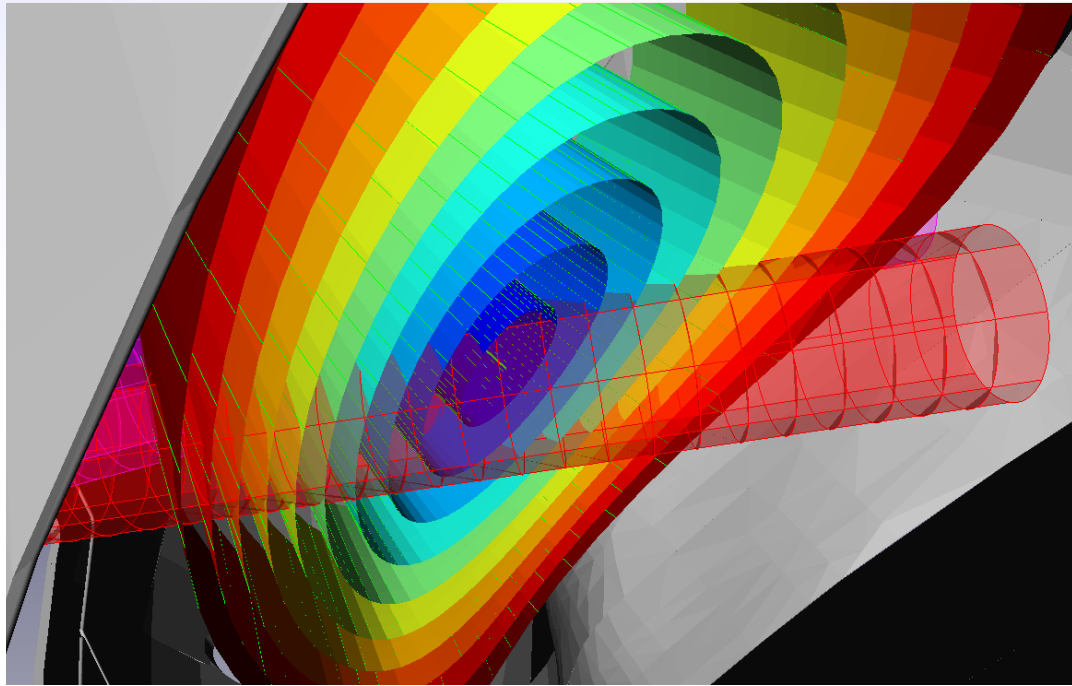
- AEN21:



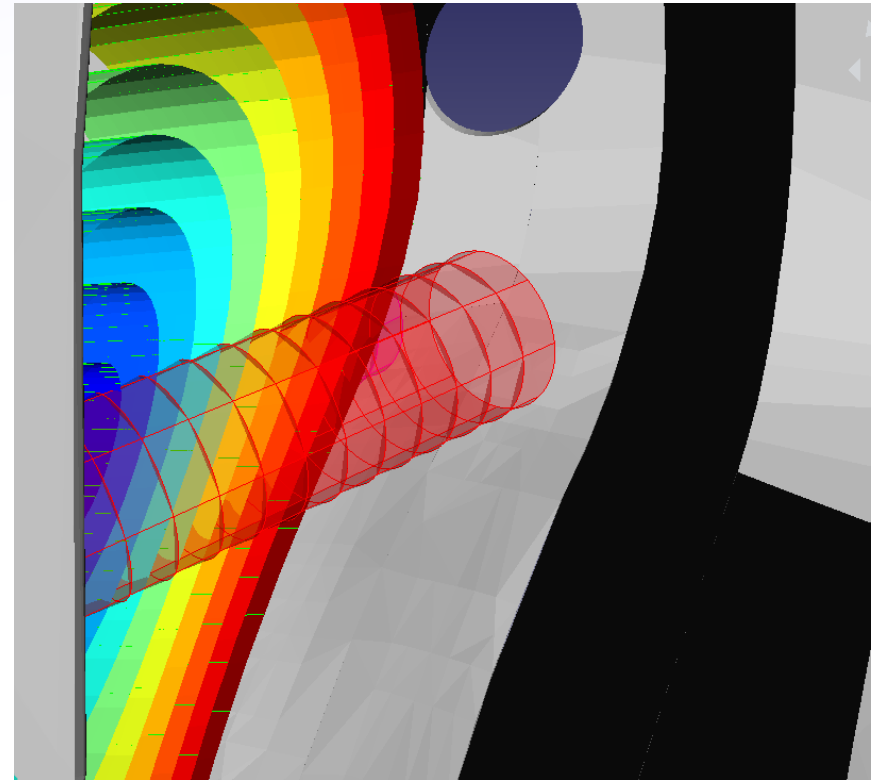
Fast ion diagnostics in AEN21

View on the beam is best from the top/inner end of the port:

From top/inner end:

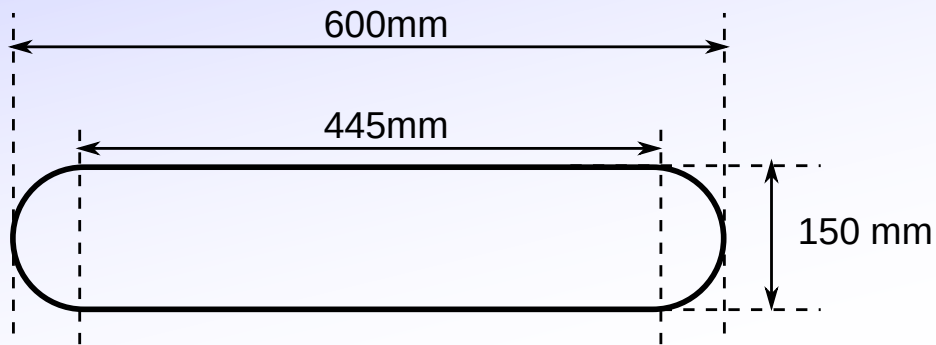


From bottom/outer end:

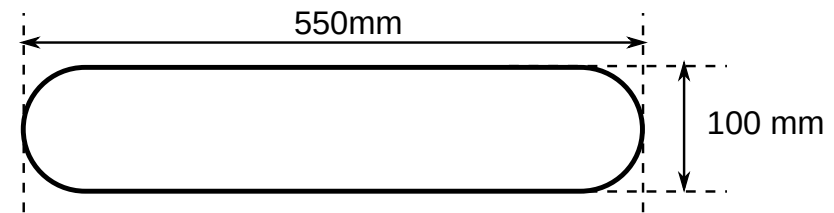
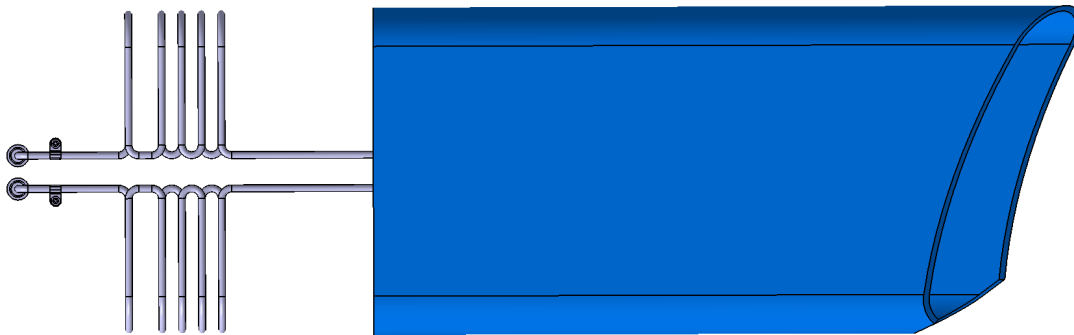


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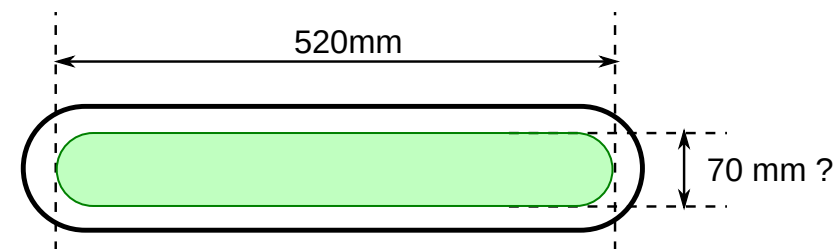
Dimensions of the port:



Will also have the port-liner in:

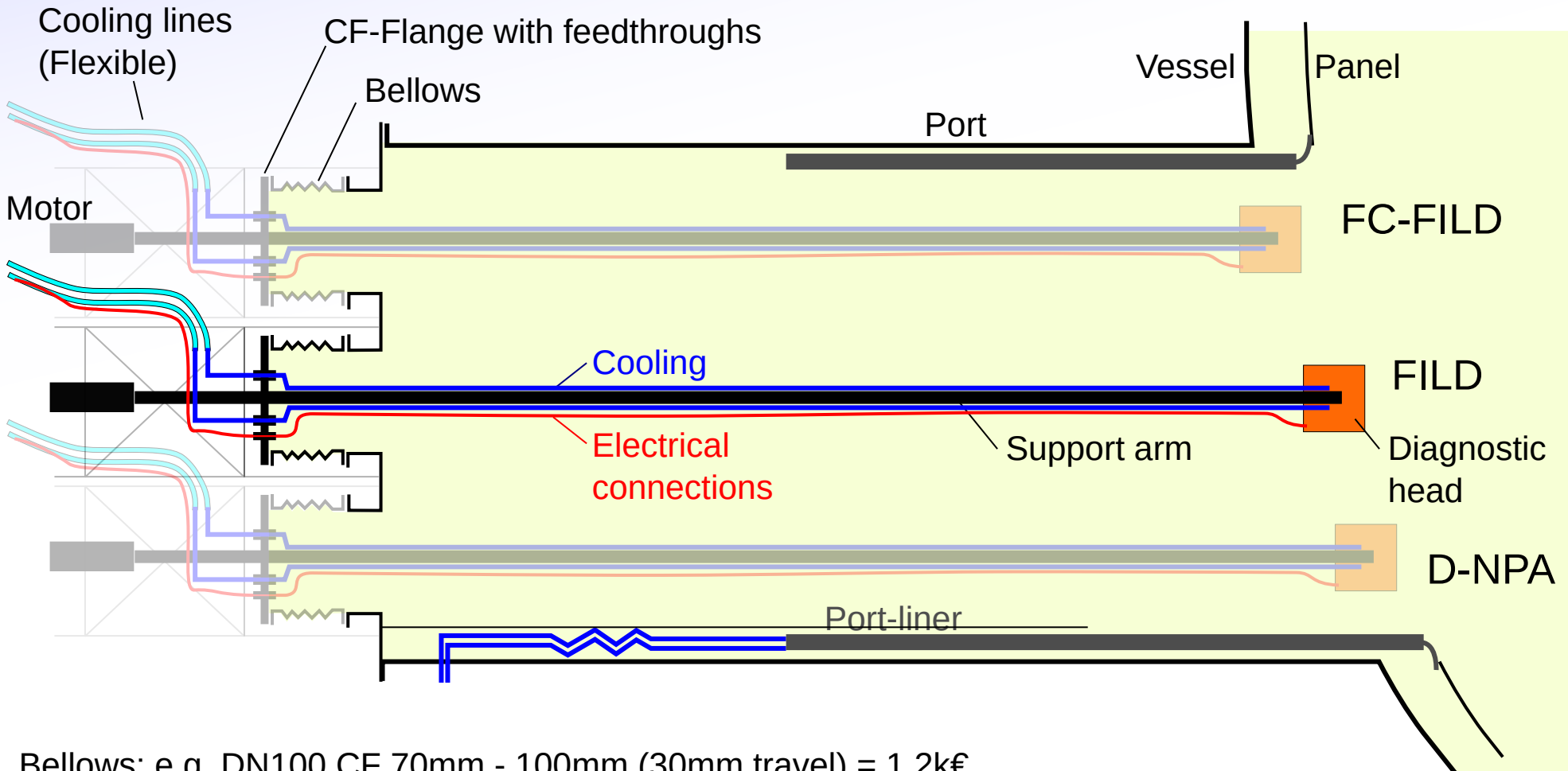


And we have to leave space to avoid collision with port-liner:



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FILD particularly requires movement toward/away from plasma, which would be possible for all multiple systems.



Bellows: e.g. DN100 CF 70mm - 100mm (30mm travel) = 1.2k€

If positioning not needed (NPA?), same structure without bellows and motor could be used.



Fast ion diagnostics in AEN21

Open points:

- AEN21 proposed as only free port in module with NBI --> can also be used for NPA. RuDIX ports (T41, Z41, N41, M41) and space with pellets (K41) also possible.
- Will AEN21 see fast ion/NPA losses? --> Sam/Simppa.
- Handover from AEN21 from E4. Agreed (M.Krychowiak, R.König). Needs CN.
- Do we expect/desire to place NIFS-FILD or some variation here too??
- DAQ will need to be done ourselves, but control of depth positioning will likely need to be CoDAC integrated into cOPM.
- Cooling/baking:
 - Register as KKL user ACK60 --> P. van Eeten.
 - Register 'last 1m' design package with DE.
- Forces of fast current events on end of stick?
- Approximate WBS for NIFS- and FC-FILD. Is delivery up to port installation possible?

Design questions:

- What extent of penetration from port is required?
- Cost per arm? How much of each do we build?