Opportunities to combine baffle hardware with vacuum hardware

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Installation of the optical baffles as of today

Welding of a baffle ring into the beampipe and fiducialisation of the assembly before UHV cleaning.

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UHV & ISO X compatible cleaning & packaging.

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Installation of the beampipes on supports and pre-alignment.

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Baffle installation in ISO X environment

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Welding of two consecutive beampipes in-situ

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Final beampipes alignement.

Installation of the optical baffles as of today

Experience with ET-PS (standard installation)

1. Fiducialisation of the beampipe and the baffle ring: transfer of the mechanical axis to external targets on the beampipe (best fitting of the mechanical axis for the aperture optimization)

-> Not easy…the beampipe misses the circularity specifications up to 4 mm.

2. Axis taken extremity to extremity or baffle/baffle ring to extremity?

-> In view of the joining technique proposed for the first beamline (sleeves), we decided to extract the axes from the extremities (will help for final mechanical alignment).

Result: No control over the baffle position.

3. Alignement and joining of two 6 meters sections.

-> The pipes are aligned fairly well, the baffles/baffles rings are not

(~0.5 mm displacements between the axes of two adjacent extremities)

Once installed in place, the baffles will be “solidal” with the beampipe.

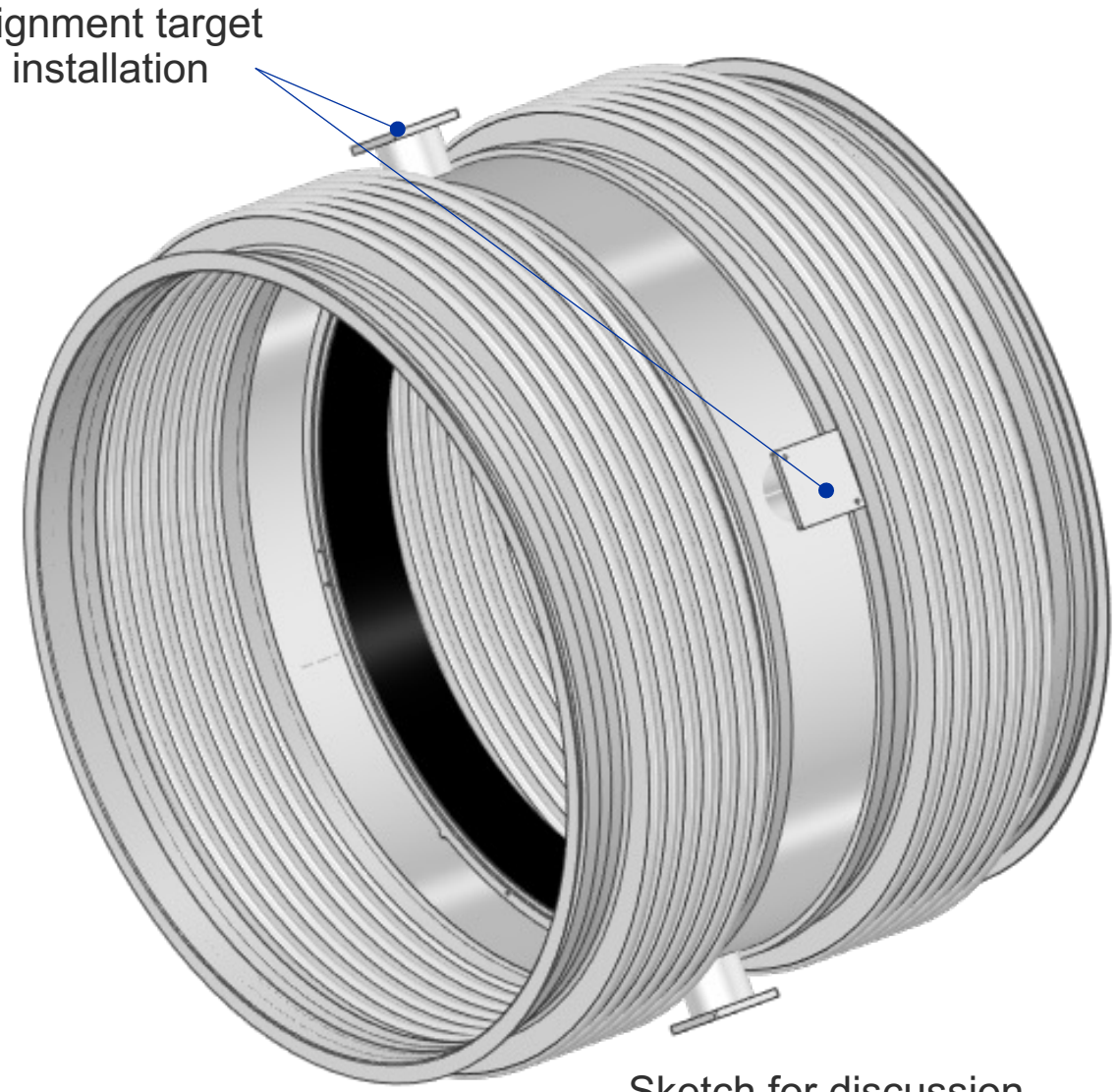
If we adjust one, we most likely misalign the other.

New baffle integration proposal

Decoupling baffles from beampipes

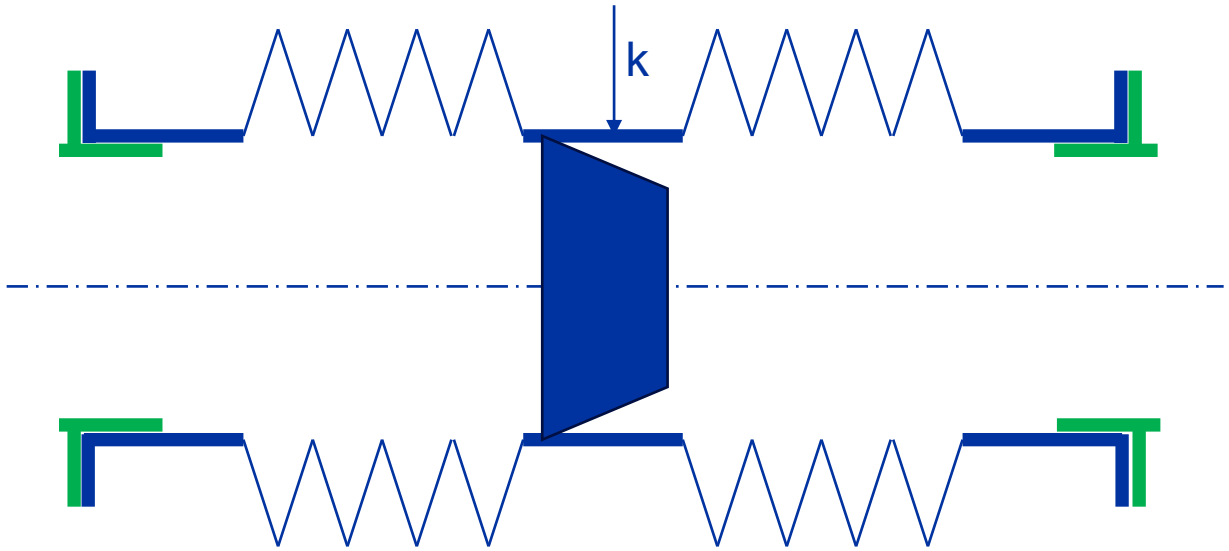
If it could be applied, it can bring several advantages:

- Baffle installation and alignment not dependent on beam pipe geometry. Can be aligned indipendently
- Simplified supporting system for beam pipes, fully adjustable support for baffle/bellow assembly.
- Requirements of cleanliness reduced to the assembly and not to the whole beampipes (?)
- The assembly can be cleaned and assembled in a clean room ad hoc (see RF cavities) and just installed at the very last moment.
- Minimization of the cleanroom need and space occupancy.
- Makes production and to some extent the installation of baffles and beam pipes independent from each other.



Sketch for discussion

New baffle integration proposal



Baffle weight: 12 kg
Sleeve: ~10 kg
Interface ring: ~ 3kg
Eigen frequency: ~45 Hz
Vertical displacement: ~0.125 mm

ET-PS bellow.

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