

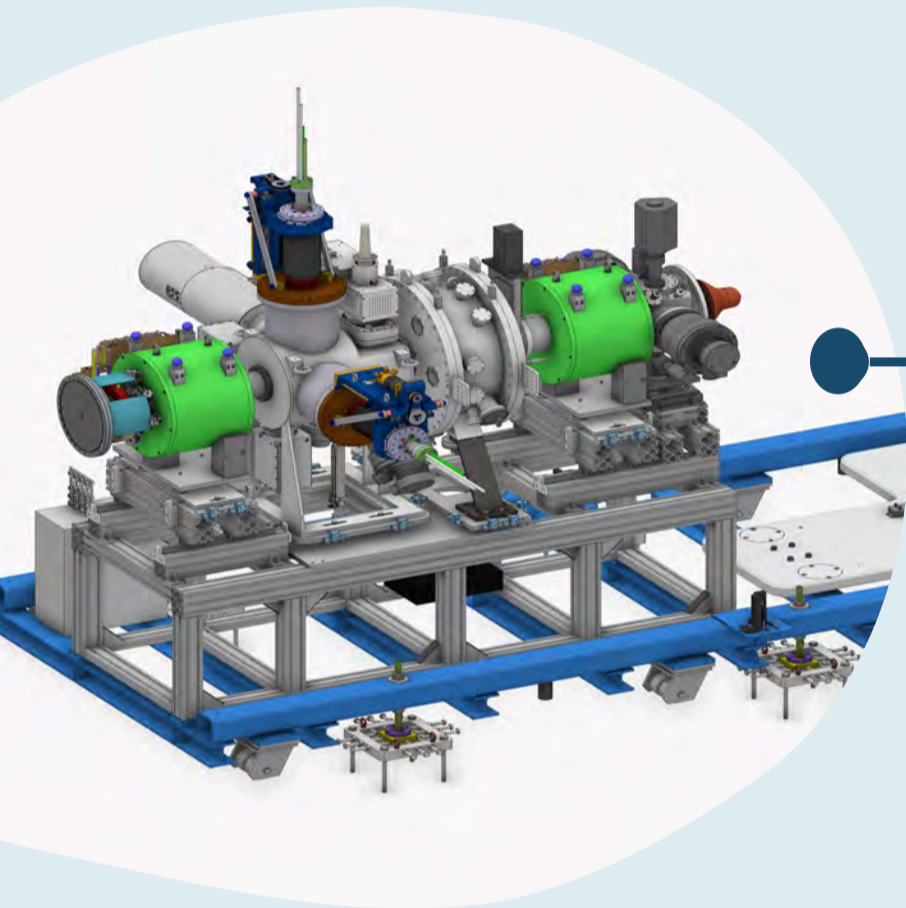
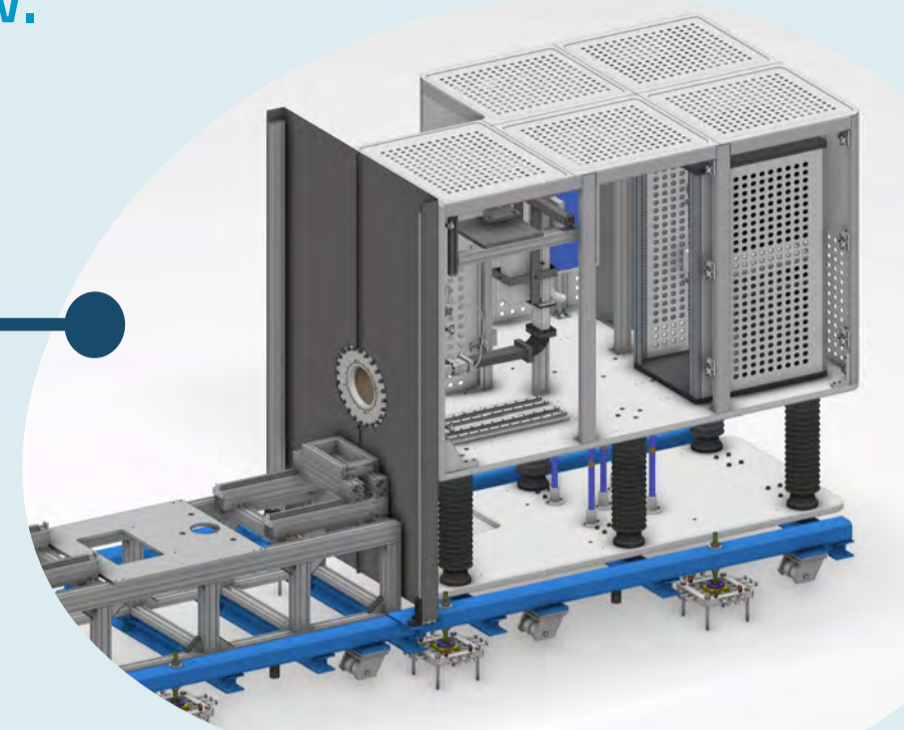


ESS Normal Conducting Linac (NCL)

The NCL, also called the warm linear accelerator, creates and accelerates the proton beam at normal or room temperature, as opposed to the superconducting linac where the cavities are cryogenically cooled to -271 degrees celcius. The NCL is made up of a number of different sub-sections, each with a different job. These sections are outlined below.

1. Ion source

The ion source creates the proton beam by extracting protons from Hydrogen gas with the help of an electro-magnetic field.

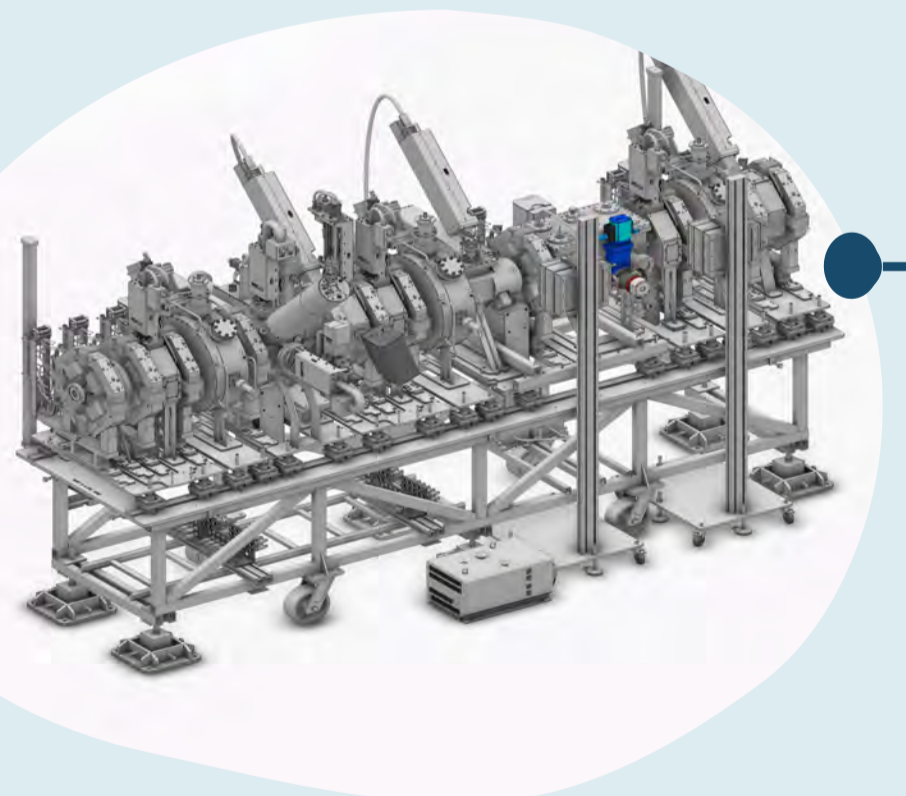
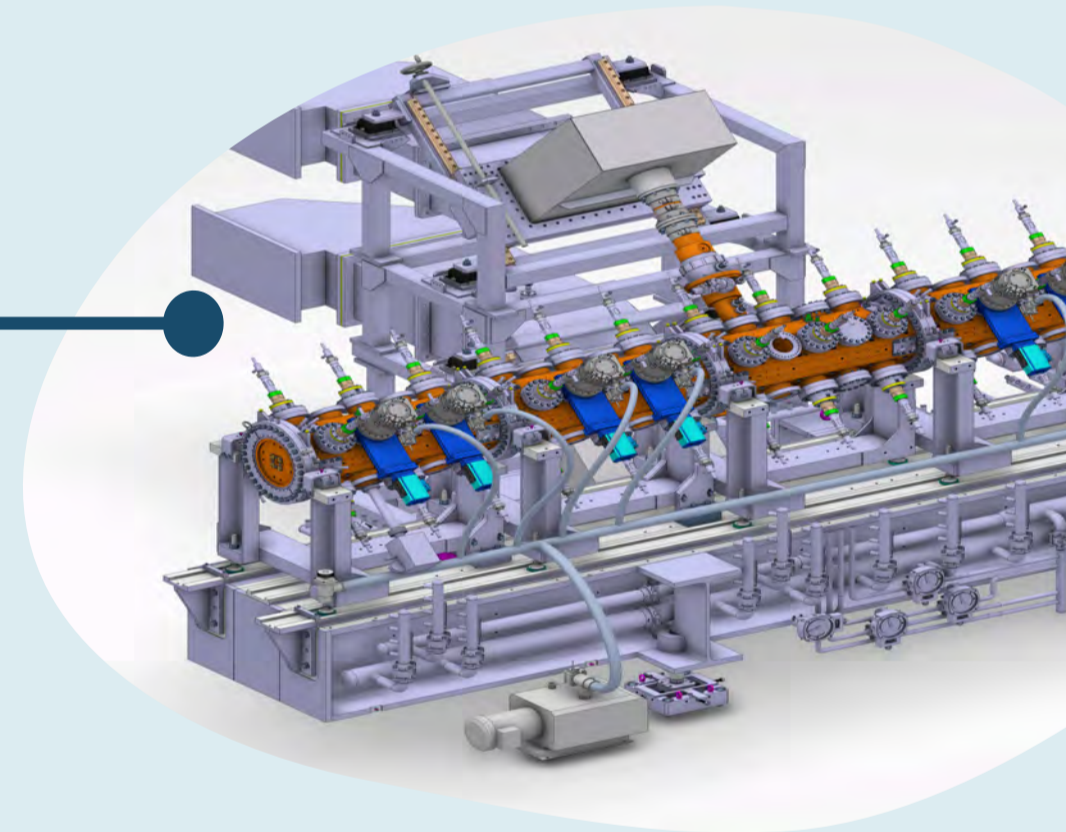


2. Low Energy Beam Transport (LEBT)

The LEBT does the initial focusing and shaping of the proton beam, in preparation for entry into the next section.

3. Radio Frequency Quadrupole (RFQ)

The RFQ then gets the beam up to 3.62 MeV and imposes the time structure (pulses and protons) needed to get the rest of the accelerator to work. The RFQ secures bunches of protons, that are focused and energised for the next section.



4. Medium Energy Beam Transport (MEBT)

The MEBT shapes the proton beam so that the horizontal, vertical and longitudinal shape is suitable and appropriate for the next accelerating structure, the DTL.

5. Drift Tube Linac (DTL)

The ESS DTL comprises five tanks which are responsible for taking the beam from 3.62 MeV up to 90 MeV, at which point it makes a transition to the cold linac - the superconducting part of the linear accelerator.

