

## The ESS helium cooled rotating target. Final design stages, manufacturing process and FAT test.

The European Spallation Source (ESS) is an ambitious European project with a budget higher to 1800 Me. The aim of the project is to design, build and operate the brightest spallation neutron source in the world. The ESS will use a proton beam with final power deposited on the target of 5 MW, which will impact on a tungsten Target cooled by helium gas.

The Target will be designed with a set of tungsten blocks placed inside of a wheel of ~ 2.6 meter of diameter. Protons will impact at high speed on the wheel in a radial direction. Inside the wheel, helium flows at high velocity, cooling the tungsten blocks dissipating the heat produced by the nuclear reactions. The wheel rotates at a speed of 0.2-0.5 Hz, so the proton beam impacts on a different region of the wheel at a repetition rate of 14 Hz, distributing the heat over the whole perimeter of the wheel.

The helium is introduced in the Target wheel by means of a coaxial pipe: the Target Shaft. This Shaft is also responsible to align the wheel and transfer the rotation. The Target Shaft is supported by the drive unit and connected to the cooling system by means of the rotatory seal.

The aim of this contribution is to summarize the progress on the final design stages, manufacturing and FAT testing of the different components of the target system.

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