

Manufacturing of the ESS Monolith Vessel: Lower and medium Vessel, Neutron port weldings, Connection Ring and head of the vessel

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 spallation reactions produced take place in the Target Station, where the accelerated protons impact the Target Wheel which rotates synchronized with the proton pulses. Large amount of radiative isotopes will generate as a product of these reactions. The amount of activated material generated by this process is comparable to a 5 MW fission reactor hence, enclosure barriers are needed to avoid damage to the public and workers. In order to confine the activated material, the target systems are enclosed in a vacuum or inactive helium atmosphere confined by a pressure vessel: the monolith vessel (MV). On 2015 ESS-bilbao was selected as in kind partner for the component.

The aim of this contribution is to summarize the progress on the manufacturing process of the different sub components during the last years, including the on site welding operations to close the confinement barrier.

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