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The ESS helium cooled rotating target. Design and manufacturing process

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The European Spallation Source is an ambitious project to build a 5 MW spallation neutron source. The Spanish contribution to this European project will be 3% of the total cost. Based on the new tendencies on Science construction projects a significant fraction of this contribution (up to 80 %) will be In kind. ESS-BILBAO Consortium has been committed to channel this contribution.

The ESS Target is composed by ~ 3 tones of tungsten bricks (10x30x80 mm) assembled in a cross flow configuration. To cool the bricks we will use ~2.8 kg/s of helium at 10 bars that circulates in the gaps between the bricks. The spacing between the bricks is critical for the cooling system, thus, the bricks are assembled in a stainless steel structure, the cassette, that ensures the separation between them. Finally, 36 of these cassettes will be assembled in the target vessel to configure the complete system.

ESS Bilbao was selected as in kind partner for the ESS Target at the end of 2014. During the last years the design of the different components of the target system has been completed and the manufacturing is ongoing. According to the schedule, the complete production will be finished in the middle of 2020.

The aim of this presentation is to summarize the status of the Target manufacturing for the different subsystems including the spallation material, the cassettes, the target vessel and the shaft.

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