Partner Institute Profile: ESS Bilbao

The ESS Bilbao research and development facility, located in Zamudio, Spain

ESS Bilbao is an international renowned strategic centre for neutron technologies, which generates knowledge and added value through its In-Kind Contribution (IKC) to the European Spallation Source, ESS. With a staff of 60 people, ESS Bilbao is a Consortium in which the Spanish Government and the Basque Autonomous Government each hold a 50 % stake. The Spanish and Basque Governments grant ESS Bilbao a budget of €178M to ensure the success of the European organization under construction and a tangible scientific and technological presence in neutron sciences for the period from 2010 to 2025.

In addition to the contribution to ESS, ESS Bilbao, with a highly qualified set of scientists and researchers, will simultaneously set up a national and regional neutron technology centre to ensure the future beyond 2025.

In BrightnESS, ESS Bilbao is involved in Work Package (WP) 2 and Work Package 6. In WP2, ESS Bilbao contributes to coordinate IKC and mitigates the associated risks within the workflow. The ESS Bilbao Consortium is also involved in WP6 (Collaboration, communication and dissemination of results) with the goal of raising awareness for ESS in Spain as well as promoting outreach activities within the principal Spanish target groups.

Science and Technology at ESS Bilbao

The scientific and technological advances in ESS Bilbao are currently underwork at the test benches in the facilities, the R&D Centre in Zamudio and the Advance Welding Facility (AWF) in Vitoria-Gasteiz. In AWF, two different welding techniques (Electron beam and brazing) are avialable for large mechanical pieces. ESS Bilbao is also involved in different collaborations with the private sector, mostly engineering companies as IDOM, for different contracts in relation to the neutronic aspects of the diagnostic ports for Tokamaks (Fusion for Energy F4E-ITER).

The Spanish contribution to ESS

ESS Bilbao is currently working on and negotiating different work packages as part of its IKC to ESS:
- MEBT, the complete subsystem behind the RFQ, including design, manufacture, assembly and testing and control.
- RF system, various RF chains made up of modulators, klystrons, wave guides and low level RF for this components.
- Target, design, construction and testing of the target wheel, shaft and drive unit; beam dump & beam dump shielding; proton beam entrance window; monolith vessel; beam instrumentation plug; neutron windows.
- In Instruments, ESS Bilbao is involved on neutron technologies and in instruments (MC&A, Data Analysis Software, Detectors and we expect to be the prime contractor of Miracles and be involved in LoKi).

The radio frequency (RF) system at ESS Bilbao. The RF system for the ESS linac converts AC line power to RF power at either 352 or 704 MHz.

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