MISSIONE 4
ISTRUZIONE RICERCA

DIVERTOR TOKAMAK TEST FACILITY UPGRADE

Finanziato dall'Unione europea NextGenerationEU
Ministero dell'Università e della Ricerca
Italiadomani
PIANO NAZIONALE DI RIPRESA E RESILIENZA

Panel di riferimento: **ENE**

Titolo della proposta: **Divertor Tokamak Test facility Upgrade**

Codice della proposta: **IR0000001**

Tipologia: **(i) - Empowering**

Proponente: **ENEA**

Infrastruttura di Ricerca: **DTT - Divertor Tokamak test facility**

Importo totale: **55.000.000,03 €**

Di cui al Sud: **23.730.089,99 € (43,15%)**

Abstract:

The increase of energy demand, expected to more than double by 2050, and the need of a decarbonisation of the energy production to cope with global warming, requires the development of energy technologies that can be sustainable in the long term. Fusion has a number of advantages in terms of fuel abundance, security of supply and intrinsic safety and can be the natural complement to intermittent renewable sources. The European Fusion Road Map aims at a demonstration plant DEMO producing fusion electricity around 2050. DEMO is conceived as a Tokamak device like the experimental fusion reactor ITER, which is presently under construction in France and will demonstrate the scientific feasibility of fusion. A key challenge in making fusion an affordable energy source consists in developing all the necessary tools to handle the large amount of thermal power originated in fusion reactions that leads to localized power loads on the exhaust system (the "divertor") similar to those of the surface of the Sun. The solution for the divertor foreseen in ITER might not be applicable for the much larger thermal loads of DEMO and more innovative solutions must be developed and qualified. To this goal, the European Fusion Roadmap foresees a dedicated experimental device, the Divertor Tokamak Test (DTT) facility. DTT will tackle this challenge by integrating and addressing all relevant physics and technology issues related to power exhaust. A proposal was presented and discussed with EURATOM in 2015. To make DTT exploitation more attractive to the international scientific community, an upgrade of the baseline design consisting in enhancing the additional heating power, the realization of a power supply system for the in vessel coil system, the realization of a remote handling facility and a high performance computing system is proposed. DTT was included among the high-priority facilities in the 'Piano Nazionale Infrastrutture di Ricerca' of the Italian Ministry of Research.

Elenco partecipanti alla Proposta:

- Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile