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# O2.102 The new Divertor Tokamak Test facility

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See the full abstract here http://ocs.ciemat.es/EPS2019ABS/pdf/O2.102.pdf

Appropriate disposal of the non-neutronic energy and particle exhaust in a reactor is universally recognized as one of the high priority challenges for the exploitation of fusion as an energy source. The new Divertor Tokamak Test (DTT) facility, which will be built in Italy, is a tool to address that challenge in high-field, high performance tokamak with complete integration between core and edge plasma scenarios. DTT is superconducting tokamak with 6 T on-axis maximum toroidal magnetic field carrying plasma current up to 5.5 MA in pulses with length up to 100s. The D-shaped device is updown symmetric, with major radius R=2.11 m, minor radius a=0.64 m and average triangularity 0.3. The auxiliary heating power coupled to the plasma at maximum performance is 45 MW, shared between 170 GHz ECRH, 60-90 MHz ICRH and 400 MV negative ion beam injectors. This allows matching the PSEP/R values, where Psep is the power flowing through the last closed magnetic surface, with those of ITER and DEMO. DTT is in fact designed to reach PSEP/R =15 MW/m. The plasma facing material is tungsten, sprayed on the first wall and bulk in the divertor. The entire machine is up-down symmetric to allow the study of double null (DN) divertor configurations and will be maintainable through remote handling. The central solenoid, the toroidal and the poloidal field coils will all be superconducting (mostly Nb3Sn), with the possibility of adding in a second phase a hightemperature superconducting insert in the central solenoid to test this emerging technology in a fusion environment. Sets of copper internal coils will be used for vertical stabilization, divertor control and for ELM/RWM control. This presentation will discuss the state of the art of the project, illustrating its scientific background, the expected plasma scenarios - in particular as far as plasma exhaust is concerned - and the main technology choices so far. Emphasis will be given to highlight the effort to design an experimental tool, which will be a device not only for plasma exhaust studies, but also for the advancement of fusion science in the grand sense.

## pppo

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