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## Role of the Italian DTT in the Power Exhaust implementation strategy

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In the European road map towards the realisation of fusion energy, one of the challenges is the power exhaust for DEMO. If the ITER baseline strategy can't be extrapolated to DEMO, tens of years will delay the realization of a fusion plant. So in parallel to ITER exploitation, it is mandatory to test alternative solutions for the heat loads on the divertor as risk mitigation for DEMO.

In the last years two schemes have been proposed as possible solutions: alternative magnetic configurations and the use of liquid metal divertors. Up to now these solutions have been tested at proof of principle level in devices with a plasma current not exceeding 1 MA and SOL parameters significantly different from reactor conditions. To implement one of these concepts on DEMO it is necessary to make another intermediate step, otherwise the extrapolation to DEMO is too large by upgrading existing facilities or by building a dedicated Divertor Tokamak Test (DTT) facility.

In this framework, the Italian fusion community with the involvement of European Labs has proposed a new device, the Italian DTT, in which one or more alternative magnetic configurations or/and liquid metals can be tested in DEMO relevant conditions.

To fulfil the DEMO requirements the device have to operate at relevant heat load on the divertor maintaining high core performance, i.e. operations in an integrate scenario with core and edge parameters as close as possible to ITER and DEMO.

The Italian DTT project has fully supported by the Italian Government that has also identified and is implementing a funding scheme.

DTT will be a high field superconducting toroidal device (6 T) carrying plasma current up to 6 MA in pulses with length up to 100s, with an up-down symmetrical D-shape defined by major radius R=2.15 m, minor radius a=0.7 m, and an elongation around 1.7.

The status of the project will be illustrated, highlighting the reviewed design addressed to increase the flexibility by allowing for fully double null operation.

The site, the time schedule, and the cost estimation will be presented too.

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