ENEA activities on superconductors for fusion and DTT magnetic system updates

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Following a brief introduction to the activities carried out at the Superconductivity Laboratory of the ENEA Research Centre in Frascati, the presentation will mainly focus on recent updates concerning the Divertor Tokamak Test (DTT) facility, a tokamak device currently under construction at the ENEA Frascati Centre and dedicated to power exhaust management, one of the major challenges toward the realization of a fusion power plant.

In particular, an overview of the DTT superconducting magnet system will be provided, with emphasis on the main design choices and on the results of the principal qualification tests performed on the Toroidal Field (TF) coils, TF joints and terminations, and Poloidal Field (PF) coils. The current status of the superconducting magnet procurements will also be presented.

An update will furthermore be given on the Frascati Coil Cold Test Facility (FCCTF), a facility currently under construction in Frascati where most of the DTT magnets will be qualified prior to their installation in the machine.

Since considerable attention has been devoted in recent years to High-Temperature Superconductors (HTS), particularly with regard to their potential application in magnetic confinement fusion, their attractiveness will be discussed, together with the way in which they have been exploited in the design of the DTT Central Solenoid (CS).