

Technical Meeting on Plasma Physics and Technology Aspects of the Tritium Fuel Cycle for Fusion Energy

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Actuators for plasma operation by the DEMO fuel cycle inner loops

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The fuel cycle of the European DEMO reactor comprises three loops, where the first two –the Direct Internal Recycling (DIRL) and the Inner Tritium Plant (INTL) Loop –are directly coupled to the reactor. These loops include components that act as actuators on the plasma, as vacuum pumps, pellet injectors or gas injection valves that can and must be controlled on a given timescale.

This paper presents the foreseen actuators in DEMO, its location and the timescales on which control tasks can be executed with the available technology. Therefore, the actuators are listed and achievable timescales will be estimated or calculated. These values will be compared with requirements given by the plasma control systems.

This comparison will lead to the identification of gaps and challenges in the development of actuators or the actuator architecture for a DEMO machine.

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