GLADIS high heat flux testing for present day fusion devices: correlation of testing and reactor application

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In this contribution an overview of high heat flux experiments in GLADIS for current fusion experiments will be given. The presented results will comprise component tests for the publicly funded devices JT-60SA and DTT as well as on the start-up project SPARC. Mock-up concepts have been studied for DTT up to large cycle numbers and small and mid-sized mock-ups have been tested for JT-60SA. Tungsten and tungsten alloy based materials have been studied for their applicability in SPARC.

Beside standard high heat flux testing the focus has been to test components in realistic conditions including design and instrumentation. In this respect, components as close as possible to the final design including instrumentation with thermocouples are tested under realistic conditions. The idea is to strengthen the correlation between the testing and the reactor environment with focus on diagnostics, modelling and data evaluation.

In addition, a short overview of the status of the GLADIS device will be presented, including the upgrade of the ion source using a newly designed acceleration grid. Finally, plans for new diagnostics for the observation of local and global deformation and for an upgrade towards heavy duty operation will be presented. The latter will allow for a significantly increased cycle number and/or very long pulses up to one hour.

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