



Karlsruhe Institute of Technology

Experimental investigation of a Helium-cooled Breeding Blanket First Wall under LOFA conditions in view of code validation

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Test Set-up

Mock-up:

- 10 channels with 15x15 mm² each,
- plasma side wall thickness is 3 mm, ۲
- material is P92

Operating conditions:

- Helium inlet temperature: **300°C**
- Helium pressure: 80 bar(a) ۲
- Total helium flow: **500 g/s** (about 250 g/s per circuit; ۲ **50g/s per channel**)
- 2 valves to control the flow in each circuit •
- Heat flux: **300 kW/m²** by electron beam heating









Experimental results for full and partial LOFA





Mock-up surface temperature mean value of elements in °C



In the Experiment the valve was opened again to return to full cooling when the mock-up surface temperature exceeded 500°C





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80 mm