

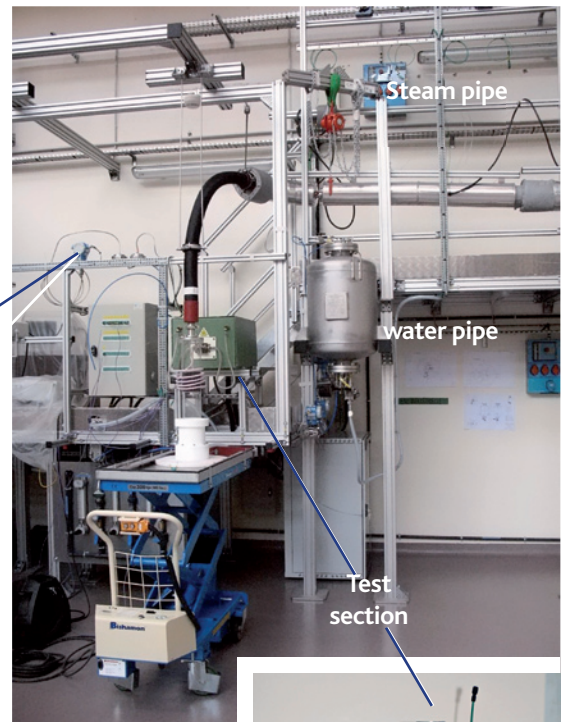
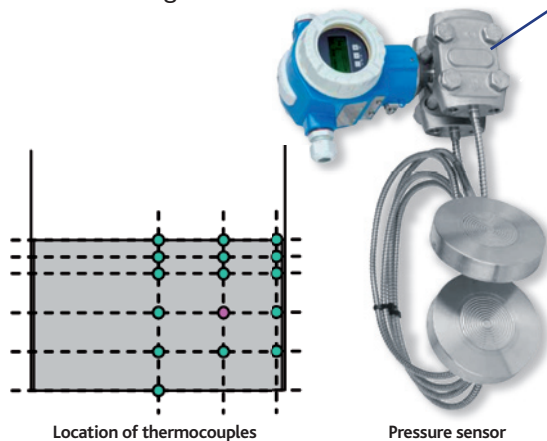
# PRELUDE facility

## [PRELIMINARY EXPERIMENTAL REFLOODING OF A DEBRIS BED] MOCK-UP OF THE PEARL FACILITY

The PRELUDE facility is devoted to performing feasibility studies and instrumentation qualification tests for the PEARL debris bed reflooding programme.

### PRELUDE facility

This facility comprises a water supply pipe, a quartz test section (110, 180 or 290 mm diameter) in which the debris bed is placed, together with its instrumentation, and a steam relief pipe. It is used to conduct reflooding tests by means of injecting water onto a bed of metal particles heated by induction. The instrumentation measures the different temperatures and pressures in the debris bed, the flow of injected water and the flow of generated steam.



### Objectives

The tests conducted in the PRELUDE facility help to validate key technical options for PEARL:

- Induction heating to obtain heating sequences between 100-300 W/kg with homogeneous distribution in the different particle beds (slightly oxidised steel balls with 1, 2, 4 and 8 mm diameters), as well as to reach a temperature of 1,000°C at the hottest spot in the debris bed.
- Material of the test section ensuring the thermo-mechanical resistance of the tube containing the particles bed,
- Instrumentation to record the first thermohydraulic measurements at atmospheric pressure when reflooding the particle bed (about 25 kg) heated to of 400, 700 and 1,000°C.

This modular facility will remain operational to support the larger-scale PEARL facility (debris bed of about 500 kg) for complementary separate effects tests.

