Profile LFR-51
HIGH-TEMPERATURE MATERIAL CORROSION TEST LOOP
JAPAN

GENERAL INFORMATION

NAME OF THE FACILITY
Oxygen-controlled Lbe LOop for material Corrosion in HIgh-temperature

ACRONYM
OLLOCHI

COOLANT(S) OF THE FACILITY
LBE

LOCATION (address):
2-4, Oaza-Shirakata, Tokai, Naka, Ibaraki, Japan

OPERATOR
JAEA

CONTACT PERSON
Toshinobu SASA
2-4, Oaza-Shirakata, Tokai, Naka, Ibaraki, Japan
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STATUS OF THE FACILITY
In operation

Start of operation (date):
2019

MAIN RESEARCH FIELD(S)
☐ Zero power facility for V&V and licensing purposes
☐ Design Basis Accidents (DBA) and Design Extended Conditions (DEC)
☐ Thermal-hydraulics
☒ Coolant chemistry
☒ Materials
☐ Systems and components
☐ Instrumentation & ISI&R

TECHNICAL DESCRIPTION

Description of the facility
The purpose of the loop is the material corrosion test in flowing high-temperature LBE with oxygen-controlled environment. The data will be used for fundamental study for future ADS development, corrosion data collection for future proton irradiation. OLLOCHI has three test section, those can set different operation condition such as LBE flow rate, operation temperature and exposure time. One test section has special function to measure the mechanical stress of the steels in flowing LBE condition.

Acceptance of radioactive material
No
Scheme/diagram

3D drawing/photo

Parameters table

<p>| Coolant inventory | 100 litre |</p>
<table>
<thead>
<tr>
<th>Power</th>
<th>75 kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test sections</td>
<td></td>
</tr>
<tr>
<td><strong>TS #1</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Characteristic dimensions</strong></td>
<td>27.2 mm in diameter, 300 mm in length</td>
</tr>
<tr>
<td><strong>Static/dynamic experiment</strong></td>
<td>Dynamic experiment</td>
</tr>
<tr>
<td><strong>Temperature range in the test section (Delta T)</strong></td>
<td>200-550°C (100°C)</td>
</tr>
<tr>
<td><strong>Operating pressure and design pressure</strong></td>
<td>0.5 MPa</td>
</tr>
<tr>
<td><strong>Flow range (mass, velocity, etc.)</strong></td>
<td>20 L/min.</td>
</tr>
<tr>
<td><strong>Coolant chemistry measurement and control (active or not, measured parameters)</strong></td>
<td>Oxygen concentration will be measured and controlled by Ar-H₂-O₂ mixed gases.</td>
</tr>
<tr>
<td><strong>Instrumentation</strong></td>
<td>Oxygen sensor, thermocouple, ultrasonic flowmeter, electro-magnetic flowmeter</td>
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</table>

**COMPLETED EXPERIMENTAL CAMPAIGNS: MAIN RESULTS AND ACHIEVEMENTS**
No

**PLANNED EXPERIMENTS (including time schedule)**
(1) Oxygen concentration control test
(2) Corrosion test in high temperature (up to 550°C)
(3) Material mechanical test in flowing LBE condition

**TRAINING ACTIVITIES**
No

**REFERENCES (specification of availability and language)**
No