Profile LFR-85

LMCS

LATVIA

GENERAL INFORMATION

NAME OF THE FACILITY: Loop for Material Corrosion Studies in Pb and Pb eutectic (PbBi, PbLi) at high temperature in presence of magnetic field.

ACRONYM: LMCS

MEDIUM (COOLANT(S)) OF THE FACILITY: Pb, PbBi, PbLi

LOCATION (address): LV-2169 Salaspils, Miera str.32, Latvia

OPERATOR: Institute of Physics University of Latvia (IPUL)

CONTACT PERSON(S): Ernests Platacis, LV-2169 Salaspils, Miera str.32, Latvia, IPUL, Senior Researcher, +371 2651 3424, Ernests.Platacis@lu.lv

STATUS OF THE FACILITY: In operation

Start of operation (date): 2013

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 facility LMCS construction material corrosion studies in Pb and PbBi, PbLi eutectic. The corrosion studies can be carried out with and without magnetic field influence. The possibilities of varying flow speed, temperature, temperature difference are available. The facility is designed for long term operation.

Acceptance of radioactive material

No

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Scheme/diagram
Principal scheme of the LMCS loop: 1 – test section; 2 – counter flow heat exchanger PbLi – PbLi; 3 – LM tank; 4 – Electromagnet; 5 – expansion tank; 6 – heat exchanger – PbLi – oil – water; 7 – flow meter; 8 – EM pump

1 - electromagnet poles; 2 - test section; 3 - exchanger-economizer; 4 - heat exchanger; 5 - electromagnetic pump; 6 - flow meter; 7 - expansion tank
3D drawing/photo
### Parameters Table

<table>
<thead>
<tr>
<th>Medium (Coolant) inventory</th>
<th>14 liter Pb, PbBi, PbLi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power</td>
<td>Heat exchanger Pb – oil – water adjustable within 0...15 kW</td>
</tr>
<tr>
<td>Test sections</td>
<td></td>
</tr>
<tr>
<td>TS #1</td>
<td>Characteristic dimensions</td>
</tr>
<tr>
<td></td>
<td>1m</td>
</tr>
<tr>
<td></td>
<td>Static/dynamic experiment</td>
</tr>
<tr>
<td></td>
<td>dynamic</td>
</tr>
<tr>
<td></td>
<td>Temperature range in the test section (Delta T)</td>
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<tr>
<td></td>
<td>Up to 550°C, maximum temperature difference in loop 150°C</td>
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<tr>
<td></td>
<td>Operating pressure and design pressure</td>
</tr>
<tr>
<td></td>
<td>maximum pressure: 6 bar</td>
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<tr>
<td></td>
<td>Flow range (mass, velocity, etc.)</td>
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<tr>
<td></td>
<td>maximum flow rate 0.2 L/s</td>
</tr>
<tr>
<td>Medium (Coolant) chemistry measurement and control (active or not, measured parameters)</td>
<td>Pb, PbBi, PbLi</td>
</tr>
<tr>
<td>Instrumentation</td>
<td>Thermocouples, power monitoring system.</td>
</tr>
</tbody>
</table>

### COMPLETED EXPERIMENTAL CAMPAIGNS: MAIN RESULTS AND ACHIEVEMENTS

Safe operational experience exists for more than 5 years. The loop has carried out tests at overall time 15 000 hours.

### PLANNED EXPERIMENTS (including time schedule)

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### TRAINING ACTIVITIES
Training activities should be agreed with IPUL for the operation of the experimental facilities under the supervision of IPUL qualified staff.

REFERENCES (specification of availability and language)