Profile SFR-86

FAMPEX

Republic of KOREA

GENERAL INFORMATION

NAME OF THE FACILITY: FAMPEX
ACRONYM: Fuel Assembly Mechanical Performance Experiment Facility
COOLANT(S) OF THE FACILITY: Water
LOCATION (address): Nuclear Fuel Safety Research Division, Korea Atomic Energy Research Institute, 989-111 Daedeok-daero, Yuseong-gu, Daejeon, Korea
OPERATOR: KAERI
CONTACT PERSON: Kyungho Yoon, 989-111 Daedeok-daero, Yuseong-gu, Daejeon, Korea, KAERI, Nuclear Fuel Safety Research Division, Tel. +82 42 868 8918, khyoon@kaeri.re.kr

STATUS OF THE FACILITY: In operation
Start of operation (date): 2016

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
FAMPEX, Fuel assembly mechanical performance experiment facility is situated on the building whose length, height, and depth is 12 m, 20 m, and 2.7 m, respectively. The facility consists of assembly-wise mechanical test equipment, dynamic load (i.e. seismic accident) simulating test system, small-scale hydraulic test loop and component-wise test platform. The mechanical test platform and the system located in concrete column is a pillar of the test facility. The 2nd and 3rd floors of steel frame structure surrounding mechanical test platform (concrete column) provide space for the control room over the dynamic simulation test and the test preparation office for operating staff and the data analysis system. The overhead crane with 5 ton capacity can move in three directions (vertical, horizontal, lateral) using the two-ways speed control inverter. The overhead crane’s hook can access the whole area of the facility except the 1st floor inside steel frame structure and the dead zone(1.5 m) around the building wall. Jib crane with 2 ton capacity (note, design load 3 ton) on the top of concrete column is also installed.
to handle and make right position of upper core plate simulator and test assembly specimen. The installation space for the dynamic (or seismic) simulating test system is constructed on the underground 2.7m deep. The thick steel-plate-sectioned hood and support that can resist to 2 ton moving payload covers the whole underground space.

Table 1 Major design parameters of the FAMPEX

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Design value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric jack</td>
<td>3,000 kgf</td>
</tr>
<tr>
<td>Dynamic shaker</td>
<td>Electromagnetic</td>
</tr>
<tr>
<td>Signal channel</td>
<td>Gauge: 140, BNC: 48, sensor: 52</td>
</tr>
<tr>
<td>Active travel length (mm)</td>
<td>100</td>
</tr>
<tr>
<td>Structure</td>
<td>Steel/concrete</td>
</tr>
<tr>
<td>Test specimen</td>
<td>1/2 FAs</td>
</tr>
<tr>
<td>FA type</td>
<td>PWR, SFR, RR</td>
</tr>
<tr>
<td>Environmental condition</td>
<td>Air/water room temperature</td>
</tr>
</tbody>
</table>

Acceptance of radioactive material
No
Acquisition data
- Load: 12 load cells
- Displacement: 40 channel laser sensor
- Strain: 140 channel strain gage
- Acceleration: 48 channel accelerometer

3D drawing/photo
Schematic 3D drawing/photo of FAMPEX
### Parameters table

<table>
<thead>
<tr>
<th>Test sections</th>
<th>Characteristic dimensions</th>
<th>Static/dynamic experiment</th>
<th>Temperature range in the test section</th>
</tr>
</thead>
<tbody>
<tr>
<td>PWR FA</td>
<td>14×14, 16×16 &amp; 17×17 FA actual dimension</td>
<td>Static/Dynamic available</td>
<td>Room temperature only</td>
</tr>
<tr>
<td></td>
<td>0.2 m square &amp; 5 m height</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research reactor FA</td>
<td>Approximately, 0.07 square &amp; 1.3 m height</td>
<td>Static/Dynamic available</td>
<td>Room temperature only</td>
</tr>
<tr>
<td>SFR FA</td>
<td>Approximately, 0.13 HEX, 4.5 m (height)</td>
<td>Static/Dynamic available</td>
<td>Room temperature only</td>
</tr>
</tbody>
</table>

### REFERENCES (specification of availability and language)