

**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 (name, address, institute, function, telephone, email):	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

<b>STATUS OF THE FACILITY</b>	In operation
Start of operation (date):	2016

<b>MAIN RESEARCH FIELD(S)</b>	<input type="checkbox"/> Zero power facility for V&V and licensing purposes
	<input type="checkbox"/> Design Basis Accidents (DBA) and Design Extended Conditions (DEC)
	<input checked="" type="checkbox"/> Thermal-hydraulics
	<input type="checkbox"/> Coolant chemistry
	<input checked="" type="checkbox"/> Materials
	<input checked="" type="checkbox"/> Systems and components
	<input type="checkbox"/> 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

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

**Acceptance of radioactive material**

No

**Acquisition data**

- Load
- Displacement
- Strain
- Acceleration

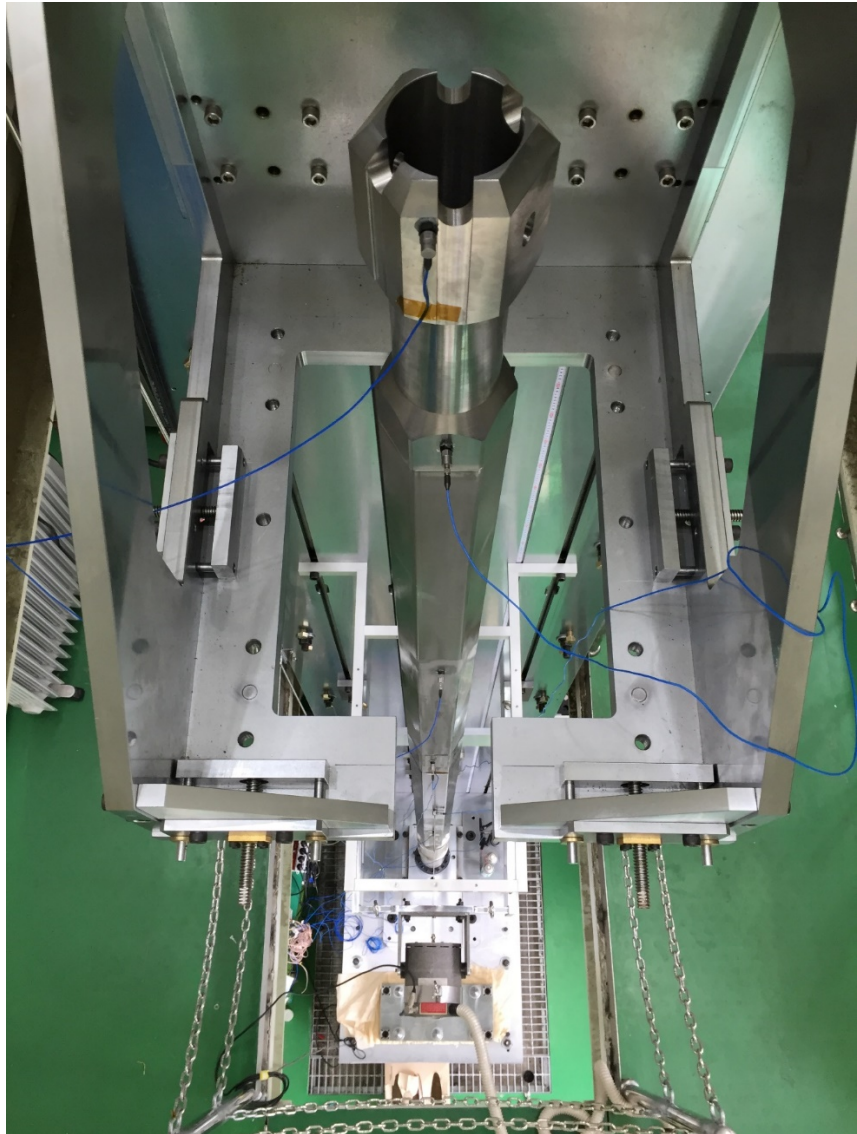
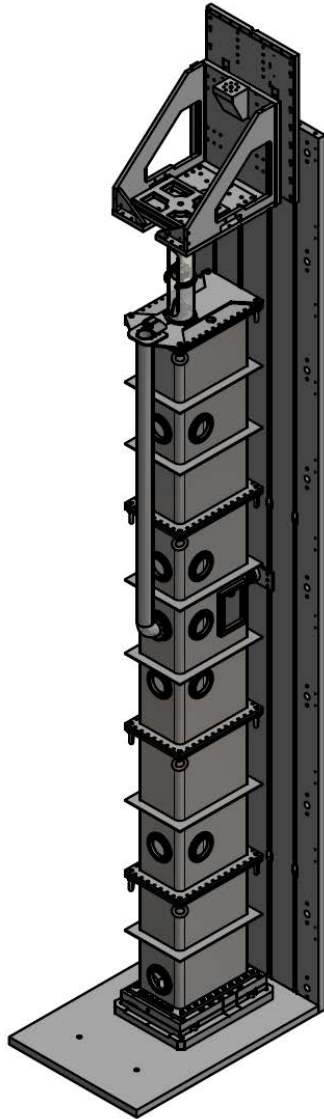
12 load cells

40 channel laser sensor

140 channel strain gage

48 channel accelerometer

**3D drawing/photo**



**Schematic 3D drawing/photo of FAMPEX**

## Parameters table

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

## REFERENCES (*specification of availability and language*)

- Lee, K.H., Kang, H.S., Yoon, K.H., Kim, H.K., Lee, Y.H., Kim, J.Y., Kim, S.H. "Functional Test Report of Fuel Assembly Mechanical Characterization Test Facility", KAERI/TR-6231/2015, Korea Atomic Energy Research Institute (Kr)
- Lee, K.H., Kang, H.S., Yoon, K.H., Kim, H.K., Lee, Y.H., Kim, J.Y., Kim, S.H., Park, H.J. "Construction Report of Fuel Assembly Mechanical Characterization Test Facility", KAERI/TR-6230/2015, Korea Atomic Energy Research Institute (Kr)