**Profile LFR-79**

**LECOTH**

**CHINA**

## GENERAL INFORMATION

| | |
|---|---|
| NAME OF THE FACILITY | Lead-bismuth Eutectic COmprehensive THermal-hydraulic test facility |
| ACRONYM | LECOTH |
| MEDIUM (COOLANT(S)) OF THE FACILITY | LBE |
| LOCATION (address): | CNPRI, Shenzhen, China |
| OPERATOR | CNPRI |
| CONTACT PERSON(S) (name, address, institute, function, telephone, email): | Jiming Lin<br>China Nuclear Power Technology Research Institute (CNPRI)<br>0086-755-88617716<br>linjiming@cgnpc.com.cn |

**STATUS OF THE FACILITY** Under Design

Start of operation (date): 2020

**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

LECOTH is a forced-convection loop for exposing industrial grade oxygen control experiment and thermal fluid mechanics experiment of fuel assemble to flowing LBE at temperatures between 280 °C and 550 °C. The facility is designed for tests in LBE having a flow up to 50m³ /h and can provide about 0.5Mpa pressure for the experimental section.

### Acceptance of radioactive material

No

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### Scheme/diagram

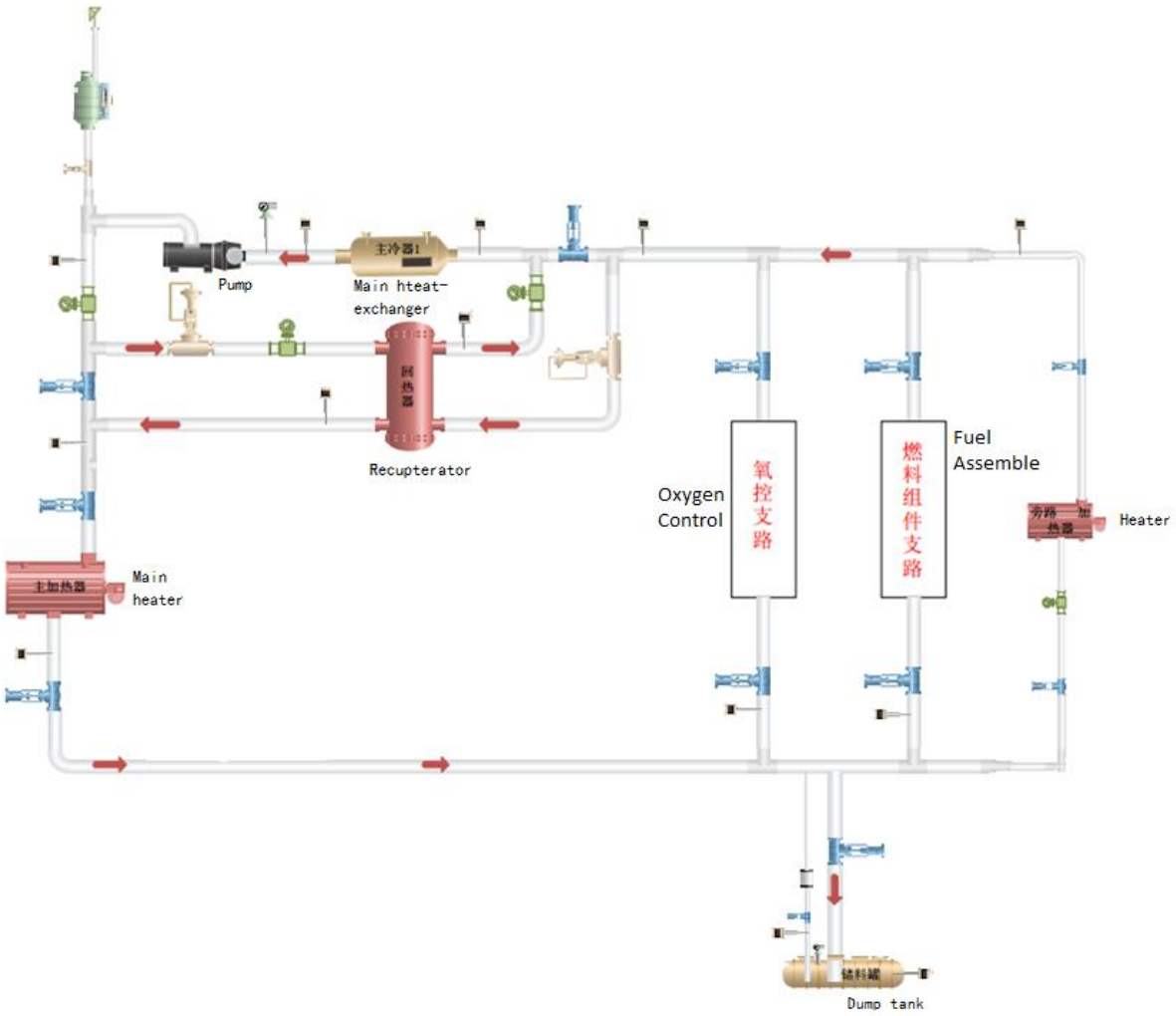


FIG.1. Scheme of the COTHELA facility

**3D drawing/photo**

**NO**

**Parameters table**

| | |
|---|---|
| Medium (Coolant) inventory | 1000L |
| Power | 2500KW |
| Test sections | |
| TS #1 | *Characteristic dimensions*<br>1500mm length. 1000mm diameter |
| | *Static/dynamic experiment*<br>dynamic |
| | *Temperature range in the test section (Delta T)*<br>280℃-550℃ (270℃) |
| | *Operating pressure and design pressure*<br>**atmospheric** |
| | *Flow range (mass, velocity, etc.)*<br>30m$^3$ /h, 2m/s |
| TS #2 | *Characteristic dimensions*<br>61 samples, 3015mm height, 150mm width |

| | |
|---|---|
| | *Static/dynamic experiment*<br>dynamic |
| | *Temperature range in the test section (Delta T)*<br>220℃-450℃（230℃） |
| | *Operating pressure and design pressure*<br>**0.44MPa** |
| | *Flow range (mass, velocity, etc.)*<br>31$m^3$/h, 2m/s |
| Medium (Coolant) chemistry measurement and control (active or not, measured parameters) | Active oxygen control system by Pt/air, Bi/$Bi_2O_3$ oxygen sensors and gas phase oxygen exchanger.<br>Active fuel assemble system by pressure sensors and flow sensors |
| Instrumentation | Flow meter<br>Oxygen sensors<br>Temperature sensors<br>Pressure sensors |

**COMPLETED EXPERIMENTAL CAMPAIGNS: MAIN RESULTS AND ACHIEVEMENTS**

No

**PLANNED EXPERIMENTS (including time schedule)**

Industrial-scale oxygen control experiments (from 2020-07-01 to 2020-12-31)

Thermodynamic experiment of fuel assembly (from 2021-01-01 to 2021-11-30)

**TRAINING ACTIVITIES**

Training activities are possible, depending on availability and after prior agreement under supervision of CNPRI

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

No