Profile SFR-32

SOLTEC

GERMANY

GENERAL INFORMATION

NAME OF THE FACILITY	Sodium Loop to Test materials and Corrosion
ACRONYM	SOLTEC
MEDIUM (COOLANT(S)) OF THE FACILITY	Na
LOCATION (address):	Karlsruhe Institute of Technology (KIT) Institute for Neutron Physics and Reactor Technology (INR) Hermann-von-Helmholtz-Platz 1, Bldg 521 76344 Eggenstein-Leopoldshafen Germany
OPERATOR	KIT
CONTACT PERSON (name, address, institute, function, telephone, email):	Dr. Wolfgang Hering Karlsruhe Institute of Technology (KIT) Head of department INR-ASS +49 721 608 22556 wolfgang.hering@kit.edu

STATUS OF THE FACILITY Under Construction
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

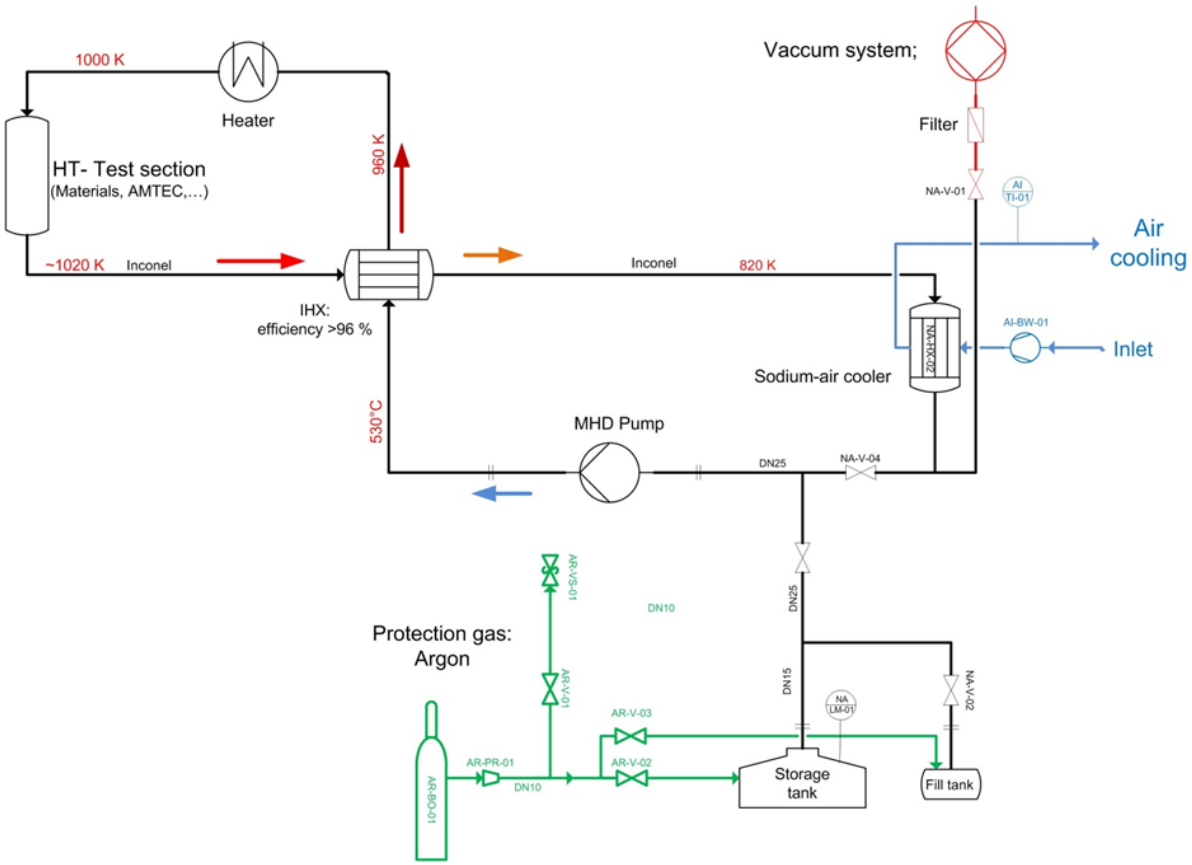
Description of the facility

SOLTEC is a family of three multi purpose lab scale sodium facilities to be operated safely in standard laboratory environments. SOTEC is an 8 shape loop with an electromagnetic pump, a recuperator and a high temperature section designed up to 1000°C. First operation for SOLTEC-1 is low cycle fatigue for new materials up to 710°C. SOLTEC -2 has a test section where fast transients can be applied by inductive heating up to boiling conditions. SOLTEC-3 is a combined two loop facility where on loop simulated a sodium cooling loop while the second loop can operate up to 1000°C.

Acceptance of radioactive material

No

Scheme/diagram



3D drawing/photo

Parameters table

Medium (Coolant) inventory	14l
Power	40 kW
Test sections	
TS #1	*Characteristic dimensions* Height. ca. 1000mm
	Static/dynamic experiment Static plus dynamic
	Temperature range in the test section (Delta T) - 700°C SOLTEC-1,-2 and 1000°C SOLTEC-3
	Operating pressure and design pressure <1 bar / 3 bar
	Flow range (mass, velocity, etc.) 20 kg/h
Medium (Coolant) chemistry measurement and control (active or not, measured parameters)	taking credit from KASOLA infrastructure
Instrumentation	flow meter, thermocouples, pressure sensors

COMPLETED EXPERIMENTAL CAMPAIGNS: MAIN RESULTS AND ACHIEVEMENTS

Commissioning SOLTEC-2

PLANNED EXPERIMENTS (including time schedule)

Q2-Q3/19

TRAINING ACTIVITIES

Bachelor and Master Thesis

REFERENCES (*specification of availability and language*)

A. Onea, W. Hering, J. Reiser, A. Weisenburger, M. Lux, R. Ziegler, S. Baumgärtner, R. Stieglitz, Development of high temperature test facilities for material investigations in hot liquid metal flow, SMINS-4, NEA International Workshop on Structural Materials for Innovative Nuclear Systems, 11-14 July 2016, Manchester, UK

A Onea, W Hering, J Reiser, A Weisenburger, N Diez de los Rios Ramos, M Lux, R Ziegler, S Baumgärtner and R Stieglitz, (B4-2) Development of high temperature liquid metal test facilities for qualification of materials and investigations of thermos-electrical modules, LIMTECH final report (IOP: http://iopscience.iop.org/issue/1757-899X/228/1, valid Nov.2017).