

Thermal-Hydraulic Platform Unique in the World



Facilities unique in the world for operating full-scale or scaled models for performing qualification tests of systems and components or for validating codes and calculations.

Scope of Activities

- Qualifications:
 - Pumps
 - Valves
 - I&C for loss-of-coolant accidents (LOCA) conditions
 - Steam generator components
 - Auxiliary system components
- Systems tests:
 - PWR/BWR integral systems tests
 - Integral testing of sump strainer and downstream systems
- Heat transfer and its limitations:
 - For severe accident conditions
 - For core flow with focus on fuel elements
 - Heat exchangers
- Fluid dynamics and flow-induced vibrations
 - Core flow and core components
 - Fuel assemblies
 - Singularities (T-junctions, etc.)
- On-site activities
 - On-site measurements of NPP components
 - Generation of databases
 - Component inspections

Resources

The thermal hydraulic and components testing facilities comprise a total floor space of more than 2,000 m² and heights of up to 32 meters.

The following facilities are available:

- Crane capacities up to 100 t
- Thermal power supplies up to 25 MW
- Electrical power 20 MW
- Dose rate: 10⁻⁴ x limit for unrestricted release
- Advanced measurement techniques also available

We are qualified as a test and inspection body within the following ranges:

Measurements	Ranges	Accuracy
Temperature	0 °C – 600 °C	0.3 K
Pressure	10 Pa – 40 MPa	0.5 %
Volume flow rate	0.1 l/h – 1,500 m ³ /h	0.5 %
Mass flow rate	0.1 kg/h – 4,000 kg/s	0.5 %
Force	1 N – 10,000 kN	1 %
Momentum	Up to 50,000 Nm	1 %
Distance	1 µm – 10 m	0.5 %
Velocity	1 mm/s – 100 m/s	0.5 %
Acceleration	0.5 – 1,000 g	1 %
Current	1 mA – 85,000 A	0.5 %
Voltage	1 mV – 4 kV	0.5 %
Electrical power	Up to 20 MW	0.5 %

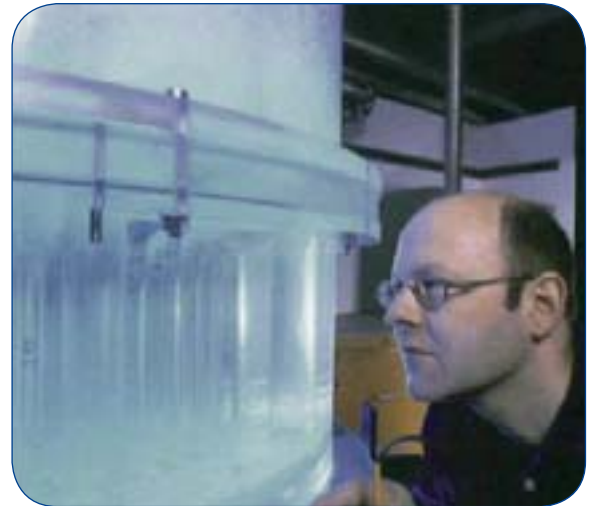


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Test Facilities

At our sites, we operate the following test facilities:

- **KOPRA** – Multifunction component test facility (fuel assemblies, CRDMs, valves)
- **BENSON** – high pressure thermal-hydraulic testing of separate effects
- **PKL** – Large scale test facility of a PWR primary loop with secondary side and auxiliary systems
- **PETER, BRIAN** – Fluid dynamic test facilities (PWR and BWR fuel assemblies)
- **SUSI** – sump strainer test facility
- **APPEL** – Pump test loop
- **GAP** – Large valve test facility
- **INKA** – Test facility for integral BWR tests
- **KATHY** – Multifunction thermal-hydraulic test loop
- **HYDRAVIB** – Vibratory validation of lower RPV internals
- **ROMÉO & JULIETTE** – RPV flow distribution in upper and lower plenum
- **CALVA** – Dynamic mechanical testing of components
- **MAGALY** – Vibration behavior of Rod Cluster Control Assembly (RCCA) and Control Rod Guide Assembly (CRGA) for various flow conditions



+ Your benefits at a glance

- Highly qualified, experienced scientists, engineers and technicians
- Knowledge base acquired over more than 40 years
- Technical and economical solutions that make sense
- Accredited test and inspection body
- Accepted by ILAC

AREVA GmbH

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