framatome

The World's Largest Valve Test Facilities

Valve testing under full flow conditions with more than 40 years of experience

Challenge

The functional capability of safety-related valves must be verified by both analytical and experimental qualification. However, analytical verification is not always possible to the extent required, particularly in the case of new designs.

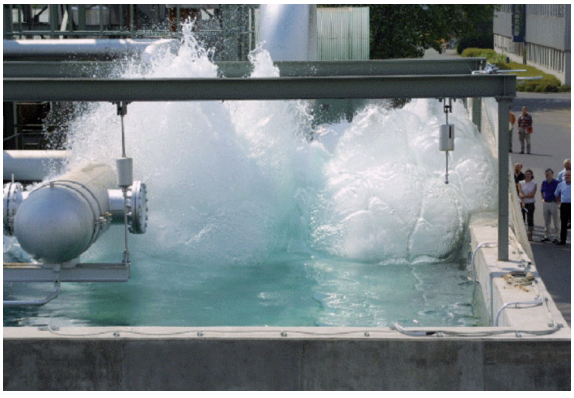
Solution

We operate large-scale valve test facilities in Karlstein, Germany, to simulate operational and accident conditions. The facilities can be operated with cold, sub-cooled, saturated water as well as saturated and superheated steam. Phase transitions are also possible (e.g. steam to two-phase or steam to water).

We offer the possibility to perform qualification, prototype functional tests and factory acceptance tests.

We provide numerical tools to forecast and support the course of the test based on test valve flow characteristics.

View at GAP test facility



Discharge of full flow test

Customer benefits

- Representative test results through full-scale valve testing
- 40 years of experience in valve testing ensure the highest test quality
- Extended possibilities with access to the Framatome thermal-hydraulic worldwide platform
- Reliable test results through accreditation as test and inspection body in accordance with ISO 17025 and 17020, accepted by ILAC

Your performance
is **our** everyday **commitment**

Technical information

Several valve test facilities are available at the Framatome site in Karlstein. The two most relevant are the Large Valve Test Facility (GAP) and the High-Pressure Test Facility (VPE). The component qualification infrastructure also provides test capabilities beyond the design data mentioned, such as valve tests with water at 300 bar and 50 t/h.

Tests can be performed in accordance with international standards, such as ASME QME-1. Static loads can also be applied under full flow.

Test specimen in the GAP test facility

Features

GAP

- Water volume: 25 m³
- Design pressures up to 165 bar
- Design temperatures up to 350 °C
- Total flow rate up to:
  - 2,000 kg/s (steam)
  - 4,000 kg/s (two-phase)
  - 1,300 kg/s (water)
- Accumulator volume: 125 m³
- Test section lines up to DN 700 (28”)

VPE

- Design pressure: 157 bar
- Design temperature: 400°C
- Flow rate: 200 kg/s (saturated steam at 85 bar)
- Accumulator volume: 22 m³
- Test section lines: DN 250 (10”)

References

Over the past 40 years, the following kind of valves have been successfully tested:

- Main steam isolation valves up 30” (e.g. globe and gate)
- Feedwater isolation valves up to 10” (e.g. globe and gate)
- Setpoint verification and flow capacity tests on safety valves (spring-loaded, self- or pilot-actuated)
- Pressurizer safety relief valves, including under ATWS conditions (ATWS: anticipated transient without scram)
- 3-way valves, check valves and many others.

Contact: test-labs@framatome.com
www.framatome.com

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