

Flow-Induced Vibration Tests

Integral Hydraulic Tests for Power Generation Plants

Optimization of power plant components through reliable and comprehensive testing

Challenge

Components in nuclear power plants and other installations must be capable of withstanding flow-induced vibrations.

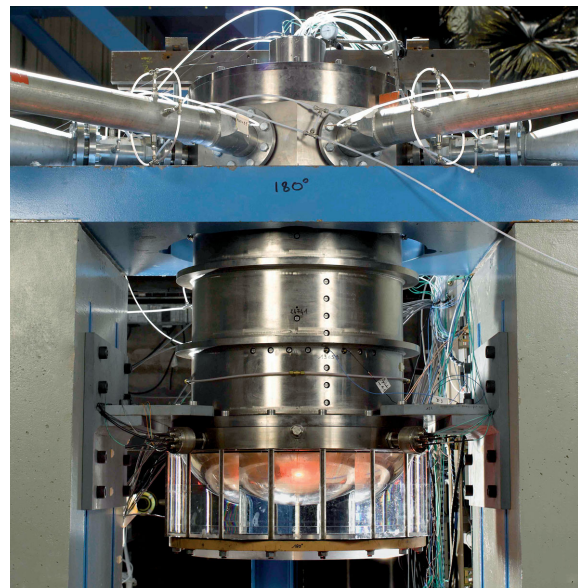
Solution

We help you to validate and optimize component design with our comprehensive flow-induced vibration testing capabilities. The relevant physical phenomena are analyzed and ranked. This allows us to select the laws of similitude and non-dimensional numbers in order to scale and design an appropriate test rig model. The test rig model represents the following physical phenomena:

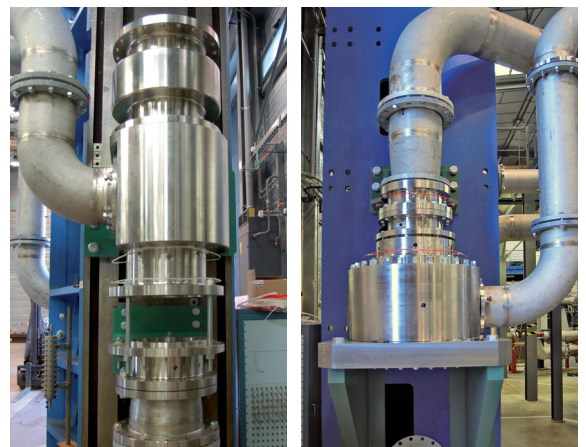
- Significant flow-induced forces affecting the structure
- Relevant structural responses and elasticities
- Linkages between the various structures.

Customer benefits

- Reliable test results through well-equipped laboratories using sophisticated measurement systems
- Accredited test laboratory according to ISO 17025 ensures highest test quality
- Wide range of application such as nuclear and renewable energy projects
- Extended possibilities with access to the Framatome thermal-hydraulic worldwide platform



HYDRAVIB: test-rig model of reactor pressure vessel internals (EPR reactor) for flow-induced vibrations testing



Jules Horowitz facility for flow-induced vibration of reactor internals

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

Technical information

Test parameters

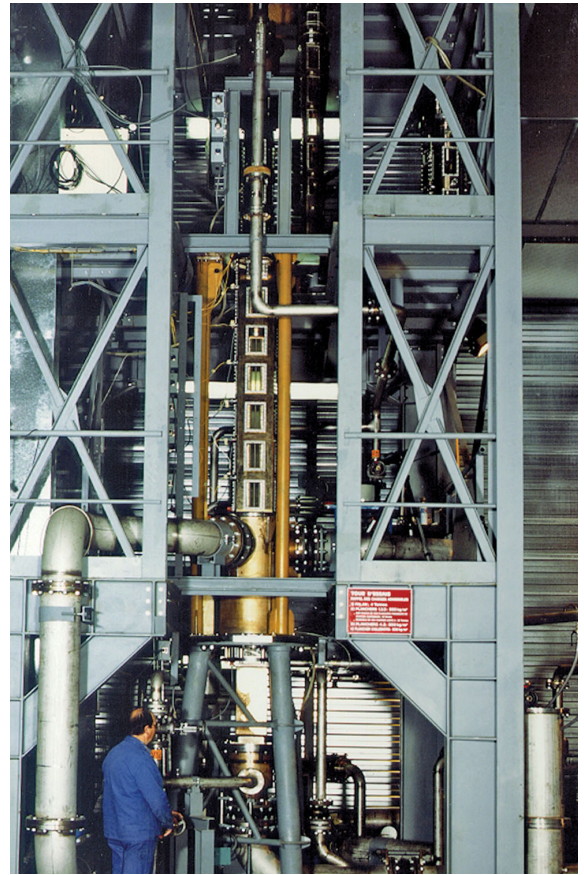
- Water flow rate up to 3,000 m³/h
- Pressure up to 16 bar
- Temperature up to 100 °C
- Fluid velocity up to 20 m/s

Measurement techniques

- Laser vibrometer
- Accelerometer
- Eddy current sensors
- Strain gauges
- Displacement sensor

Data acquisition

- Powerful data acquisition and process control systems



MAGALY bench: flow-induced vibrations of control rod guide assembly and control rod cluster assembly

Key figures

More than **30** years of experience in similitude testing and analyses

References

MAGALY bench

- Control rod cluster assembly flow-induced vibrations for:
 - EPR reactor
 - 1,300 MWe French plants

HYDRAVIB bench

- Vibrations of EPR reactor pressure vessel internals

Reactor Jules Horowitz (RJH) test bench

- Vibrations of reactor internals

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