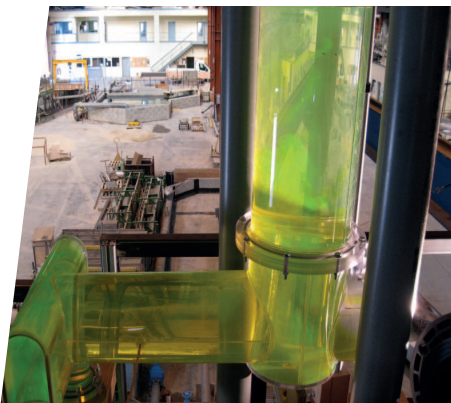


MODELLING |

DAMS AND HYDROPOWER

Physical scale models remain the most reliable and high-performance solution to validate the complex hydraulic behaviour of the structures associated with dams and hydropower schemes and ensure a technically and economically optimised design.

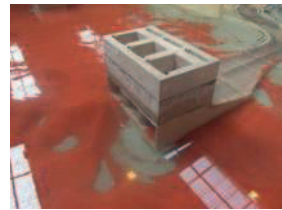
This benchmark facility also represents an invaluable communication resource and is particularly acclaimed by international experts, funding organisations, and structure inspection services in France.



OUR ASSIGNMENTS

- Checking the design and sizing of safety structures (flood spillways, gates, downstream stilling basins, surge shafts, etc.)
- Determining stage-discharge relations for complex structures
- Studying 3D flows approaching and around structures

- Studying vortex formation risks around water intakes and forebays
- Studying sedimentary risks in reservoirs and with regard to water intakes, and validating structural or operating solutions (bypasses, sediment deposition areas, flushing operations)
- Optimising structure dimensions and the associated works.



LABORATORY MODELLING | DAMS AND HYDROPOWER



NEPAL | Karnali dam - Scale: 1:100
Gated flood spillway



FRANCE | Cammazes - Scale: 1:35
Free surface spillway - 4 bays



OMAN | AK01 dam - Scale: 1:70
Stepped spillway



OMAN | Wadi Aday - Scale: 1:40
Labyrinth flood spillway



OMAN | New Fulajj Dam - Wadi Rafsa
Scale: 1:50
Bottom gates

Laboratory holding
ISO 9001
OHSAS 18001
certification

OUR SKILLS

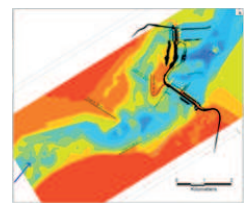
- Ultra-precise, three-dimensional physical scale modelling of:
 - . permanent or transient phenomena (floods, pressure surges)
 - . two-phase flows (water + air)
 - . complex hydraulic shapes.
- Measuring and recording hydraulic parameters (velocity fields, flow rates, water levels, pressures, etc.)
- Monitoring scouring at the toe of structures
- Testing the hydraulic behaviour of structures subjected to log jamming
- Types of structure studied and optimised:
 - . Complex flood spillways (PK Weirs, fusegates, morning glory, labyrinth, mobile gates, etc.)
 - . Stilling basins
 - . Surge shafts
 - . Water intakes
 - . Temporary river diversions, etc.

SOPHISTICATED FACILITIES

- Robotic station - model construction and quality control
- Infrared stereoscopic cameras - Motion capture
- 3D scanner - Measurement of topographical and morphological changes
- LabVIEW (NI) - Creation of customised systems for acquiring and processing data
- Balances for 3- or 6-component force measurements
- Wide range of pressure sensors
- Ultrasonic level sensors
- Ultrasonic probes
- Photogrammetric scour analyser
- Gates with PID regulators
- Doppler velocimeter
- Large scale particle image velocimetry (LSPIV)
- Sediment analysis and qualification laboratory: fall velocity, grain size distribution, density



Brazil | Sedimentological model of Jirau
Horizontal scale: 1:1000 - vertical scale: 1:100



Topographical survey