



Hydropower and Dams

Focussed hydraulic modelling & mathematical studies undertaken at BHR Group can minimise design risk, construction costs and long term environmental impact in many large civil engineering projects. Where problems are identified viable mitigation options with long-term assessment of performance are provided.

The complex hydraulic phenomena combined with geological, environmental and structural engineering considerations involved in hydro engineering projects require decisions on a large number of interacting factors.

BHR Group has an established international reputation for scaled physical models, computational fluid dynamics (CFD), surge analysis and hydroelastic modelling for hydropower, pumped storage and environmental schemes world-wide, including Dinorwic, Thames Barrier and Murchison Falls.



Working with the client's engineers we help ensure efficient use of economic resources, full evaluation of design options and operating parameters thereby minimising downside risks

Structures modelled

- Head and tail works
- Tunnels and spillways
- Reservoirs
- Pump sumps
- Surge chambers and control devices
- Pipe networks
- Rivers
- Turbulence/energy reduction structures
- Flood and flow control structures
- Fish passes
- Canoe slaloms
- Bridge, pier supports and offshore structures
- Flow control devices including sluice/ dock gates, valves Vortex formation and drawdown
- Bulk mixing of fluid layers
- Sedimentation/deposition
- Mobile bed studies for scour intensity and prevention
- Rip-rap positioning, sizing and effectiveness
- Air entrainment
- Vortex-induced vibration
- Loss-coefficients across structures
- Wave action



BHR Group offers an up-front design service to eliminate serious hydraulic performance problems prior to more detailed studies.



Design Verification

Using the appropriate tools and scaling laws, physical and mathematical models can be used to measure and assess a wide range of flow phenomena.

Model tests are of value both for design purposes and as a convenient means of verifying specified performance.

Actuation and control systems assessment

Using our fluid power, sealing technology and system design expertise, BHR provides site surveys and engineering advice for the actuation and control mechanisms for large-scale flow control structures.

Also specialised elastomer materials knowledge and software allows us to assess the condition and potential operating life of sealing components in hydraulic structures.



Contact us for more information or visit our website www.bhrgroup.com

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