CALL FOR PAPERS

HYDRO 2023
NEW IDEAS FOR PROVEN RESOURCES
Edinburgh International Congress Centre (EICC), Edinburgh, Scotland
16 to 18 October 2023

Organized by:
Supporting organizations include:

Regular updates will be posted on our website and published in Hydropower & Dams
Email: Hydra2023@hydropower-dams.com  •  Tel: +44 20 8773 7244
www.hydropower-dams.com/hydro-2023
HYDRO 2023 MISSION

As always, the main aim of bringing together the global hydropower community is to exchange practical experience, learn of new technical developments (of which there are plenty), encourage best practice, and together play a role in advancing hydro development in the parts of the world that need it most.

Besides new schemes, emphasis is also placed on maximizing the value of existing hydro assets, by timely refurbishment, upgrading and improving operational efficiency.

These annual events are probably the most truly international conferences devoted specifically to hydropower, and, normally we welcome at least 1200 delegates from more than 70 countries.

EDINBURGH AS HOST CITY

Edinburgh has been Scotland’s capital since the 15th century and is steeped in history. Its centre is compact and hilly, with many magnificent views and buildings. It comprises a medieval old town and an elegant Georgian new town with gardens and neoclassical buildings. These two contrasting townscapes, which give the city its unique character, are together listed as a UNESCO World Heritage Site.

Towering over the city is Edinburgh Castle, a former fortress and royal residence, at the top of the ‘Royal Mile’. It is home to Scotland’s crown jewels and the Stone of Destiny, once used in the coronation of Scotland’s monarchs. Other sites include the Palace of Holyroodhouse, St. Giles’ Cathedral, Canongate and Greyfriars churches, Arthur’s Seat and Princes Street.

Edinburgh is the seat of the Scottish Government, the Scottish Parliament and the highest courts in Scotland. The city has long been a centre of education, particularly in the fields of science and engineering, medicine, law, literature and philosophy.

There are world class hotels available in all categories, mostly within easy walking distance of the EICC. Rooms will be blocked at favourable prices for delegates, and can be booked at the time of registration.

A city tour on 15 October will mean all participants have an opportunity to see the city’s most famous sites of interest. There will also be a package of tours for accompanying persons, in and around the city, during the conference days.
SCOTLAND’S HYDROPOWER HERITAGE

The role of Scottish hydropower

Scotland produces around 85 per cent of the United Kingdom’s hydropower, with an installed capacity of about 1800 MW at conventional hydro plants and 740 MW at pumped-storage plants. It has 78 large dams and 54 medium/large hydro plants, with more than 300 km of associated tunnels. More than 5000 MW of new pumped-storage capacity is currently being planned.

Scotland is also a world leader in the development and deployment of wave and tidal energy technologies. It hosts: the world’s leading wave and tidal test centre, the European Marine Energy Centre (EMEC) in Orkney; the world’s largest tidal stream array; and, the world’s most powerful tidal stream turbine.

Over the last century, Scottish hydropower played a major part in the country’s energy make up. While today hydro lags behind wind and solar as a source of renewable electricity in the UK, it played a vital role in connecting vast areas of rural Scotland to the grid, some of which had no electricity as late as the 1960s. Soon, new pumped-storage schemes will integrate perfectly with the increasing use of intermittent renewables.

History and milestones

At the end of the 19th century, Scotland’s first known hydro scheme was built on the shores of Loch Ness at the Fort Augustus Benedictine abbey. The scheme provided power to the monks, as well as to 800 village residents.

The huge potential of Scotland’s steep mountains, lochs and reliably heavy rainfall, to generate substantial amounts of hydropower, was first recognized in the 1890s. A reliable source of electricity was needed to help turn raw bauxite into aluminium, and the Foyers hydro plant and smelting works were built in 1896.

But it was more than 20 years before the first major hydro project to supply electricity to the public was designed. In 1926 the Lanark hydro scheme was commissioned on the river Clyde. It is still in operation, with a capacity of 17 MW today. This was followed by plants at Rannoch and Tummel in the Grampian mountains and, in 1935, what became a highly influential cascade scheme in the history of Scottish hydropower, at Galloway.

Scotland’s first major pumped-storage plant was Cruachan, in Argyll, inaugurated by Queen Elizabeth II in 1965; the final unit was commissioned in 1967. This was the largest plant of its type in the world at that time. A major expansion project at the 440 MW plant is planned, which will add a new 600 MW underground plant.

The most recent large hydro plant to be commissioned in Scotland was the 100 MW Glendoe scheme, in the Highlands above Loch Ness; it was commissioned in 2009. More recently, in 2021, RWE commissioned the 2 MW Glen Noe run-of-river small scheme.

Into the future

The next major development will be the implementation of several large pumped-storage plants. In 2021, the Scottish Government granted planning consent for the 450 MW Red John scheme, which will be built close to Inverness. (>200 MW) in Dumfries and Galloway; Eishken (300 MW), using seawater, on the Isle of Lewis; Coire Glas in Lochaber in the Highlands, with a capacity of up to 1500 MW; Ballimeanoch (1500 MW); and, Corrievarkie (600 MW).

Scottish and other UK hydropower and dam engineers have much experience to share, as well as future plans to discuss.

Working in collaboration with hydro plant owners and operators in Scotland, we are planning some short technical visits, as well as post-conference tours. Details will be announced on our website. These will be designed to showcase Scottish experience in large and small hydro, pumped-storage development, and hydraulic research.
FACILITATING FUTURE HYDRO DEVELOPMENT
Potential and development opportunities
Innovative techniques for site identification
Planning tools and project design
Regional projects and cross-border collaboration
Planning and design
Hydrological risk

FINANCIAL, LEGAL AND CONTRACTUAL ASPECTS
Project financing and structuring
Risk allocation and management
Project and country risk management
Concession agreements
Valuing full economic benefits
Attracting private finance
Legal and insurance aspects

ENVIRONMENT
Environment: impact assessment and mitigation measures
Environmental enhancements during upgrades
Innovative solutions for fish protection and transfer
Organizational level ESG management
Management of greenhouse gas emissions
Sedimentation management and removal systems

SOCIAL ASPECTS
Stakeholder consultation and support
Resettlement programmes
Livelihood enhancement

Benefit sharing
Hydro heritage and historic sites
The role of hydro in poverty alleviation

SAFETY AND RISK
Dam and powerplant safety
Managing hazards and risk
Disaster risk management as part of design
Seismicity: lessons from past experiences
Flood and drought management: research and case studies
Challenging site conditions
Warning systems and evacuation planning

HYDRO EQUIPMENT
Hydraulic machinery: R&D
Operational issues and condition monitoring
Modelling and testing
Environmentally friendly technology
Machinery design and safety
Turbine upgrades

CIVIL WORKS
Innovations in civil engineering
Civil engineering: design, construction and upgrading
Materials for dams
Dam safety and monitoring systems
Electronic and physical security of gates and spillways
Gate operation in hot and cold climates
Construction challenges and solutions
HYDRO IN SYNERGY WITH OTHER RENEWABLES
Synergies between renewable energy systems
Floating solar PV on reservoirs
Grid benefits of pumped storage
Latest European pumped-storage projects
Innovations and achievements in pumped-storage technology

ELECTRICAL ENGINEERING
Developments in electrical engineering
Uprating of hydro generators
High voltage interconnections
Cyber security and control system management

SMALL, MINI AND MICRO HYDRO
Small hydropower: potential and technology
Ultra-low head hydro
Innovative concepts
Marine energy: wave and tidal power
Retrofitting existing civil works with SHP
Case studies

THE INTERNATIONAL STEERING COMMITTEE

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Xu Zeping, China
K-T. Yum, Republic of Korea
G. Zenz, Austria
A major technical exhibition will run alongside the HYDRO 2023 Conference (16-18 October), showcasing the latest developments in the hydro and related renewable energy sectors, as well as the activities of professional associations, and the services of specialist consultants, contractors and equipment suppliers.

All lunch and refreshment breaks will take place in the spacious exhibition halls, below the conference rooms. There will be a networking party after the conference sessions on 17 October to provide an additional opportunity for meetings between exhibitors and international delegates. Some additional features to enhance networking opportunities are being arranged, including a HYDRO 2023 app.

Exhibition stands are available in units of 6 m², and custom-built units can be arranged. If you would like to book a place, we recommend that you contact our Sales & Marketing team as soon as possible to reserve your preferred position.

A number of sponsorship opportunities are available, such as conference bags, water coolers, coffee and lunch breaks, WiFi, and various social events. Further details can be obtained from our Sales & Marketing team and are also available on our website.

Meanwhile, for further information or to reserve an exhibition stand, contact:
Mr Chris Richman or Miss Tanita Chondrunaiko • Tel: +44 20 8773 7252/7250 • Email: Sales@hydropower-dams.com

www.hydropower-dams.com/hydro-2023

Exhibition stand pricing:

- 3 x 2 m (6 m²) = £3,300
- 3 x 3 m (9 m²) = £4,950

- Reserved
- Catering points
- Poster display
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Abstracts of up to 500 words, in English, are invited on the themes listed in the centre of this brochure or on related topics. Please email abstracts to the address below by **12 January 2023 at the latest**. A short CV of each author/co-author should be included.

Abstracts should summarize precisely the scope and content of the paper proposed. No artwork is required at this stage. In the case of any project described, please mention its current status or date of completion. Please incorporate the author's name in the file name.

**Please note:** abstracts should only be submitted if the author would be able to attend the conference (or send a representative). Please obtain any necessary clearance and check availability to attend before submitting the abstract. Speakers are eligible for reduced registration fees (about 50 per cent of the full fees).

If the paper is accepted, you will be asked to sign a form confirming willingness to attend; it is essential that we receive this undertaking before allocating time for an oral presentation.

Technical abstracts will generally be reviewed by two or more experts from our International Steering Committee, and authors may be asked to modify some aspects of the proposed paper.

Full papers will be required by **Friday 18 August 2023**, and format guidelines will be sent to all authors whose papers are accepted. Full papers accepted for the conference will be made available to all HYDRO 2023 delegates.

**Key Points:**
- **I am interested in attending the Conference as a delegate.** Please send further details.
- **I attach an abstract for consideration.** If it is accepted, I (or a co-author or a representative) will attend the conference to present the paper (**NB: Speakers will be eligible for reduced registration fees, which will cover attendance of the whole event, including the technical and social programmes and meals during the conference**).
- **My organization may wish to participate in the Exhibition.** Please send further details.
- **I am interested in sponsorship opportunities.** Please send further details.
- **I would like to subscribe to The International Journal on Hydropower & Dams**
  (There will be reduced registration fees for subscribers to the journal).

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