



ROLES OF HYDRO IN THE GLOBAL RECOVERY

International Conference and Exhibition
Palais de la Musique et des Congrès ~ Strasbourg, France

25 to 27 April 2022

(PLEASE NOTE NEW DATES)

Organized by:

THE INTERNATIONAL JOURNAL ON
**HYDROPOWER
& DAMS**

in partnership with:



Supporting organizations include:



9th FORUM MONDIAL
DE L'EAU / DAKAR 2021



For details of the programme, and to register, visit: www.hydropower-dams.com

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HYDRO 2022 MISSION AND SCOPE

FRANCE WELCOMES HYDRO 2022

The French hydropower and dam industry welcomes the world hydro community to Strasbourg. After successful events in Lyon (2009) and Bordeaux (2015), delegates will have the opportunity to visit the Grand Est region, where EDF operates 10 hydro schemes on the Rhine, one of which (Vogelgrun) is a demonstrator project for the EU-funded XFLEX scheme.

The extensive experience of supporting organizations EDF and CNR, both within France and abroad, will be well reflected in the programme, and on the study tours.

France currently (2021) has around 25 732 MW of hydro capacity in operation, and a further 822 MW of hydro at various stages of development. Hydro generation increased to more than 65 TWh in 2020.

The two most important recently completed schemes were the addition of a 240 MW surface powerplant at the 320 MW La Coche pumped-storage scheme in the Isère valley, and the 92 MW Romanche Gavet scheme in the southwest, where six surface plants and five dams have been replaced by one underground powerplant. The country plans to double its renewable energy over the next ten years, with hydro, solar and wind schemes.

Strasbourg, the capital city of the Grand Est region of France, formerly Alsace, is also the formal seat of the European Parliament. On the border of Germany, and also close to Switzerland (and very close to many hydro plants on the Rhine) it is an ideal meeting point for the hydro industry. Its culture and architecture blend both German and French influences.

The newly refurbished Centre de la Musique et des Congrès is a state-of-the-art venue, modern and spacious, and has impressive measures in place for hosting a safe conference during the COVID recovery period. More details can be found on p12 of this brochure.



MISSION AND SCOPE

The focus of the conference will be on the impact of hydropower worldwide, and optimizing its ongoing contribution to progress and development.

The theme 'Roles of hydro in the global recovery' is inspired by policies and plans set out by all the main policy drivers in the power sector, clearly indicating that hydro and pumped storage will have a much greater role to play in the energy transition, especially as the world recovers from the effects of the global pandemic.

A special session will look at challenges which utilities faced with hydro schemes during the pandemic, as well as what was achieved despite the unprecedented problems

As always, much attention will focus on the potential and development needs of the less developed countries, and also on climate resilience, engineering for challenging sites, and the synergy of hydropower with other (intermittent) renewable energy sources.

One presentation will examine lessons learnt about siting hydro schemes in areas prone to natural disasters, in the light of the Chamoli disaster in northern India.

The conference aims to encourage an exchange of experience between experts from nations at various stages of developing their water resources.

The technical sessions on machinery and civil works will encourage best practice in researching, planning, designing, building, operating and refurbishing hydro plants.

This year we are devoting several sessions to hybrid systems, following the success of our virtual conference, SOLAR-HYDRO 2021, in July.

As always, our programme is designed to be practical and topical, forming the bridge between policy-makers and practitioners.



HYDRO 2022 TIMETABLE

Sunday 24 April	Monday 25 April	Tuesday 26 April	Wednesday 27 April
Exhibition set-up Small Hydro Workshop Departure of cultural excursion in Strasbourg with lunch	Opening Plenary Session Welcome to the Conference and Opening Addresses (Aqua~Media, ICOLD, IEA, EDF)	Session 10: Hydro plant maintenance Session 11: Small hydropower - 1 Session 12: Hazards and challenging sites	Session 21: Environment; Fish protection - 1 Session 22: Solar-Hydro including FPV Session 23: Sedimentation management
	<i>Coffee</i>	<i>Coffee</i>	<i>Coffee</i>
	Session 1: Key financing approaches Session 2: Hydro machinery - 1 Session 3: Civil works - Design and construction	Session 13: Hydro plant and penstock safety Session 14: Small hydropower - 2 Session 15: Hydro plant refurbishment	Session 24: Fish protection -2 Session 25: Pumped storage and hybridization Session 26: Experience through the pandemic
	<i>Lunch</i>	<i>Lunch</i>	<i>Lunch</i>
	Session 4: Promoting future hydro in Europe Session 5: Hydro machinery - 2 Session 6: Materials for dams	Session 16: IEA-TCP research programmes Session 17: HYPOSO - Part 1 Session 18: Innovation in data acquisition	Session 27: Spillways and gateworks Session 28: Pumped storage technology Session 29: Tunnels and tunnelling
	<i>Coffee</i>	<i>Coffee</i>	<i>Coffee</i>
Meeting of AMI Hydropower Foundation Trustees	Session 7: Cross-border projects Session 8: Electrical engineering Session 9: Dam safety and monitoring	Session 19: Work of the IEA Hydro Annexes Session 17 contd. : HYPOSO - Part 2 Session 20: Climate and floods	Closing Plenary Session Key outcomes from the sessions Welcome to AFRICA 2022
Meeting of Chairpersons Briefing and Reception for Chairpersons and Speakers	Evening: Welcome Reception Strasbourg Congress Centre (Etoile Suite)	Networking party in the Exhibition areas (Apéritifs and snacks after the sessions)	HYDRO 2022 Closing Dinner Restaurant à l'Ancienne Douane (Old Customs House) in the picturesque centre of Strasbourg



The HYDRO 2022 organizers gratefully acknowledge the support of Europtimist, in the City of Strasbourg, for arranging complimentary tram passes for delegates not staying in the hotels within walking distance of the Congress Centre.

THE INTERNATIONAL STEERING COMMITTEE

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M. De Vivo, France	A. Kumar, India	D. Paschini, France	

PRE-CONFERENCE EVENTS – SUNDAY 24 APRIL



SMALL HYDRO WORKSHOP

Many factors are considered in the design and construction of the optimum hydropower project. All parts of a scheme are interrelated and interdependent. Change one component and all others will be affected.

This workshop, following successful ones held in Vientiane, Montreux, Marrakech, Seville, Danang, Gdansk, Namibia, and Porto, is aimed at people who are, or will be, involved in hydropower development as part of rural electrification programmes. It will cover run-of-river hydro projects in the 'pico' to 'mini' range (1 kW to 1 MW capacity).

As this is a diverse form of energy production, there are always areas which are unfamiliar to people, despite many individual specialisms. This workshop aims to fill in the gaps, and help people to gain a good basic grounding in the topic. The Workshop is led by Prof D. Williams and G. Black, of Learning Hydro, UK.

All relevant aspects will be covered, from rainfall to energy evaluation, including:

- Analysis of scheme location and definition of potential catchments
- Turning rainfall into an available flow range from a catchment and development of a flow duration curve
- Power and energy generated calculation
- Intake structures, channel and/or pipeline routes and sizing
- Powerhouse design and equipment
- Turbine selection
- Generator, controls and switchgear options
- Grids, national and local



This will be a 'hands-on' workshop, which will involve the participants, working in groups, to develop an actual hydropower project during the day. After presentations on the individual scheme aspects, the groups will put together the components of the project. This will follow through to the completed design.

HALF DAY EXCURSION WITH LUNCH

Departing from the Palais des Congrès in the mid-morning (after registration), the excursion will begin with a tour by boat of the most scenic and important areas of Strasbourg.

From the water, participants will discover the half-timbered houses of Petite France, the Imperial district and the European institutions, while learning a little of Strasbourg's history along the way.

Lunch will be served at the popular Brasserie Le Tigre, a brewery and bistro serving local specialities, including Tarte Flambée.

After lunch, participants will be invited to a private organ concert in one of Strasbourg's most architecturally and historically important churches, Saint-Pierre-le-Jeune.



AMI HYDROPOWER FOUNDATION

This is an independent charitable foundation, governed by an international board of trustees, set up in 2007 with the principal aim of facilitating the participation at the annual Hydro Conferences of delegates from the less developed and developing countries, and others with current economic difficulties.

Details of the application process for funding can be found on the dedicated web page, at:

www.hydropower-dams.com

Fully completed applications, with supporting references, must be received by the organizers well in advance of the conference, to allow sufficient time for processing by the trustees.

Successful applicants will normally be granted assistance to cover registration fees, and in some cases accommodation. Travel expenses will generally not be covered, although in exceptional cases, contributions to fares may be granted.

Donations to the Foundation can be made at the time of registration.



A working lunch meeting of Foundation Trustees and those who were assisted by the Foundation to attend one of the previous HYDRO Conferences, discussing how they had benefitted from attendance of the event, and the outcomes and new contacts they would share on their return home.



CONFERENCE SESSIONS

This first version of our detailed programme may be subject to some updates, as a number of papers are being invited for sessions which have been created recently. Travel restrictions may prevent a few speakers from attending. Regular updates will be posted on our website: www.hydropower-dams.com

MONDAY 25 APRIL - Morning

Opening plenary session

A welcome message and programme preview will be presented by Aqua~Media Director, Alison Bartle, and here will be opening messages by officers from ICOLD, IEA and EDF.

Session 1: The good the bad and the ugly – Three key financing approaches for hydropower

Chair: Dr Judith Plummer Braeckman, University of Cambridge, UK

- After some introductory talks, the session will consist of a panel discussion considering the three main trends in financing for large hydropower, and assessing the relative merits of each for low-income countries looking to develop their infrastructure. The session will begin with a summary of three projects in Uganda, each with a different financing structure, and panellists will compare and contrast this with experience from elsewhere in the world.
- (Panellists will be announced shortly)

Session 2: Hydro machinery - 1

Chair: Daniel Paschini, EDF, Peru/France

- Pitfalls of specifying hydro-mechanical equipment - *J.H. Gummer, Hydro-Consult Pty Ltd, Australia*
- Reducing costs, risks and outage time through underwater robotized turbine runner inspection - *O. Teller, GE Renewable Energy, France; D.A. Habel, GE Renewable Energy, Canada; C. Theurer, GE Global Research Centre, USA*
- Particularities of optimization design of the runner blade system for Mainskaya HPP - *A. Semenova, M. Romanova, A. Babachenko, A. Zakharov and E. Orlov, Power Machines JSC/LMZ, Russia*
- The Iso-Power method (or Index test without flow measurement) for optimization of the Kaplan's cam curves - *J. Cavalier, EDF DTG, France*
- On the benefits of air admission systems for the flexible operation of Francis runners - *F. von Locquenghien, P. Faigle and T. Strauss, Voith Hydro Holding GmbH & Co KG, Germany*

Session 3: Civil works – Design and construction

Chair: Michael Rogers, President, ICOLD; and Stantec, USA

- Janneh dam: Challenging construction of the cofferdam with an arch bulkhead - *C. Savary, A. Yziquel and G. Mathieu, Artelia Eau & Environment, France; Z. Zahour, Ministry of Energy and Water, Lebanon*
- Design and performance of the underground hydraulic circuit at Laúca in Angola - *S.B. Katereniuk and J.F. Pinheiro Machado, Intertechne Consultores, Brazil; P.C. Thá, Fugro, Brazil*
- La Romaine, Canada: Construction aspects of the most important hydroelectric project under way in north America - *V. Alicescu, Hydro-Québec, Canada*
- Optimum design of waterways made easy - *T.S. Leifsson, Verkis, Iceland*
- Comprehensive construction technology for mass concrete in high altitude regions during low temperature season - *Qian Xiang, Bangxu He, Xingchao Zhou, Sinohydro Bureau 9 Co Ltd., China*
- New lower Fiskumfoss hydropower project: Next generation BIM and the way ahead - *A. Gasslbauer and H. Bergsodde, Norconsult, Norway*

MONDAY 25 APRIL - Afternoon

Session 4: How to promote future hydro development in Europe with a sustainable impact

Co-Chairs: J-J. Fry, Consultant, France; M. Morris, Samui France Sarl, France

Since November 2018, HYDROPOWER EUROPE, supported by a project that has received funding from the European Union's Horizon 2020 research and innovation programme, has been preparing a Research and Innovation Agenda (RIA) and a Strategic Industry Roadmap

(SIR) for the hydropower sector, which are now available in their final versions. The challenge is to have a permanent voice through a forum gathering all hydropower stakeholders, so that the EU can use the recommendations which HYDROPOWER EUROPE has outlined in the RIA and SIR in making decisions regarding the clean energy transition. The purpose of this special session is to discuss in a roundtable how the future development of hydropower in Europe can be promoted in a sustainable way. Ideas on how a sustainable and common voice for the hydropower industry at the EU level and how research initiatives with high industrial interest within the European context could be coordinated and supported will be discussed. The roundtable discussion will begin with the following introductory talks:

- Suggested research themes and strategic actions to promote hydropower as a catalyst for the energy transition in Europe - *Prof. A. Schleiss, Emeritus Professor, EPFL-LCH, Switzerland*
- Role of hydro in the energy transition - *M. François, MFX Consulting, France*
- How a sustainable and common voice can promote hydropower development in Europe through collaborative research and strategic actions - *M. Morris, Samui France Sarl, France*

Session 5: Hydro Machinery – 2

Chair: Dr Cecile Munch-Alligné, HEVS, Switzerland

- Insights into field measurements of a mega Kaplan and correlation with model test and CFD - *R. Peyreder, Andritz Hydro GmbH, Austria; E. Hütter, Andritz AG, Austria; M. Melot, Andritz Hydro Inc., Canada*
- Multidimensional vibro-acoustical diagnosis of cavitation: A case of a Kaplan turbine (Prototype and models) - *B. Bajic, Korto Cavitation Services, Luxembourg; S. Weissebverger, Andritz Hydro GmbH, Austria; M. Keller, Andritz Hydro AG, Switzerland*
- Sluice mode operation of CNR's low head bulb turbines: Current status and numerical modelling - *T. Foggia and B. Havard, CNR, France*
- Reducing the runner blades movement in Kaplan and bulb turbines through advanced governor functions - *H.A. Menarin and T. Nunes, Reivax, Brazil; J.C. Mazzoleni, Reivax Switzerland AG, Switzerland; L. Watanabe and M.S. Oliveira, CTG, Brazil*
- Investigation of mismatched runner blades influence on the Kaplan hydro turbine model characteristics - *E. Kashka, A. Kaznacheev, Y. Kuznetsov and R. Akulaev, Power Machines JSC/LMZ, Russia*
- Determination of the optimal combination dependence of Kaplan turbines at Djerdap I hydroelectric power station - *Y. Kuznetsov, R. Akulaev, M. Romanova and I. Kuznetsov, Power Machines JSC/LMZ, Russia*

Session 6: Materials for dams

Chair: Dr Malcolm Dunstan, MD&A, UK

- World overview of RCC dam construction - *M. Dunstan, MD&A, UK*
- Key technology of RCC dam construction in Tibetan high-altitude and cold areas - *Qian Xiang, Chaojian Liu and Tao Xiong, Sinohydro Bureau 9 Co Ltd, China*
- Technique research on concrete aggregate and sandstone processing system for large-scale hydropower station with complex material sources - *Bing Deng, Tao Xiong and Dan Luo, Sinohydro Bureau 9 Co Ltd, China*
- Cemented soil dam: Engineering and design advances - *C. Alléon, ISL, France; P. Cochet, PC Consultant; P. Agrestj, Artelia, France*
- Maintenance of embankment dams with bituminous upstream facing: Materials and design choices - *M.V. Vignoli and E. Tito, Cooperativa Edile Appennino, Italy*
- Geomembranes in new pumped-storage schemes: Two ongoing innovative projects - *G. Vaschetti, A. Scuero and F. Tronel, Carpi Tech, Switzerland*

Session 7: Cross-border hydropower projects

Chair: J-M. Devernay, Consultant, France

- Countries must continue to collaborate in the development of their hydropower potential at the regional scale, so as to maximize water, energy and climate services. Opportunities exist for the export of clean and cheap electricity generated by hydropower in countries, where a high untapped potential exist to energy-hungry neighbouring countries to foster the development of more climate resilient and more efficient regional electricity systems. Following the highly successful discussions on this issue at the past Hydropower Conferences, once again introductory talks are being arranged which will be followed by a panel discussion.

CONFERENCE SESSIONS

Session 8: Electrical engineering

Chair: Dr Ralf Bucher, Tractebel Engie, Germany

- A virtual powerplant with hydro and battery plants to supply ancillary services - A. Koehl and B. Veilly, EDF Hydro, France
- The Rapperswil-Auenstein generator replacement project: Challenges encountered and overcome during the installation phase of a rehabilitation project in Switzerland - A. Schürmann and K. Adler, Afry Switzerland Ltd., Switzerland; A. Weber, SBB Ltd, Switzerland
- Root cause analysis for vibrations on a 110 MW hydro unit based on vibration and air gap sensors data - O. Oreskovic and O. Husnjak, Veski Ltd, Croatia; D. Bojic, HEP, Croatia; J. Letal, Iris Power-Qualitrol, Canada; N. Dehlinger, ABB Hydro Services, USA
- The role of hydro for grid balancing: A case study on the 9pm 9min event in India - J. Pani and S.K. Mishra, NHPC Ltd, India

Session 9: Dam safety and monitoring

Chair: Michel Lino, ISL, France

- Development of a software as a service platform for dam monitoring - R. Stucchi, R. Crapp and I. Fern, Lombardi Engineering Ltd, Switzerland
- Multipurpose real-time monitoring system for embankment dams - A. Ran, Sensoil Innovations Ltd, Israel; O. Dahan, University of the Negev, Israel
- Continuous dynamic monitoring of large arch dams and vibration-based damage detection - A. Alegre, LNEC/IST, Portugal; S. Oliveria, LNEC, Portugal; E. Carvalho and B. Matsinhe, HCB, Mozambique; P. Mendes, ISEL, Portugal; J. Proença, CERIS - IST, Portugal
- Digitalizing dam monitoring: Optimising operations and maintenance using geospatial AI - C. Braithwaite, Rezatec, UK

TUESDAY 26 APRIL - Morning

Session 10: Hydro plant maintenance and asset management

Chair: Laurent Mouvet, Hydro Operation International, Switzerland

- Digital maintenance management software for hydropower generating stations - E. Ngue, EN Solutions Inc., Canada
- Economic value added (EVA) with supportability in maintenance - J.F. Bok, IMHP, Switzerland; G. Capetillo, IMHP, Spain and Mexico
- Advancements in hydraulic actuation solutions address maintenance, safety and environmental concerns - P. Claessens, Danfoss Power Solutions II B.V., The Netherlands; K.R. DuPont, Danfoss power Solutions II, LLC., USA

Session 11: Small hydro technology - 1

Chair: Pierre Duflon, Andritz Hydro, France

- Lessons learnt from small Pelton projects, from cavitation to bearing destruction - L. Smati, A. Choulot and V. Denis, Mhylab, Switzerland
- Low and very low head SHPP: Where is the efficiency hiding? Overview on several case studies - D. Cazzago and L. Papetti, Frosio Next S.r.l., Italy
- The Vallabrègues small hydro powerplant: Design concept and feedback from CNR experience - N. Rivière, E. Maginot and P. Castel, Compagnie Nationale du Rhône, France
- Optimisation potential of cross-flow-turbines through numerical calculations: Validation through experimental verification - C. Bodner and H. Jaberg, Prof. Dr. Jaberg und Partner GmbH, Austria; H. Benigni, Graz University, Austria
- Scaling effects on Archimedes screw generators - S. Simmons and W.D. Lubitz, University of Guelph, Canada; G. Dellinger, l'Ecole Nationale du Génie de l'Eau et de l'Environnement de Strasbourg, France
- Double regulated mixed flow turbine for small hydro applications: Design and operational experience - J. Schiffer and H. Jaberg, Prof. Jaberg & Partner GmbH, Austria; G. Pretis, EFG Energieforschungs- und Entwicklungs Ges.m.b.H. & Co. KG, Austria; H. Benigni, Graz University, Austria

Session 12: Hazards and challenging sites

Chair: Prof John Reynolds, Reynolds International Ltd, UK

- Integrated geohazard assessments to increase resilience of hydropower schemes to natural disasters incorporating lessons learned from the February 2021 Chamoli disaster, N. India - J. Reynolds, Reynolds International Ltd., UK
- Modelling of GLOF and its impact on hydropower projects: Case study of Nepal - P. Thapa, S. Palt and P. Schäfer, Fichtner GmbH & Co KG, Germany
- Seismic risk analysis of existing hydropower dams in Ethiopia - A. Aman, Ministry of Water, Irrigation and Energy, Ethiopia; M. Wieland, Consultant, Switzerland
- Jet grouting check dams to control the regressive erosion of the Coca river - P. Espinoza and E. Heredia, CELEC EP, Ecuador; F. Micheli, Lombardi-Andina SA, Ecuador; A. Vanni, Lombardi Engineering Ltd, Switzerland

Session 13: Hydro plant and penstock safety

Chair: Øle Westberg, Sivilingeniør Ole A. Westberg AS, Norway

- FMEA for hydropower: Lessons learned and future advancements - B. Baratti, D. Cazzago and L. Papetti, Frosio Next S.r.l., Italy
- Operational problems in hydro power stations - J. Pani and S.K. Mishra, NHPC Ltd, India
- Steel lining assessment of Coo-Trois-Ponts PSP - L. Boulat, Tractebel Engineering SA, France
- (Two additional presentations to be announced)

Session 14 – Small hydro technology- 2

Chair: Vincent Denis, Mhylab, Switzerland

- Development of a new lift-based turbine for in-pipe applications - N. Maguin, N. Dellinger, J. Vazquez, Researcher, ICube Laboratory, France; L. Duarte, INSA National Institute of Applied Science, France; G. Dellinger, ENGEEES National School for Water and Environmental Engineering, France; L. Heme-de-Lacotte and N. Tcherniguin, Technip Energies, France
- Feasibility analysis of small-scale hydrokinetic systems through operational and maintenance monitoring of full-scale pilot installations in South Africa - C.M. Niebuhr and M. van Dijk, University of Pretoria, South Africa
- On-shore wave energy and coastal protection: perspectives in relation to rising sea level - A. de Bonviller, M. Jellouli and M. Bernicot, ISL Ingénierie, France; G.H. Hounguè, M. Houekpohèha and B.B. Kounouhewa, Abomey-Calavi University, Benin
- Using pneumatic technology for the automation and control of small hydropower plants: A cost reduction and environmentally friendly approach - V. Vigolo, G.P. Conterato, T.A.B. Spada and V. J. De Negri, Federal University of Santa Caterina, Brazil; L.A. Weiss, Reivax, Brazil; L.L. Leoncini, P. Gayer de Araújo and M.A. Zanutto, China Three Gorges, Brazil
- Determination of run-of-river SHP potential sites in Owan watershed Nigeria using RS & GIS techniques - O.A. Fasipe, Energy Commission of Nigeria; O.C. Izinyon, University of Benin, Nigeria

Session 15: Hydro plant refurbishment

Chair: Helmut Obermoser, AFRY, Switzerland

- Upgrading of hydropower plants for EU-green deal: Efficiency upgrade projects for more generation and flexibility - J. Mayrhuber, D. Giefing, R. Doeltelmayer and C. Ladreiter, Verbund Hydro Power, Austria
- Rehabilitation and upgrade of 5 MW Wovwe hydropower plant in Northern Malawi - I. Vuckovic and A. Wetzel, Fichtner GmbH & Co. KG, Germany; A. Kandoje, Electricity Generation Company Ltd. Malawi
- Shardara rehabilitation project, Kazakhstan - Upgrade and replacement of Kaplan turbine-generator Units: Challenges and lessons learned - H. von Büren. S. Komaei and Y. Omelich, Fichtner GmbH & Co. KG, Germany
- Ozalj 1, a cultural heritage monument: Reconstruction and upgrading and with continuous powerplant operation - T. Miletić and M. Sabljak, HEP – Proizvodnja, Croatia; B. Križanić, Ministry of Culture, Croatia; L. Štrbac, Projektni biro Split, Croatia
- Francis turbine refurbishment at HPP Schwarzach: CFD calculations and operational experience - H. Benigni and P. Meusburger, Graz University, Austria; J. Schiffer, Jaberg & Partner GmbH, Austria; G. Penninger, Verbund Hydro Power GmbH, Austria; H. Jaberg, Graz University and Jaberg & Partner GmbH, Austria

CONFERENCE SESSIONS

TUESDAY 26 APRIL - Afternoon

Session 16: International research programmes of the IEA Hydropower TCP

Chair: Dr Klaus Jorde, Secretary, International Energy Agency-TCP

- IEA's Renewable Energy Market Report with a special focus on hydropower - Y. Abdelilah and P. Frankl - International Energy Agency, Paris Headquarters, France
- The USA/DoE Research Program on Hydropower - S. Bockenbauer, Department of Energy, USA
- The Norwegian HydroCen Research Program on Hydropower - A. Harby and O. Gunnar Dahlhaug, SINTEF Energy Research, Norway
- IEA Hydropower TCP: Research Programme - K. Jorde, Secretary, IEA Hydro TCP, Austria

Session 17: HYPOSO – Supporting hydro in Africa and Latin America

Co-Chairs: Prof Bernhard Pelikan, University of Natural Resources and Life Sciences, Austria; and, Ewa Malicka, President, Polish Association for Small Hydropower Development (TRMEW), Poland

This session will discuss opportunities for the European industry to support chances for small hydro development in Africa and Latin America. The findings of the EU-supported research project HYPOSO (Hydropower Solutions) will be presented with particular emphasis on the HYPOSO Platform and the promotion opportunities it provides for the European small hydropower industry and stakeholders from five target countries: Uganda, Cameroon, Colombia, Ecuador and Bolivia.

Part One

- Hydropower solutions for developing and emerging countries: Updates from the HYPOSO project - I. Ball and D. Rutz, WIP Renewable Energies, Germany
- Small hydropower situation and needs in Uganda: Potential and development opportunities - D. Malone Nabutsabi, Hydropower Association of Uganda Ltd (HPAU), Uganda
- Framework conditions of SHP development in Cameroon - J. Kenfack, Solarhydropower (SHW) Cameroon
- Framework conditions of SHP development in Colombia - C. Velasquez, CELAPEH, Colombia
- Framework conditions of SHP development in Ecuador - V. Minaya Maldonado, Escuela Politécnica Nacional (EPN), Ecuador
- Framework conditions of SHP development in Bolivia - F. Ledezma, Universidad Mayor de San Simón, Bolivia

Part Two

- Hydropower potential sites determination and benefits of small hydropower systems using irrigation infrastructure applied to national electrification within HYPOSO project - F. Ledezma, Universidad Mayor de San Simón, Bolivia
- The HYPOSO map: Identification of potential small hydropower sites in Africa and Latin America - P. Punys, Vytautas Magnus University, Lithuania
- Pilot projects: Justification for selection, challenges and next steps - B. Baratti, Frosio Next S.r.l. Italy
- Knowledge and capacity development in the hydropower sector - M. Marence, IHE Delft, The Netherlands
- Showcasing and promoting the European small hydropower industry - T. Jawaid, European Renewable Energies Federation (EREF)

Session 18: Innovation in data acquisition

Chair: Declan Kelleher, Stucky Consulting Engineers, Switzerland

- This new session will focus on innovative remote systems for gaining reliable data, for planning, designing and monitoring. This will coincide with the commercial launch of the HyPOS (Hydro Power Suite) EU Horizon 2020-funded research project, aimed at water resources and sedimentation management. Topics will include: Earth observations the use of Drones/UAVs; geospatial tools; remote sensing; and remote supervision.
- (Presenters to be announced)

Session 19: Work of the IEA-TCP Annexes

Chair: A. Harby, SINTEF Energy Research, Norway

- Three presentations on Annex XVI: Hidden and Untapped Hydro Opportunities - Speakers to be confirmed (from the USA and Switzerland)
- Two presentations on Annex IX/XII: Valuing Hydropower Services and Hydropower and the Environment - (Speakers to be confirmed, from Austria, Norway and Brazil)
- One presentation on Annex XIII: Hydropower and Fish - M. Szabo-Meszaros, SINTEF Energy Research, Norway

Session 20: Climate and floods

Chair: Denis Aelbrecht, EDF, France

- Challenges of extreme floods - L. Deroo, ISL, France; F. Lempérière, Hydrocoop, France
- Hydrological study revision for upgrading Adhaim dam's spillway with a fusegate for climate change mitigation - M.A. Nayf Younis, Center of Water Resources Studies for the Northern Region, Iraq
- Impacts and adaption in future climate for hydropower in Iceland - A. Gunnarsson, H. Jóhannesson, Ó.G.B. Sveinsson and G. Þórarinnsson, Landsvirkjun, Iceland
- (Two additional presentations to be announced)

WEDNESDAY 27 APRIL - Morning

Session 21: Environment and (including Fish protection part 1)

Chair: Prof Markus Aufleger, University of Innsbruck, Austria

- Monitoring eelgrass (marine plants) in La Romaine estuary, Québec, Canada - A. Tremblay and J-P. Gilbert, Hydro-Québec, Canada; C. Lalumière, Englobe, Canada
- Environmental and social strategies in a time of recovery and changing expectations - S. Sparkes, Statkraft A.S., Norway
- The case for methane capture at hydropower dams - N. Rueda-Vallejo and L.B. Bentata, Blumethane Limited, UK
- Simplifying matters for hydropower operators: Advancements in fisheries data and Elver passage - M. Messina and S. Dearden, Whoosh Innovations, USA
- Fish deterrent associated with hydraulic flow rate increase in bulb turbines - T. M. da Silva, W.S. Figueiredo and L.F. Zara, University of Brasília (UnB), Brazil; L. L. de Oliveira Silva, J.O. Melo Junior, F. de Souza Lima Ribeiro and M.K.T. Obara, Energia Sustentável do Brasil – "Jirau Energia", Brazil

Session 22: Solar-hydro, including floating PV

Chair: Luc Deroo, ISL, France

In the light of the success of our recent SOLAR-HYDRO 2021 virtual conference held in July, which brought together solar PV experts with hydro and dam engineers, to discuss practical aspects of floating solar PV on hydro/dam reservoirs, we decided recently to introduce this topic to HYDRO 2021.

- Floating PV in dynamic environmental conditions - N. Baderiya, SolarinBlue, France; L. Das Neves and Z. Samadov, IMDC, Belgium; D. Villaverde Vega, Sener Ing, y Sistemas SA, Spain; R. Bucher, Tractebel Engineering GmbH, Germany
- Defining the optimum solar/hydro combination - M. Bernicot, L. Deroo and B. Peltié, ISL Ingénierie, France
- Small hydropower: Modelisation of adapted small hydro power plant in Burkina Faso - A. Nombre and M. Kaboré, IFEC, Burkina Faso; N.S. Yaoliré, Ministry of Water and Sanitation, Burkina Faso
- (Additional papers to be announced for this new session)

Session 23: Sedimentation management

Chair: Prof Anton Schleiss, Consultant, Switzerland

- Advancing large scale hydrological and sediment modelling for hydropower industry operations - A. Bartosova, C. Brendel, C. Canedo, I. Pechlivanidis, D.Gustafsson, J. Musuuza, M. Elenius, B. Arheimer, R. Capell and J. Strömquist, SMHI, Sweden; N. Rütther and K. Schwarzwälder, NTNU, Norway; M. Launay, Stucky, Switzerland; S. Haun, Stuttgart University, Germany

CONFERENCE SESSIONS

- **Storage and risk value analysis of reservoirs exposed to high sediment load** - H. Nøvik, Sweco Norge AS, Norway; S. Stokseth, Statkraft AS, Norway; B. Glover, Multiconsult AS, Norway; N. Ruther, NTNU, Norway; E. Solvang, Sintef, Norway
- **Enhanced design of desanding facilities at hydropower schemes** - R. Boes and D.F. Vetsch VAW, ETH, Switzerland; C. Paschmann, Spiekermann Ingenieure GmbH, Germany
- **Sediment-adapted multi-method approach to obtain sediment characteristics and siltation rates** - S. Hilgert, K. Sotiri, and S. Fuchs, Karlsruhe Institute of Technology, Germany
- **Integrated dredging sediment solution with positive environmental impact** - R. Gaillard and F. Gauch, Watertracks, France; S. Caffo, EDF Hydro CIH, France
- **Web-based sediment analysis using satellite, modelling and in situ data and its application in European hydropower projects** - K. Schenk, T. Heege and E. Haas, EOMAP, Germany; A. Bartosova, SMHI, Sweden; M. Launay, Sediment Expert, France; M.L. Ribeiro, Stucky, Switzerland; C. Giardino, M. Bresciani, E. Matta and M. Amadori, CNR-IREA, Italy; N. Røther and K. Schwarzwälder, NTNU, Norway
- **Evaluation of sediments from the river Drava and their potential for further use in the building sector** - V. Ducman, K. Traven, K.F. Bizjak and B. Likar, Slovenian National Building and Civil Engineering Institute, Slovenia; A. Robba, M. Kolar and J. Imperl, University of Ljubljana, Slovenia; M. Božič and B. Gregor, Hydropower Plant Dravske Maribor d.o.o., Slovenia
- **Case studies in sediment management monitoring for Alpine hydropower schemes** - S. Carvalho and P. Mivelaz, Hydro Exploitation SA, Switzerland

Session 24: Developments in fish protection

Chair: Toby Coe, Fishtek Consulting UK

- **A hydraulic Fishheart fishway: Innovative solutions for fish protection and passage** - M. Sohlberg and M. Breitenstein, Fishheart Ltd, Finland
- **Fishcon-lock: An innovative fish pass with promising results** - B. Mayrhofer, Fishcon GmbH, Austria
- **Research on rapid construction technology for long fishway in over-high dam in alpine canyon** - Chaojian Liu, Chaogui Luo and Xiaojin Zhe, Sinohydro Bureau 9 Co Ltd, China
- **Implementation of the FishProtector at a pilot plant: Functional checks** - J. Haug, R. Tutzer and M. Aufleger, University of Innsbruck, Austria; B. Brinkmeier, HyFish GmbH, Austria
- **Fish ladder design in terms of a large difference in water level** - M. Mazurkiewicz, I. Suslo, M. Pilecki and M. Gajewska, Hydroinvest Ltd, Poland; W. Wiśniewolski, (Retired) The Stanislaw Sakowicz Inland Fisheries Institute, Poland

Session 25: Pumped-storage and hybridization

Chair: J-L, Drommi, EDF-DPIH, France

- **Solar-hybrids and HVDC interconnectors as key drivers for Africa's renewable energy infrastructure** - R. Bucher, Tractebel Engineering GmbH, Germany
- **A hydro-solar simulation tool for pumped-storage power plants** - M. Jellouli, N. Pepin and M. Bernicot, ISL Ingénierie, France; A. de Bonviller, Consultant, France
- **Licensing of offshore wind in the North Sea brings new initiatives to pumped storage projects** - L. Lia and L. Pitorac, NTNU, Norway; K. Vereide, Sira-Kvina kraftselskap, Norway
- **An economic model for revenues of hybridized pumped-storage plants** - Q. Boucher, R. Guillaume, J-P. Payre and G. Amodeo, Supergrid Institute, France
- **Pumped-storage hydropower to balance large scale wind and solar power: The Faroe Islands on the way to a fully renewable power production in 2030** - F. Ludescher-Huber and A. Reynaud, Norconsult, Norway; D. Reinert Hansen and T. Nielsen, Elfelagið SEV, Norway
- **Hybridization of pumped-storage plants: From concept to implementation** - R. Guillaume, H. Mesnage and F. Errigo, Supergrid Institute, France

Session 26: Experience through the global pandemic: challenges and achievements

Chair: H. Irfan Aker, Dolsar Engineering, Turkey

- **Hydropower asset management in the time of pandemic** - J. Mayrhofer, Verbund Hydro Power, Austria
- (Other papers are now being invited for this newly planned session)

WEDNESDAY 27 April - Afternoon

Session 27: Spillways and gates

Chair: Prof Leif Lia, NTNU, Norway

- **Technical innovations and economical optimization in spillway physical model studies** - S. Roux, CNR, France
- **Plunge pool scour and bank erosion: Assessment of protection measures for Ilarion dam by physical and numerical modelling** - R. van Mol, C. Mörtl, A. Amini, A. Schleiss and G. De Cesare, EPFL, Switzerland; S. Siachou, PPC, SA, Greece
- **Application of CFD modelling in the optimization of flood releasing facilities of Lower Namakhvani dam** - I. Stojnić, C. Thévenaz, P. Remesal and M.L. Ribeiro, Stucky Ltd, Switzerland
- **Applied research of underwater inspection robot in spillway area in hydropower stations** - Xie Huaidong, Cai Wei and Zhong Heng, China Yangtze Power Co., Ltd., China
- **Innovative live 'Digital Twin' for hydraulic structures** - L. Grau and C. Condemine, Morphosense, France; Y. Masson, CNR-DGAC, France
- **A new intake gate at the Chivor life extension project** - M. Pujol, Lombardi Engineering Ltd, Switzerland; B. Tapia, Lombardi Engineering Ltd, Ecuador; D. Del Rio, The AES Corporation, Colombia
- **Fuse steel plates could be cost effective for most spillways** - F. Lempérière and J.P. Vigny, Hydro Co-op, France; A. Ouamane, Biskra University, Algeria; M. Ho Ta Khanh, Expert, Vietnam

Session 28: Pumped-storage technology

Chair: Prof Bogdan Popa, University Politehnica of Bucharest, Romania

- **New business model that makes pumped hydro widely feasible** - P. Siitam, Energiasalv Pakri, Estonia
- **More than 1500 m head with a single-stage storage pump: Model test on pressure pulsations and compensation methods** - H. Benigni, S. Leithner, H. Jaberg and P. Meusburger, Graz University, Austria; C. Bodner, Jaberg & Partner GmbH, Austria; A. Prackweiser, C. Kirilowitsch, D Giefing and G. Penninger, Verbund Hydro Power GmbH, Austria
- **Very fast response of variable speed machines: How to manage the operating limits of the turbine?** - S. Nichele, R. Guillaume, H. Mesnage and M.A. Benchaib, Supergrid Institute, France
- **Ranking of pumped hydro potential plants based on multi-criteria analysis to provide sustainable flexibility to the system** - J. Alterach, A. Danelli, G. Stella, A. Gatti and R. Calisti, RSE - Ricerca sul Sistema Energetico, Italy
- **Project Malta: First direct MMC converter for variable speed pumped hydro storage** - C. Haederli and T. Thurnherr-Schlumpf, Hitachi ABB Power Grids, Switzerland; C. Ladreiter-Knauss, Verbund AG, Austria

Session 29: Tunnels and tunnelling

Chair: Dean Brox, Consultant, Canada

- **Hydropower tunnel inspections: Recommendations for industry practice** - D. Brox, Dean Brox Consulting, Canada
- **Increased dam safety by combined mechanized tunnelling and drilling campaigns** - W. Dolsak, DSI Underground Austria GmbH, Austria; M. Lübbers, Herrenknecht AG, Germany
- **State-of-the-art hybrid injection methodology for stopping water inflow in tunnels** - A. Heizmann, Renesco GmbH, Germany; G. Lilliu, Renesco Holding AG, Switzerland
- **Inspection of the headrace tunnel of Villarino powerplant with unmanned aerial and manned terrestrial vehicles** - A. Vaquero Mateos and C. Mayoral Ranedo, Iberdrola, Spain; F. Espada, Moreno, Hovering Solution, Spain

Closing session

- Key outcomes from the sessions
- Welcome to AFRICA 2022 in Uganda
- Close of the HYDRO 2022

ACCOMPANYING PERSONS' PROGRAMME

A package of three cultural and touristic visits have been arranged for accompanying persons during the three days of the conference. Tours will not depart before 09:00 hrs and will return in good time for some relaxation and free time before the evening programme

The group will travel by luxury coach, with a knowledgeable guide. Accompanying persons are also invited to all evening events.

Monday 25 April

European Parliament, Lunch at Bouclier d'Or Hotel and the Alsatian Museum

Strasbourg is home to the world's largest transnational parliament. The group will visit the European Parliament, located within the European Quarter of Strasbourg, a short distance from the Palais des Congrès. The building's plenary chamber has served as the backdrop to many important parliamentary debates and votes, and participants will be able to take a tour of the building's tall, hollow oval structure and hear about the role of the European Parliament, and the process behind making law for the whole of Europe.

Lunch will be at the elegant Bouclier d'Or hotel, a tastefully renovated Bourgeois-style mansion in the

heart of the UNESCO World Heritage-listed historical centre of Strasbourg. After lunch, participants will have a tour of the Alsatian Museum. Housed in three former houses, the museum displays a fascinating range of artefacts which tell the story of the region's history and identity.

Tuesday 26 April

Mount Sainte-Odile, Spindler Marquetry and Geispolsheim Chocolate Museum

The group will start the day by travelling to Mount Sainte-Odile, a convent dedicated to St Odile, the patron saint of Alsace. At an elevation of 753 m on pink sandstone cliffs, the site provides a stunning panoramic view of the Plain of Alsace. The group will then visit Maison Spindler. Charles Spindler, a painter, marquetry inlayer, writer and photographer, was also a supporter of Alsatian regionalism. He founded several institutions for the promotion of Alsatian culture. A guided tour of the museum and workshop will give participants an insight into the heritage of the family, and the technique of marquetry.

The group will then explore Obernai, a fortified medieval town in the heart of the Bhas-Rhin region.

There will be an opportunity to enjoy Obernai's narrow lanes and half-timbered houses, and to see the Kappelturn tower in the attractive market square. Then the group will go on to the Geispolsheim for a tour and to sample some regional chocolate treats.

Wednesday 27 April

Haut-Koenigsbourg Castle and wine tour and tasting

The final excursion will start with a visit to the medieval Haut-Koenigsbourg Castle, located in the Vosges mountains, with a spectacular view of the Upper Rhine Plain. The castle has a rich history and the group will have an exclusive guided tour of the most important rooms, and also access to the grounds which offer views across the Alsace region.

The group will then journey further into the heart of the wine region, to enjoy an afternoon of lunch and wine tasting. There will be a tour of the wine route, with a stop at a popular vineyard for a leisurely lunch, and a visit to the historic wine cellar to learn about the wine-making process. There will be a chance to sample some of the most popular wines.



CULTURAL AND SOCIAL PROGRAMME

As always, the conference will offer a full social programme to enable delegates and accompanying persons to reunite with international friends and colleagues, and to make new contacts, in a relaxing atmosphere. This will be a chance to enjoy some Alsatian and European cuisine, as well as some musical and cultural entertainment.

Special measures will be taken regarding distancing and food service, to ensure the highest standards of health safety!

Sunday 24 April

Pre-Conference dinner for Chairpersons and Speakers at 20.00 hrs

After meetings and briefings about arrangements for the conference, those chairing or co-chairing sessions, and speakers presenting accepted papers, will be welcomed to a reception with dinner. The event is an opportunity for all session participants to get together ahead of the sessions.

Monday 25 April

HYDRO 2021 Welcome Reception at 19.30 hrs

This opening reception for all participants will take place in the Etoile Suite at the Palais des Congrès, a large space appropriate for socializing while also social distancing. A light dinner, featuring local specialities, will be served, and the evening will be an opportunity to catch up with friends and make new contacts.

Tuesday 26 April

HYDRO 2022 Networking Party in the Exhibition Halls at 17.30 hrs

Refreshments and snacks will be served in the exhibition halls, which will remain open for two hours after the sessions, on the second day of the conference. This a great way for delegates to meet exhibitors they may have missed during the coffee breaks and lunches, for extended discussions. Exhibitors are invited to prepare special demonstrations

of equipment, or to welcome key groups of delegates to their stand for drinks.

Wednesday 27 April

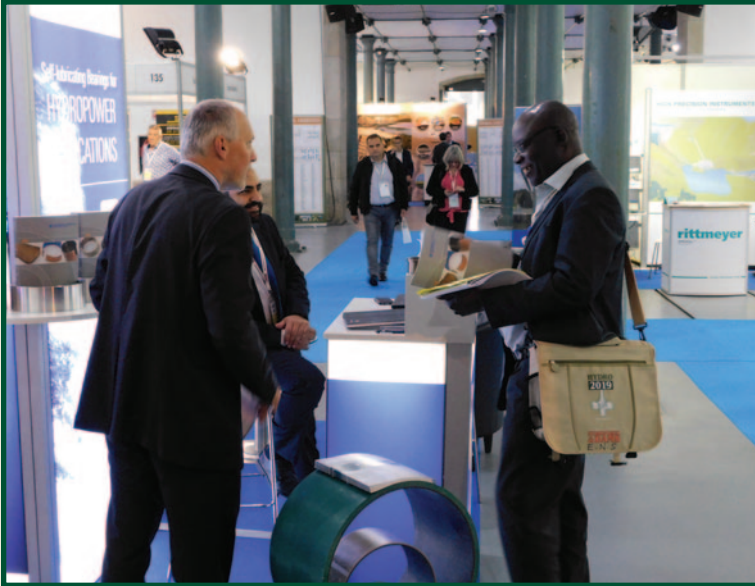
Farewell Dinner at 19.30 hrs

The Farewell Dinner will take place at Restaurant à l'Ancienne Douane (old customs house) in the picturesque historic centre of Strasbourg beside a canal. We aim for this to provide a memorable end for a long-awaited HYDRO 2022 in Strasbourg.



HYDRO 2022 EXHIBITION AND SPONSORSHIP

A major element of HYDRO 2022 will be the Technical Exhibition, running for three days alongside the conference (25 to 27 April). The exhibition areas will be the main hubs for business networking between delegates and industry representatives who will be exhibiting their supplies and services. Exhibitors typically comprise consultants, contractors, manufacturers, developers and professional associations.



All lunches and refreshments will be served in the exhibition, with catering points arranged to allow delegates to move around the whole area regularly during the three days. Feedback from previous events indicates that delegates maximize the opportunities to circulate in the exhibition, and that valuable contacts are made, which are maintained after the event. All parts of the conference and exhibition are open to all registered participants.

The exhibition will remain open for a networking reception after the conference sessions end on Tuesday 26 April, to provide extra opportunities for business meetings in an informal atmosphere.

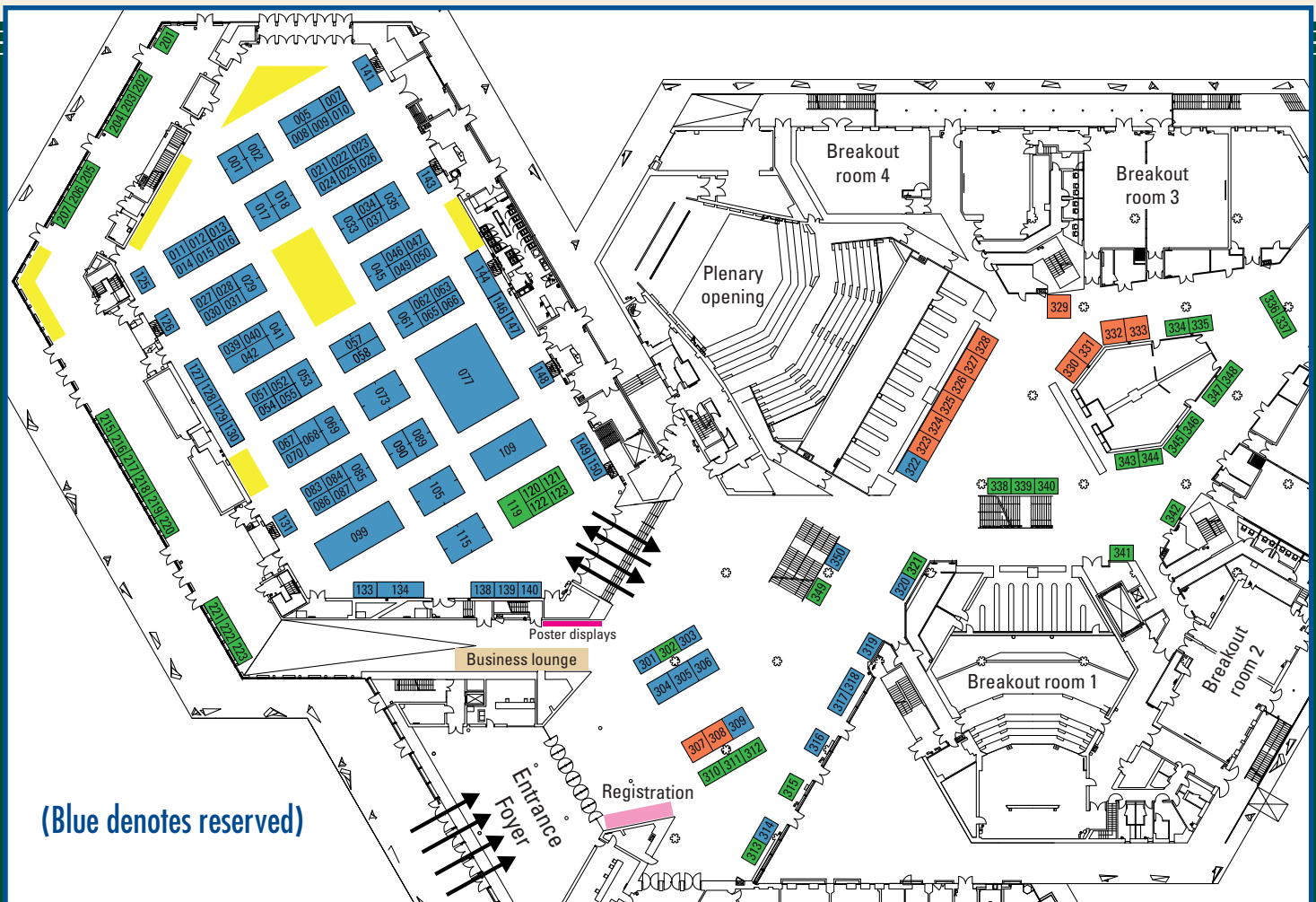
Exhibition space is generally sold in units of 6 m², and multiple units can be combined to create larger displays, including custom-built stands.

Sponsorship packages are available and provide an excellent way of standing out among competitors (such as coffee breaks, lunches, social events and more).

Please contact: sales@hydropower-dams.com
or visit: www.hydropower-dams.com/hydro2022/exhibition-plan

TECHNICAL EXHIBITION PLAN AND PRICING

3 x 2 m (6 m²) = € 3225
 3 x 3 m (9 m²) = € 4835
 = Catering



HYDRO 2022 EXHIBITORS

Stands reserved, as of September 2021

Acebron Group, Spain	www.acebrongroup.com	87	IMHP, Spain	www.imhp.es	33
ADAMS Schweiz AG, Switzerland	www.adams-armaturen.ch	77	Indar, Spain	www.indar.net	68
AFRY	www.afry.com	85	Končar, Croatia	www.koncar.com	73
Alpiq AG, Switzerland	www.alpiq.ch	77	Landustrie Sneek BV, Netherlands	www.landustrie.com	131
API spa Trash Rakes, Italy	www.apispa.net	14	Leroy Somer, France	www.leroy-somer.com	134
AquaVision Engineering SA, Switzerland	www.aquavision-eng.ch	77	Litostroj Engineering a.s, Czech Republic	www.litostroj-eng.com/en	89
Armatury Group, Czech Republic	www.armaturygroup.cz	67	Mapei, France	www.mapei.com	146
Artelia, France	www.arteliagroup.com	37	Mavel a.s., Czech Republic	www.mavel.com	130
ATB Riva Calzoni, Italy	www.atbrivacalzoni.com	53	MC - Monitoring SA, Switzerland	www.mc-monitoring.com	126
Atlantium, Israel	www.atlantium.com	62	Mechmine, Switzerland	www.mechmine.com/de	77
ATP SpA, Italy	www.atpgroup.it	27	Metalvar New srl, Italy	www.metalvarnew.it	55
AUMA Actuators, Germany	www.auma.com	69	Mhylab, Switzerland	www.mhylab.ch	77
Bavarian Pavilion	www.bayern-international.de	109	Milsa Trillo Galicia, S.A.	www.milsatrillo.com	105
Bernard & Bonnefond, France	www.bernardbonnefond.com	115	Montanhydraulik, Germany	www.montanhydraulik.com	23
BGH Edelstahlwerke GmbH, Germany	www.bgh.de	144	Muhr, Germany	www.muhr.com	17
BH2M, France	www.bh2m.fr	10	Obermeyer Hydro Inc, USA	www.obermeyerhydro.com	40
Bluetech Hydro, France		90	Oiles, Germany	www.oilesglobal.com/	317
Borflex, France	www.borflex.fr	9	Omexom, France	www.omexom.com	42
Braun Maschinenfabrik, Austria	www.braun-tech.com	124	PMI WWTECH, Poland	wwttech.com.pl/	304
Business Iceland	www.islandsstofa.is	41	Poolmeccanica Lorenzon Srl, Italy	www.poolmeccanicalorenzon.it	49
C.I.B. Srl Carpenteria Industriale Bresciana, Italy	www.cibcarpenterie.com	2	Power Vision Engineering SA, Switzerland	www.powervision-eng.ch	77
Carpi, Switzerland	www.carpitech.com	29	Prof. Dr. Jaberg und Partner GmbH, Austria	www.jabergundpartner.com/en	54
CG GANZ Generator & Motor, Hungary	www.cgglobal.com	314	Reivax of Switzerland AG	www.reivax.com	150
CKD Blansko, Czech Republic	www.ckdblansko.cz	15	Renesco, Switzerland	www.renesco.com/	13
CMA Hydro, Italy	www.cmahydro.com	21	Rezatec, France	www.rezatec.com	303
CMD Gears - Groupe CIF, France	www.cmdgears.com	16	Rittmeyer AG, Switzerland	www.rittmeyer.com	77
CNR, France	www.cnr.tm.fr	58	Rubena Náchod, s.r.o., Czech Republic	www.rubena.eu	309
Cooperativa Edile Appennino, Italy	www.cea-coop.it	148	Ruhfus Systemhydraulik GmbH, Germany	www.ruhfus.com	316
Costronic SA, Switzerland	www.costronic.ch	77	Sadafzar Co. Ltd, Iran	www.sadafzar.ir	34
Dive Turbinen GmbH & Co. KG, Germany	www.dive-turbine.de	109	Sauer Compressors, Germany	www.sauercompressors.com	39
Dolsar Engineering Inc. Co., Turkey	www.dolsar.com.tr	140	Sedicon, Norway	www.sedicon.no	86
Douce-Hydro, France	www.doucehydro.com	46	Ševčík Hydro s.r.o., Czech Republic	www.sevcik-hydro.cz	22
DSD Noell GmbH, Germany	www.dsd-noell.com	18	SKF Sealing Solutions, Austria	www.skf.com/seals	50
Dyrhoff, UK	www.dyrhoff.co.uk	127	SMI-Drulingen SAS, France	www.smi-drulingen.fr	138
Ecocoast, United Arab Emirates	www.ecocoast.com	12	Sogéa-Satom, France	www.sogea-satom.com	42
EDF, France	www.edf.fr	57	Soletanche Bachy International, France	www.soletanche-bachy.com/en	25
Elledi s.n.c, Italy	www.elleditech.com/	26	Sparks Instruments, Switzerland	www.sparksinstruments.com	126
EOMAP, Germany	www.eomap.com	109	Stahlhandel Gröditz GmbH, Germany	www.stahlportal.com	63
EPFL Laboratory for Hydraulic Machines, Switzerland	www.epfl.ch	77	STM srl – Sviluppato Tecnologie Meccaniche, Italy	www.stmpotenza.com	8
F. Nencini, Italy	www.nencini.com	11	STPH, France	www.stph-sas.com	115
Farab, Iran	www.farab.com	35	Stucky Ltd, Switzerland	www.stucky.ch	47
Federal Mogul Deva GmbH, Germany	www.deva.de	61	subdron GmbH, Austria	www.subdron.com	129
Fishheart Ltd., Finland	www.fishheart.com	125	SuperGrid Institute, France	www.supergrid-institute.com	28
Franke-Filter GmbH, Germany	www.franke-filter.com	149	Swiss Pavilion		77
Freyssinet, France	www.freyssinet.com	42	Tacquet Industries, France	www.tacquet-industries.fr	5
Glual Hydraulics, Spain	www.glual.com	31	Talleres Aratz, Spain	www.talleresaratz.com	65
Gometegui Industrial, Spain	www.gometegui.com	25	TES Vsetin, Czech Republic	www.tes.cz/en/	147
Graz University of Technology, Austria	www.tugraz.at	51	TIS Service SpA, Italy	www.tisgroup.it	30
GWF Technologies GmbH, Germany	www.gwf.ch	139	Tractebel	www.tractebel-engie.com	306
Heico Group	www.heico-group.com	119	Troyer SpA, Italy	www.troyer.it	24
HES-SO Valais, Switzerland	www.hevs.ch	77	Turbiwatt, France	www.turbiwatt.com	115
Hibbard Inshore, LLC, USA	www.hibbardinshore.com	319	Ultraflux S.A., France	www.ultraflux.com	52
HPP (Hydro Power Plant), France	www.hydropowerplant.com	115	Verbund Hydro Consulting, Austria	www.verbund.com/en-at	128
Hydac International, Germany	www.hydac.de	45	Vinci, France	www.vinci.com	42
Hydro-Construct GesmbH "The rubber dam company", Austria	www.hydroconstruct.at	309	Vortex Hydra, Italy	www.vortexhydradams.com	70
Hydroalp S.r.l, Italy	www.hydroalp.com	90	Whoosh Innovations, USA	www.whoosh.com	84
Hydrokarst Group, France	www.hydrokarst.fr	133	Wiegert & Bähr Turbinen und Stahlwasserbau GmbH, Germany	www.wb-hydro.de	7
Hydroplus, France	www.hydroplus.com	42	WWS Wasserkraft GmbH, Austria	www.wws-wasserkraft.at	301
HyFish – University of Innsbruck, Austria	www.hyfish.at	66	ZT-Fritsch GmbH, Austria	www.zt-fritsch.at	309
ICOLD (International Commission on Large Dams)	www.icold-cigb.org	350			
Ikon Ideea, Romania	www.ikonideea.ro	83			

Conference sponsors are listed in bold text



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To receive further details of the exhibition and/or sponsorship opportunities, please contact:

Dr Lukas Port, Mrs Maria Loredo or Mrs Melanie Ganz • Tel: +44 20 8773 7250/7251/7252 • Email: sales@hydropower-dams.com

Alternatively, we invite you to book Exhibition space online via our website: www.hydropower-dams.com/hydro-2022/exhibition-plan

TECHNICAL EXCURSION



Thursday 28 April

In the interests of keeping things simple and local this year, we have decided not to offer tours to different regions of France this time, as originally planned.

Therefore, together with EDF, we are planning an excursion to two sites of technical interest, in the vicinity of Strasbourg, which it will be possible to visit within one day.

Details are currently being finalized, and the itinerary will be announced shortly.

The main focus of the trip is planned to be a low-head run-of-river powerplant on the Rhine, which has aspects of both technical and environmental interest.

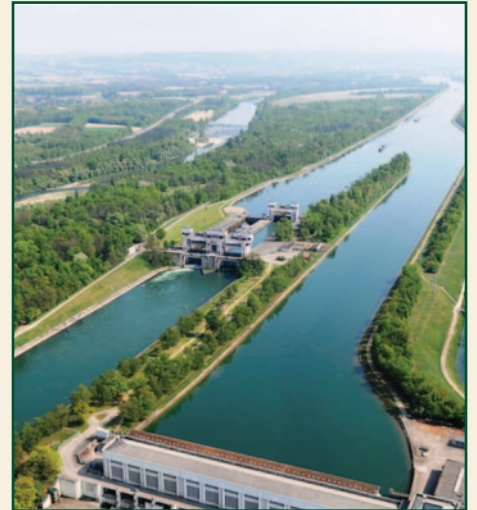
The trip will depart after breakfast at around 09.00 hrs (to be announced), and will return to Strasbourg (Hilton and Conference Centre) by about 18.30 hours.

Travel will be by luxury coach, and there will be lunch in a restaurant with some specialties of Alsace, as well as light refreshments along the way.

An extra night's accommodation at the conference hotels could be arranged, for those not travelling home on the same evening.

The trip will be subject to a maximum number of 40 participants, who may be asked to be split into two groups during the powerplant visit.

Full details will be announced shortly on our website, along with any programme updates; but meanwhile, if you would like to end the days in Strasbourg by visiting a hydro plant with a number of interesting features, before returning home, and seeing some of the picturesque surrounding area, please express interest now, and we will send further details, as well as the price of the excursion.



PLEASE NOTE THAT ADDITIONAL TECHNICAL TOURS ARE NOW LIKELY TO BE OFFERED, WHICH HAD BEEN PLANNED FOR 2021, AND SUSPENDED BECAUSE OF THE COMPLICATIONS OF THE PANDEMIC. UPDATES WILL BE ANNOUNCED SHORTLY.

HYDRO 2022 HOTELS

As always, our event management company has negotiated favourable rates, and blocked rooms at a selection of hotels. Some may be booked through our website, and others will be reserved for delegates to book direct. Full details will be announced shortly when

revised contracts have been finalised with the hotels. Some are in walking distance of the congress centre. Others have very easy links by tram, and some complimentary tram passes are being generously offered by the City of Strasbourg.

We are arranging hotels in different categories, to suit all budgets; all are world class standards, with the normal facilities, including WiFi. As well as traditional hotels, we will be offering an Aparthotel, with modern studio apartments including kitchenettes.



BOOKING CONDITIONS

The Conference HYDRO 2022 - Strategies for future progress, is being organized by *The International Journal on Hydropower & Dams* with administration by Event Management Services (EMS), UK.

On-line Registration

You can register on-line via the *Hydropower & Dams* website at: www.hydropower-dams.com. This is a secure site. Registrations will be handled by EMS on behalf of Aqua~Media. You will receive an acknowledgement of registration on completion of this process; however, this is not a confirmation (until payment is received).

We encourage all delegates to register on-line; the registration site provides more information about the event. Pre-registration is required.

In the unlikely event of any difficulties using this system, please contact EMS (see contact details below).

Picking up conference documents and badges

The registration desk will be open from 08.30 hrs on Sunday 24 April 2022, at the Strasbourg Palais de la Musique et des Congrès, and delegate bags can be collected from 09.00-11.00 hrs, and from 14.00 to 19.00 hrs.

Payment

Payment for all services (fees, hotels, tours) must be made in Euros (€) and received in advance of the Conference. Payment is possible by the following methods:

- On-line by Visa or Mastercard; or,
- By bank transfer (see details on the registration form).

All fees paid by credit card will be charged in Euros (€).

Accommodation

Beware of scam accommodation bureaux who are operating as usual, falsely claiming to represent HYDRO 2022. We recommend that you do not pass credit card details to them.

In view of the postponement of the conference, new contracts are being finalized with hotels, where rooms have been blocked for conference participants. Details will be announced in good time.

Disclaimer

All best endeavours will be made to present the programme as printed. The HYDRO 2022 organizers and their agents reserve the right to alter arrangements, timetable, plans or other items relating directly or indirectly to HYDRO 2022 for any cause beyond its reasonable control. The Conference and Tours are subject to minimum numbers. Tour places are subject to availability on a first-come-first-served basis. Full payment for tours must be received at the time of registration.

Cancellations

Cancellations must be made in writing to EMS. Cancellation charges will be payable as shown in the Table below, **except in the case of a resurgence of COVID-19 preventing the event to go ahead as**

planned, or a delegate being unable to travel to France from his/her home country. Substitution of delegates, speakers or exhibitors after a reservation has been made is acceptable before the conference, and no extra fee is payable. Any necessary refunds (see Table below) will be made after the conference.

Liability/Insurance

The registration fees do not include the insurance of participants against personal accidents, sickness, cancellations by any party, theft, loss or damage to personal possessions. The organizers accept no responsibility for death, injury, loss or accident, delays arising from any act or default of any person, or any other matter arising in connection with Conference services or transport. The organizers make no warranty in this connection.

All services provided are subject to local laws. Arrangements for the Conference have been made in accordance with UK and French Law.

Delegates, exhibitors and tour participants are strongly advised to take out adequate personal insurance to cover risks associated with travel, accommodation, cancellation and theft or damage to personal belongings.

In the unlikely event that it is necessary to cancel any of the conference arrangements or postpone the conference, a refund will be made and thereafter the liability of the organizers will cease.

The organizers reserve the right not to accept applications for attendance (for example, but not exclusively, if applicants are not working in the field of hydro, or if there could be a conflict of interest with the mission of the conference, the organizers, or any policy of the host country).

Passport and Visa Requirements for France

France is a member of the European Union, and is a signatory to the Schengen Agreement. It is the responsibility of all participants to check their own passport and visa requirements. Please contact the French embassy or consulate in your country if in doubt about requirements, or visit: https://france-visas.gouv.fr/en_US/web/france-visas/tourist-or-private-visit

Applying for a letter of invitation to support a visa application

In some cases, letters of invitation from Aqua~Media in the UK and one of our partner organizations in France may be necessary, as well as special clearance from the relevant authorities.

The process could take several weeks, so we strongly urge participants requiring visas to start the application process in good time.

If you require a letter of invitation to facilitate your visa application, please let us know at the time of registering.

Please note that letters to assist with obtaining visas can only be provided to registered or invited participants, and these letters do not imply an invitation to the conference without payment of registration fees, unless this is specified. If you need a letter from the host country, as well as the organizers, please notify us as soon as possible and supply your full name, date of birth, passport details, and proposed dates of arrival and departure.

As soon as a registration is confirmed, a number of expenses are incurred by the organizers; therefore the cancellation conditions below apply.

Date cancellation received	On or before 10 February 2022	From 11 February to 31 March 2022	On or after 1 April 2022
Registration for the Conference	10% of fee will be forfeited	50% of fee will be forfeited	No refund
Technical Excursions (Study Tours)	10% of fee will be forfeited	No refund unless place can be resold	No refund
Accommodation	10% of fee will be forfeited	No refund unless place can be resold	No refund

NB: Separate booking conditions apply to Exhibition Stands, and these will be sent directly to Exhibitors by our Sales & Marketing Department.

A reduced registration fee is available for speakers, current subscribers to *Hydropower & Dams*, and those taking a new subscription. See booking information form for details.

CONTACT DETAILS

For enquiries concerning registration and accommodation, contact:

**HYDRO 2022 Secretariat, Event Management Services (EMS).
hydro2022@ems-ltd.org • Tel: +44 1225 258 013**

**For further details of the programme, please contact: Mrs Margaret Bourke, Hydropower & Dams,
PO Box 285, Wallington, Surrey SM6 6AN, UK.**

Tel: + 44 (0)20 8773 7244 • Email: hydro2022@hydropower-dams.com

Regular updates and on-line registration via: www.hydropower-dams.com

BOOKING INFORMATION



The online HYDRO 2022 registration is open, and bookings can be made via: www.hydropower-dams.com

The system is simple to use, but in the event of any difficulties, please contact EMS.

Email: hydro2022@ems-ltd.org ~ Tel: +44 1225 258 013

Prices for each delegate category and conference activity are given below.

FULL DELEGATE FEE: Includes attendance of the Conference and Exhibition; documentation; conference papers on a USB stick; morning and afternoon refreshments; lunches during the Conference; full social programme

€1095 (until 31/01/22) €1200 (from 01/02/22)

REDUCED DELEGATE FEE: For existing subscribers to *Hydropower & Dams*.

€1025 (until 31/01/22) €1130 (from 01/02/22)

FEE INCLUDING NEW SUBSCRIPTION TO H&D: (6 issues from No. 1, 2022+ Atlas + Maps)
(This represents a saving of about 35 per cent on the normal H&D subscription rate).

€ 1235 (until 31/01/22) €1340 (from 01/02/22)

SPEAKER FEE: Includes all facilities described above for Full Delegates, plus an additional reception on Sunday 24 April. NB: This fee applies to one person per paper (main author or presenter).

€650

FIRST EXHIBITOR FEE: (One full participant fee is included with exhibition booking).

€0

SECOND + THIRD EXHIBITOR FEE: (Fee per person for up to two additional exhibitors).
(Includes all benefits available to full delegates).

€785

SMALL HYDRO TRAINING SEMINAR: (Full day on Sunday 24 April - Design a small plant in one day).

€50

ACCOMPANYING PERSON FEE: (For family members, partners or friends not colleagues attending the Conference or Exhibition).

The fee includes the excursions each day, with lunch, and the evening social events. The cost for registering as an accompanying person is €495.

HALF DAY EXCURSION: The details of this are presented on a previous page. The cost for joining the tour including lunch, is €105 per person.

OPTIONAL DONATION TO THE AMI HYDROPOWER FOUNDATION: As in past years, there will be opportunity when registering online to make a donation to the AMI Hydropower Foundation. This is a charitable foundation, set up by Aqua-Media and governed by a board of international trustees. It exists to facilitate the participation of delegates from the less developed countries at the annual Hydro Conferences.

TECHNICAL EXCURSION (Thursday 28 April) NB: Now that the conference is rescheduled, additional tours may be offered again; to be announced soon

One day excursion, close to Strasbourg

A low head run-of-river plant on the Rhine, operated by EDF, will be visited, which offers aspects of interest with regard to technology, environment and navigation. Please express interest, by email or on our booking system, and full details will be announced shortly.

DIETARY REQUIREMENTS: These may be specified on the online registration system (including, for example, vegetarian, vegan, gluten free, etc).

VISA REQUIREMENTS: You will be able to apply for an invitation letter to support your visa application during the on-line registration process.

COVID TRAVEL RESTRICTIONS: Please check before registering that your country is not on the (now fairly short) red list, which would require quarantining, or entrance to France may be denied. Updates from the French Government can be found via embassy websites.

NB: Attendance of the Welcome Reception and Farewell Dinner are included within the registration fees for all participants. However, we request a nominal contribution of €15 per event for those wishing to attend, to encourage a firm commitment to participate. This is important to enable us to assess numbers for catering, and avoid food wastage.