 vgbe energy | Hydro Power

General Presentation

Individual success through exchange of experience within vgbe energy | Hydro Power
1. The Association
2. vgbe energy | Hydro Power
3. vgbe Committees and Expert Groups
4. Technical Programmes
5. Research Projects
6. Expert Workshops
7. General Activities
8. Contact
The Association
vgbe energy e.V. is the technical association of energy plant operators. Our members are companies that operate power, heat and cooling, energy storage and sector coupling plants worldwide. Since its foundation in 1920, vgbe energy has become the technical centre of competence for the operators of power and heat plants.

Currently, vgbe energy has 411 members, comprising operators, manufacturers, and institutions connected with energy engineering. The members come from 29 countries and represent an installed power generation capacity of 342,000 MW.
vgbe energy | Hydro Power
Competences in Hydropower

vgbe energy | Hydro Power

The hydropower sector in Europe is going through a challenging phase, whilst at the same time hydropower provides plenty of opportunities for a safe and stable energy supply.

vgbe energy | Hydro Power as part of vgbe energy is the first address for interested parties in techno-economic, ecological and strategic issues concerning hydropower and maintenance and it performs as the collective European platform and key representative for operators, manufacturers and suppliers of the hydropower community.

In this context, our hydropower community has been sharing experiences and knowledge with a high level of expertise since the year 2000. Currently, experts from 68 operators and 24 equipment suppliers and consultants are actively participating in vgbe’s Technical Competence Center “Hydro Power” and benefit from our offers as a member of the successful hydropower network.

Our slogan for our common work is: *Success through Exchange of Experience*
vgbe energy | Hydro Power – Content and focus of our work

Focus on operation, maintenance and plant optimization in techno-economic and ecologic issues as well as research

vgbe’s work

- **Drafting of technical and operational standards**
  - compiling practice-oriented vgbe-Standards and guidelines considering experiences of operators
  - coordinating the elaboration of international technical standards

- **Supporting in implementation of EU-regulation**
  - providing facts&figures to our European partner Eurelectric
  - interpreting EU-regulation for practical use

- **Initiating and coordinating national and international research projects and industry self-funded technical programmes**
  - connecting subject-specific experts from industry and research
  - building and exchanging knowledge

- **Organizing conferences and workshops**
  - presenting the state of technology and future developments
  - networking and directly exchanging experiences with experts
Technical Competence Center Hydro Power

Steering Forum Hydro Power

Your engagement

Committees
- TC Hydro Power Plants
- WG Hydro Operation & Maintenance
- WG Hydro Ecology & Environment
- WG Hydro Health & Safety
- TC Hydro Framework

Expert Groups
- Communication
- Digitalisation
- Generator
- Automation
- Pelton turbine
- Francis turbine
- Kaplan turbine
- Dam safety
- Shut-off devices
- Weirs

Current subjects

Engineering
- Asset optimisation
- Optimization of operations
- Predictive maintenance
- Digitization measures
- Improvement of flexibility
- Environmental management
- Availability and reliability of plants
- Damage analyses

Supporting and broader insights
- Technical benchmarks
- Cost comparison
- Risk management
- Plant safety
- IT/OT and cyber security
- Hybrid solutions
- Exchange on implementation of EU regulations
- Technical support to advocacy (Eurelectric)

Activities
- Exchange of experiences and information
- Position papers
- Publications
- Conferences
- Membership/MoU with associations
- vgbe-Standards
- Research projects
- Technical Programmes
- Databases
- Platforms
- Subject-specific workshops

TC ... Technical Committee
WG ... Working Group

Your engagement

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TC ... Technical Committee
WG ... Working Group
vgbe energy | Hydro Power – Exchange of experience

be energised
be inspired
be connected
be informed

Comprehensive experience transfer and exchange
- operational issues
- techno-economic issues
- environmental issues
- energy strategies
- energy policy aspects

Networking throughout Europe
More than 250 professionals participating in vgbe energy | Hydro Power committees.

67 Operators
24 Suppliers

vgbe energy pushes the practical exchange of experience.
The strength of our European hydropower network

- European Institutions
- European Energy Research Alliance
- Advisory Board
- Brussels liaison offices
- Advocacy
- Seat
- Member
- Exchange
- Affiliate
- H2020 Project „ETIP Hydropower“ Consortium / Consultation Expert Panel
- WFD CIS
  Strategic Coordination Group & Working Groups & drafting teams
- National Associations
  - representing the electricity industry in 32 European countries
- Power Industry
  - representing operators & manufacturers in 33 countries
- International Associations
  - Contribution to work streams of: IEA, OECD, International Pumped Storage Forum
- Regional Associations
  - Danube, Rhine, Alpine Area, etc.

vgbe energy is well embedded in European hydropower network.
vgbe energy | Hydro Power as part of vgbe energy is the first address for interested parties in techno-economic, ecological and strategic issues concerning hydropower and performs as the collective European platform and key representative for operators, manufacturers and suppliers of the hydropower community.

In this context, our hydropower community has been sharing experiences and knowledge on a high level of expertise since the year 2000. Currently, experts from 67 operating companies and 24 suppliers and organisations are actively participating in vgbe’s Technical Competence Center “Hydro Power” and benefit from our offers as a member of the successful hydropower network.
3 vgbe Committees and vgbe Expert Groups
Supporting our members in operation, maintenance and plant optimisation as well as in technical, environmentally relevant and strategic challenges:

- Ongoing improvements in availability, reliability and plant safety of hydropower plants
- Promotion of cost-optimised life cycle and environmental management
- Development of concepts to improve operation and maintenance
- Creation of practice-oriented vgbe-Standards, taking into account operator experience
- Definition of operational safety standards
- Expansion of the exchange of experience in technology and operations

Performing as the collective European information platform for the hydropower community:

- Preparation and provision of facts on positions and recommendations
- Introduction of positions in European and national regulations
Task “Committee” and “Working Group”
- Regular exchange of operational experience and development of proven practices within a topic-specific framework

Task “Expert Group”
- Exchange on an as-needed basis on topic-specific issues in the form of consulting experts in this field

Participation
- vgbe members

Benefits
- **Expand your network**
  Through a topic-specific assignment, you gain access to a valuable and targeted network in your field of expertise.

- **Improve your business**
  Benefit from mutual exchange and support each other through best practices in their professional endeavours.

- **Free choice of design**
  Depending on topic and expected outcome, different formats can be used to work on specific topics. Collaboratively develop a data model or database, create a guideline, or expand the exchange to overarching topics in a vgbe Expert Workshop.

vgbe’s contribution
- Organizing, managing and supporting the work in the committees, working groups and expert groups
The Steering Forum is a platform for networking and exchange of experiences regarding industry challenges of operators and manufacturers.

The participants are mainly high-level executives and have a wide overview of:

- energy market situation in their home country and in Europe
- technical and environmental challenges for hydropower
- national and European policies

Tasks

- **Coordination of the interests of the European hydropower sector on management-level by synchronising requests, requirements and challenges**
- **Ensuring exchange of findings and experience concerning general strategic and investment aspects**
- **Communication with authorities at different levels (national, EU)**
The TC Hydro “Framework” is a platform for sponsoring members with an extended membership status as well as for operators to promote hydropower in Europe.

**Tasks / Benefit for the members**

- Developing communication strategies to deliver defined messages to the EU institutions and other relevant policy makers

  *Improving the position of hydropower by joining activities together with eurelectric*

- Supporting the elaboration of hydropower relevant technical and environmental fact sheets

  *Elaborating detailed information by common investigations*

- Assisting in organising conferences and workshops to promote hydropower in Europe

  *Coordinating and representing the overarching interests and recommendations on international events and workshops*
The TC Hydro “Power Plants” coordinates the development of practical-oriented results on behalf of the Steering Forum “Hydropower”.

**Tasks / Benefits for members**

- Coordination of operator interests towards authorities and standardisation bodies
  *Reasoned counterstatements to excessive demands*

- Statements regarding regulatory frameworks on technical equipment for and operation of hydropower plants
  *Fast response by evaluating and influencing dossiers*
  *Assistance with the applications*

- Definition and documentation of the state of the art
  *Support for legal applications*

- Preservation and dissemination of knowledge
  *Dissemination of manufacturer independent know-how*
  *Focus on operation and maintenance*
Exchange of information and experience regarding operation, maintenance and asset management of hydropower plants

Tasks / Benefits for members

- Development of a guideline for risk-based maintenance and comparison of different maintenance strategies of European operators

A minimal maintenance strategy enables the operators to adequately manage the risks of operating hydropower plants despite economic constraints.

Examples of risk reduction are discussed.
Exchange of information and experiences regarding environmental issues of European hydropower operators

Tasks / Benefits for members

▪ Review and technical elaboration of relevant ecological issues
  Protection of the operator interests
  Basis for clarifying discussions with authorities
  Basis for technical and political discussions on legislative procedures

▪ Creating and maintaining an overview matrix for all environmental aspects of hydropower plants
  Targeted access to results of research projects, publications and evaluation reports

▪ Formulation and representation of the operators’ interests in ecological issues in other associations and organisations as well as through contributions to events and through publications
  Influencing regulations with technical expertise
Exchange of information and transfer of expert know-how of European hydropower operators

Tasks / Benefits for members

- Discussion and exchange of information on new and upcoming topics
  - Access to a wealth of experience of other European operators
  - Discussion of pressing issues as well as long-term strategic planning
  - Helping to shape the dialogue in the H&S hydropower community

- Creating and maintaining a H&S guideline for Health & Safety in hydropower
  - Access to preliminary results and documents of participating members
  - Your contribution directly affects the content of the guideline and the file collection

- Presentations on current developments and innovations within the industry
  - Be the first to hear about solutions to upcoming regulations at a national and European level
Expert Groups

- Communication
- Digitalisation
- Francis turbine
- Generator
- Health & Safety
- Kaplan turbine
- Pelton turbine
- Shut-off devices

Objectives

The Expert Groups are a pool of experts made up of vgbe members with experience from operators and manufacturers and form the backbone of the network in vgbe energy.

The Expert Groups meet on an ad hoc basis depending on the topic at hand.

- Exchange on technical events
- Development of concepts
- Preparation and provision of facts on positions and recommendations
Technical Programmes – Objectives

Objectives

vgbe energy with its leading role in understanding about good and best practices in hydropower operation and development launches different Technical Programmes in cooperation with its members.

These programmes are part of the comprehensive activities of vgbe energy for the hydropower sector to support the daily work in operation, maintenance and plant optimisation as well as in techno-economic and environmental challenges. Therefore, the programmes are open for vgbe members as well as vgbe non-members.

The programmes can be carried out as:

- **Cost-comparison for run-of-river power plants**
- **Operations management comparison for storage and pumped storage power plants**
- **Digitalisation barometer for hydropower operators**
- **Value of hydropower**

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Technical Programmes – Tasks and benefits

Tasks
▪ Management of industry funded projects (e.g. scientific or applied research)

Benefits
▪ Management of industry funded projects
  vgbe energy initiates, coordinates and/or conducts industry funded projects together with scientific partners.
▪ Development and management of databases
  vgbe energy develops databases or IT-based tools to support the optimisation of operation and maintenance.

vgbe’s contribution
▪ Initiating and coordinating industry-funded projects (e.g. description of the programme, contracts, organizing the meetings)
▪ Developing databases (e.g. description, implementation, recruiting of participants, hosting and operation)

Participation
▪ vgbe members and vgbe non-members
▪ Charged service (discount for members)
Technical Programme
Cost-comparison for run-of-river power plants

Participants will receive multiple benefits and a deep insight in its O&M cost-structure by participating in a European cost-comparison.

Objective

The cost-comparison is based on a proven and unique methodology which assures an objective and best-in-class benchmarking of all O&M cost-components taking into account the vast variety of such plants and their specifications.

The objective of this cost-comparison method is solely to establish a comparable basis for O&M cost-performance and is designed to systematically analyse the complex relation of O&M cost-types, cost-drivers and resulting cost-performance. The profitability of individual run-of-river plants is explicitly not taken into account in the analysis.

Some benefits

- Identification of areas for improvement
- Statement about indicative cost-targets to be able to achieve top performance
- Comprehensive and transparent overview of the O&M cost-structure
- Insight into cause-effect relationships between technical and infrastructural parameters and O&M cost-categories
- Indications and guide values for concrete improvement measures
- …

Download Programme

- Project
- Dec 2022 – Jun 2023
A campaign to increase the awareness of the positive impact of hydropower for a sustainable energy future in Europe.

**Objective**

The hydropower industry needs to raise awareness of the positive impact of hydropower on a sustainable energy future in Europe to ensure the efficient operation of existing plants as well as the development of new hydropower plants across Europe.

The aim of this campaign is to underline the value of hydropower and the indispensability of hydropower for Europe in the context of climate neutrality and security of supply. The hydropower industry in Europe, therefore needs a stakeholder-focused tool box consisting of a structured dissemination strategy "Thinking Outside the Bubble", a jointly agreed implementation plan and an image campaign based on existing data and publications.

**Some benefits**

A concerted approach supported by the key players in hydropower should bring the following benefits and results:

- An increased brand equity of hydropower in Europe
- Augmented visibility across different stakeholders
- A platform to increase the exchange among/inside the sector
- An engaged target audience (e.g. EU decision makers)
- A higher impact on future EU-policies
Participants will receive a deep insight in different operations management concepts of European pumped storage power plant operators.

Objective

The demands on operations management have changed over the last decade due to new technical achievements and changing market conditions. This new environment poses new challenges for operators in terms of operational management and adaptation of internal processes. A transparent qualitative comparison of different operational management concepts and the flow of relevant processes leads to the identification of improvement potentials.

vgbe energy starts the comparison of storage and pumped storage power plants with a moderated approach on operational management strategies and processes and their results. This approach offers a deep insight into the differences in operation and maintenance of such plants and thus helps to adapt and optimise one's own approaches and strategies.

Some benefits

Operators achieve a better overview of best practices in operations management and of the flow of relevant processes in order to evaluate their individual operations management concept.

- Operational processes
- Maintenance strategies
- Make-or-buy decisions
- Implemented digitalisation measures
- Optimisation concerning internal versus external staff
- …
Objective

Apart from decarbonisation and decentralisation, digitalisation is one of the driving forces of the energy transition. Digitalisation is also a key challenge for hydropower operators, especially in the context of increased pressure on costs, risk-based and preventive maintenance strategies and increasing flexibility requirements. Therefore, companies are more or less intensively involved in a variety of digitalisation issues and are facing different challenges:

To actively support hydropower operators in advancing and achieving digital transformation, vgbe energy | Hydro Power and its members have developed a digitalisation check, the “Digitalisation barometer for hydropower operators”.

Some benefits

The “Digitalisation barometer for hydropower operators” allows companies to evaluate

- their current status of digitalisation and
- their intended target status in digitalisation in three years in comparison to the sector average.

Thus, the companies can gain a comprehensive insight into their digitalisation degree.

Our members get the full evaluation report with the averages in the main fields and in each sub-action field.
Research Projects
Research Projects – Objectives

Objectives

vgbe energy offers collaborative research activities to meet new challenges. In these projects, manufacturers and operators, universities, research institutes and the public sector pool their specific know-how and financial resources.

- Initiation and coordination of national and international research projects
- Building of know-how and knowledge transfer

Some Research Projects

- ETIP Hydropower
- PanEuropean Network for Sustainable Hydropower
- RELY – REliable Reinforcement Learning for sustainable energY systems
- HYDROPOWER EUROPE
- INADAR – Innovative and Ecological Approach for Dam Restoration

...
Research Projects – Tasks and benefits

Tasks

- Depending on the specific call of the funding programme

Participation

- vgbe members and vgbe non-members

Benefits

- **Improved funding opportunities**
  Higher likelihood of being awarded a contract due to our network with various stakeholders and institutions.

- **Expertise in submission phase**
  Benefit from vgbe’s expertise in developing a dissemination, exploitation and communication plan for submission.

- **Dissemination network**
  Events and conferences across Europe, partner organizations and editors of journals.

- **Topic-specific expert network**
  Pooling of expertise and resources to answer larger and more complex scientific questions or to conduct surveys.

vgbe’s contribution

- Recruiting project partners and/or self-participation
- Co-coordinating the submission proposal
- Responsible for different Working Packages (e.g. dissemination, exploitation and communication)
Expert Workshops
Expert Workshops – Objectives

Objectives

vgbe energy organises topic-specific expert workshops for vgbe members only to foster exchange and problem-solving between experts with extensive practical experience.

The Expert Workshops are planned by vgbe energy in cooperation with its members and cover a broad variety of applications that include established and emerging technologies for energy generation and storage. They can be organised on short notice and can therefore not only address pressing issues in the industry but also be used proactively to find solutions for upcoming challenges.

The Expert Workshops are targeted at operators that are vgbe members and require an active participation according to the policy “give and take”. Therefore, it is mandatory to give a presentation in order to join the active discussion and benefit from the experience of the other participants.

Potential Expert Workshops

- Workforce management
- Digital documentation management system
- Sensors and diagnosis systems for generators
- Sensors and diagnosis systems for turbines
- Hydrographic and aerial survey
- IT-/OT experiences with ISO 27001
- Surveillance and maintenance concepts for dams
- Practical experiences in operation of battery systems
- Underwater inspection
- Fish monitoring

Networking opportunity

Topic-specific workshops
Expert Workshops – Task and benefits

Task
- Intensify the exchange of operational experiences according to the motto "give and take"
- Very in-depth analyses and documentation

Benefits
- **Proactive approach**
  Overcome emerging challenges before they become an issue at your company.
- **Expert talks**
  Discuss with experienced and specialized experts.
- **Train young professionals**
  Take the opportunity to train your young professionals on specific topics through exchanges with experienced industry experts.
- **Documentation**
  Presentations available to all members.

Participation
- vgbe members

vgbe’s contribution
- Organizing the expert workshops
General Activities
General Activities – Tasks

- **vgbe-Standards**
  vgbe energy prepares best practice guidelines.

- **Position papers**
  vgbe energy develops positions papers to topic-specific issues.

- **Publications**
  vgbe energy and our hydropower network produces a range of publications on hydropower’s role, new trends and developments in the sector.

- **Conferences and workshops**
  vgbe energy organises topic-specific events for the direct exchange of experience with experts as well as for obtaining the latest information.

- **Cooperation with other organisations**
  vgbe energy cooperates with international and national partner associations to exchange information and coordinate technical, environmental and political positions.
Ordinary members of vgbe energy have free access to vgbe-Standards in electronic format (ebook). Special conditions are offered to affiliated and sponsoring vgbe energy members.

https://www.vgb.org/shop/

vgbe-Standards reflect the state of the art for the generation and storage of electricity and are developed in close cooperation with operators and manufacturers. More than 35 vgbe-Standards with regard to hydropower are available containing regularly updated best practices.

Fields of application are:

- Layout, design and planning (E&D)
- Procurement and manufacturing (P&M)
- Construction and commissioning (C&C)
- Operation and maintenance (O&M)
- Disassembly and recycling (D&R)

For example

- DE/EN/FR Hydropower – Definition and Indicators
- DE/EN Operational safety in electro-technology
- DE/EN Conformity assessment and health and safety in hydropower plants
- ….
The use and application of KKS and RDS-PP® are already licensed for ordinary members of vgbe energy.

With the vgbe-Standards KKS and RDS-PP® “Application Explanations/Guideline for Hydro Power Plants”, practice-oriented identification and classification systems for this type of power plants are available. The uniform systematics of KKS and RDS-PP® may be applied over the entire lifetime of hydropower plants. Both systems support operators, manufacturers and service providers upon design and planning, construction, operation and maintenance of hydropower plants.

KKS was introduced in the 1970ies and is well implemented in hydropower plants worldwide; RDS-PP® was edited in the early 2000ies based on revised international standards. Both vgbe-Standards are based on the general KKS/RDS-PP for all types of power generation.

vgbe energy offers support
- Quick Scan of your KKS/RDS-PP® codes
- KKS/RDS-PP® application audit in your company
- KKS/RDS-PP® training for your staff
vgbe energy I Hydropower is working with several national associations and in close co-operation especially with eurelectric on European level and elaborates position papers.

Coordinated and joint positions create more influence on decision makers.

For example

- 2021  Positions on the EU Taxonomy regulation
- 2018  Joint comments with BDEW on the DIN 19752 "Wasserkraftanlagen – Planung, Vorhabenrealisierung und Betrieb (Hydropower plants – planing, execution and operation)
- 2016  Comments on final report “Forum Fish Protection” of German Umweltbundesamt
- …
Our hydropower network produces a range of publications on hydropower’s role, new trends and developments in the sector.

For example

- 2021 Publication “Hydropower Industry Guide 2021/22”
- 2021 Publication “Hydropower – An indispensable part of the secure power supply in Europe”
- 2018 Joint publication with eurelectric of the “Facts of hydropower in Europe”
- 2018 Joint publication with eurelectric of the revised “Hydropower Fact Sheets”
- 2016 Brochure: “Hydropower – Part of the renewable family”
- …
The “Hydropower Industry Guide” gives an up-to-date overview of the newest products and services offered by the hydropower sector.

The “Hydropower Industry Guide” is an annual guide that gives a comprehensive and up-to-date overview of the newest products and services offered by the Hydropower sector. It provides an easy-to-use directory of companies providing key products and services to the worldwide hydropower market. The full contents found in the guide are:

- Hydropower Sector Information
- Expert Contributions
- Company Profiles
- Media Partner Profiles
- vgbe energy – Range of Services

The guide is published with the support of our media partners and reaches more than 4,000 interested people in the hydropower community. The guide is available for free download on the vgbe homepage and is presented at each vgbe “Expert Event”.

If you are interested in contributing to our next edition please contact us.
Expert Events

Direct exchange of experiences with experts and subject-specific events as well as newest information on state of technology. Reduced registration fee for vgbe´s members.

The Expert Events bring together experts from leading operator, manufacturer and supplier companies as well as related stakeholders to discuss challenges and opportunities. Based on practical examples attendees gain insights on how solutions are already successfully implemented and applied. Attendees take the opportunity to consult experts and to exchange ideas, build up their network as well as benefit from the know-how transfer at our Expert Events.

▪ **Expert Event “Digitalisation in Hydropower“**

  The international Expert Event will provide a comprehensive overview of all topics regarding digitalisation in hydropower dealing mainly with the results of newly developed and implemented innovative digital measures, products and tools.

▪ **Expert Event “Ecology and Environment in Hydropower“**

  Protecting the environment and preserving nature is one of the many important challenges not only for hydropower, but for society as a whole. In this context, an optimal balance between hydropower and ecology is a central aspect to ensure the further expansion of hydropower and at the same time to preserve the existing plants.
Cooperation with other associations

Our members benefit from the exchange of information and from the harmonisation of technical, environmental and political positions including the support of international and national partner associations.

As an international technical association vgbe energy is working with several national associations and in close co-operation with eurelectric on European level. Within the framework of a memorandum of understanding vgbe energy's professional competence is integrated into the political/strategic work of eurelectric:

▪ Promoting the role of hydropower
▪ Technical input by vgbe energy
▪ Lobbying by eurelectric
▪ Joint activities and publications
▪ Exchange of information

vgbe energy and eurelectric being a strong voice for hydropower in Europe.
8 Contact

Benefit from our expertise – Get in touch with us

be energised
be inspired
be connected
be informed

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Performing as the collective European platform for operators, manufacturers and suppliers of hydropower.

Being the first address for interested parties in technical, ecological and strategic issues concerning hydropower.

Functioning as information hub and key representant for the hydropower community in Europe.