TC “Photovoltaics”
General Presentation

Individual success through exchange of experience within vgbe energy
Agenda

1. The Association
2. vgbe energy | Future Energy System
3. Technical Committee “Photovoltaics”
4. Technical Programmes
5. Research Projects
6. Expert Workshops
7. Contact
1 The Association
The Association

**vgbe energy e.V.**

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 energy 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 | Future Energy System
Technical Competence Center Future Energy System

Steering Forum Future Energy System

**vgbe Committees**

- TC Future Technologies (TC FT)
- TC Hydrogen (TC H2)
- TC Photovoltaics (TC PV)
- TC Biomethane (TC BM)

**Current Subjects**

<table>
<thead>
<tr>
<th>Subject</th>
<th>TC FT</th>
<th>TC H2</th>
<th>TC PV</th>
<th>TC BM</th>
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<tbody>
<tr>
<td>Operational experience analysis</td>
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<td>H2 market ramp up</td>
<td>Service life and failure analysis</td>
<td>Biogas upgrading</td>
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<td>Plant operation and maintenance</td>
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<td>Green hydrogen production</td>
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<td>Process control</td>
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<td>Availability, reliability and safety</td>
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<td>Cost-efficient lifetime management</td>
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<td>Environmental management</td>
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<td>Digitalisation measures</td>
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<td>IT/OT and cyber security</td>
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<td>Health &amp; Safety</td>
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**Activities**

- Exchange of experiences and information
- Publications
- Conferences
- Participation in other organisations
- vgb-Standards
- Research projects
- Technical Programmes
- Databases
- Platform
- Subject-specific workshops
vgbe energy | FES – Exchange of experience

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

Networking throughout Europe
More than 80 professionals participating in vgbe energy | FES committees.
- Future Technologies
- Hydrogen
- Photovoltaics
- Biomethane

vgbe energy pushes the practical exchange of experience.
vgbe energy | Future Energy System as part of vgbe energy is the first address for interested parties in techno-economic, ecological and strategic issues concerning photovoltaics, biomethane, hydrogen, storage and other future technologies.

It is precisely the different perspectives within the membership of this non-homogeneous body that lead to creative approaches to developing common and viable solutions to the challenges of transformation in the energy sector.

Currently, experts from 56 organizations, mostly operating companies, are actively participating in vgbe´s Technical Competence Center “Future Energy System” and benefit from our offers as a member of the successful network.
Technical Committee “Photovoltaics”
The photovoltaic sector in Europe faces many challenges, whilst at the same time, photovoltaics provides plenty of opportunities for a safe and stable energy supply.

vgbe energy | Photovoltaics as part of the Technical Competence Center “Future Energy System” is the first address for parties interested in techno-economic and ecological issues as well as in research and innovation topics concerning photovoltaics.

The platform offers operators the exchange and transfer of practice-oriented experience and best practice measures as well as know-how to improve and optimize operation and maintenance.

Our slogan for our common work is:

*Success through Exchange of Experience*
In the TC “Photovoltaics” vgbe energy brings together experts from this fast-growing sector. Using the extensive experience of vgbe energy and its network of industry experts, solutions to the various techno-economic, environmental and strategic challenges related to the installation and operation of PV systems will be developed.

Tasks / Benefits for members

- Coordination of operator interests towards manufacturers, authorities, and standardization bodies
  Representation and “one voice” of the operator’s interests
- Initiation and update of vgbe-Standards
  Optimisation of the life cycle profit
- Sharing and joint analysis of operational experience
  Reduction of the operational costs
- Initiation, coordination and evaluation of research projects
  Cost savings and build-up of know-how
- Organisation of events and workshops
  Direct exchange of experience with external experts

Planned works

- Developing new concepts to improve the operation, maintenance and performance
- Exchange on selection and design of structural and technical installations in PV plants
- Improving availability, reliability and safety
- Supporting cost-efficient lifetime and environmental management
- Supporting work in Digitalisation, IT and Cyber Security in the PV industry
- Initiate research projects on interesting up-and-coming topics (Agri-PV, Floating-PV, etc.)
- Service life and failure analysis
TC “Photovoltaics“ – Focus

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

vgbe’s work

➢ Supporting in operation, maintenance and plant optimization as well as in technical, environmental and strategic challenges
  ▪ improving the availability, reliability and plant safety
  ▪ supporting cost-effective durability and environmental management
  ▪ developing new concepts to improve or optimise operation and maintenance

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

➢ 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 at issue-specific professional events
TC “Photovoltaics” – Benefits

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.
4 Technical Programmes
Technical Programmes – Objectives

Objectives

vgbe energy with its leading role in understanding about good and best practices in 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 future energy 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:

- Platform
- vgbe-Standard
- Industry funded project
- Database

Technical Programme Examples

Cost-comparison

Digitalisation barometer

Fault / Failure Catalogue

...
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)
The Technical Committee “Photovoltaics” will develop an **internal fault/failure catalogue** that will track various issues that arise with PV systems and describe how these issues have been addressed by our members. This may also include a bow-tie risk assessment.

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<tr>
<th>Technical Programme</th>
<th>Description</th>
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<tr>
<td><strong>Fault / Failure catalogue</strong></td>
<td>Guidance for the maintenance of photovoltaic power plant components through tracking and describing failures and conducting risk assessments. Further steps may be to use data-based methods to identify failures</td>
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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 industry, national and international research projects
- Building of know-how and knowledge transfer
- Saving costs through joint research projects

Some Example Research Projects

- ETIP Hydropower
- HYDROPOWER EUROPE
- RELY – REliable Reinforcement Learning for sustainable energy systems
- INADAR – Innovative and Ecological Approach for Dam Restoration
- DigiWind: The digital twin of a wind turbine
- ICING III
- XSTAND-H2
- ...

Benefit from international collaboration to improve access to public funds as well as from cost-savings, build-up and sharing of know-how.
Research Projects – Tasks and benefits

Tasks
- Depending on the specific call of the funding programme

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

Participation
- vgbe members and vgbe non-members
Expert Workshops
Expert Workshops – Objectives

Potential Expert Workshops

- Disposal of PV-panels
- Nighttime inspection
- Floating-PV
- H2 Coupling
- AI monitoring
- Central control stations
- Agri-Photovoltaics
- ...

Objectives

vge energy organises topic-specific expert workshops for vge members only to foster exchange and problem-solving between experts at the highest technical level.

The Expert Workshops are planned by vge 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 vge 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.

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
Thank you to all members for your participation and assistance
vgbe energy | Photovoltaics

Performing as the collective European platform for operators of photovoltaics.

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