OVERARCHING TOPICS

A1 - Power System Modelling and Grid Operations

A1.1 Grid Congestion Analysis and Mitigation

A1.2 Power System Expansion and Planning

A1.3 Operational Aspects of Power Systems

A1.4 Synchronous Condenser Technology and Applications

A1.5 Cellular Solutions for Distributed Network Operations

A2 - Grid Forming

A2.1 Grid Forming Capabilities and Practical Experience

A2.2 Grid-Forming Capabilities: Frequency Control with PV Systems

A3 - Regulatory Framework and Market Aspects

A3.1 Regulatory Standards and Policies

A3.2 Market Rules related to VRE

A3.3 Demand-Side Management (DSM) Strategies

A3.4 Demand-Side Regulations and Standards

A4 - Power-to-X Technologies and Sector Integration

A4.1 Power-to-X System Modeling and Case Studies (e.g., Hydrogen, E-Fuels)

A4.2 Grid Code Compliance for Power-to-X Systems

A4.3 Sector Coupling and Integration with Hydrogen

A4.4 Large-Scale Load and Data Center Modeling

A5 - AI, Smart Grids, Automation, and Cybersecurity

A5.1 Smart Grid Technologies and IT Innovations

A5.2 AI and Machine Learning for Grid Integration

A5.3 Cybersecurity Solutions for Critical Infrastructure

A6- System Stability and Security of Energy Supply

A6.1 Energy Supply Security and Risk Mitigation Strategies

A6.2 HVDC (High Voltage Direct Current) and FACTS (Flexible AC Transmission Systems)

A6.3 Role of Synchronous Condensers in Grid Stability

A7 - Challenges in Weak Grids and Emerging Markets

A7.1 Infrastructure Challenges and Solutions for Weak Grids

A7.2 Global South: Grid Integration Challenges

A8 - Ancillary Services and Forecasting

A8.1 Ancillary Services for Grid Support

A8.2 Power System Forecasting and Predictive Modeling

A8.3 Smart Innovations for Ancillary Services

A9 - Decarbonization and Industrial Applications

A9.1 Decarbonization Strategies for Energy Sectors

9.2 Decarbonizing Industrial Processes

A10 - Grid Codes and Emerging Challenges

A10.1 Grid Codes and Standards: Current Challenges and Future Trends

A10.2 Power System Balancing and Stability Aspects

A10.3 Grid Code Compliance for Large Loads and Data Centers

A10.4 Grid Code Testing and Certification Procedures

A11 - Hybrid Power Systems (Island Systems)

A11.1 Modelling and Operation of Hybrid Power Systems

A11.2 Project Experience with Hybrid Power Plants: Deployment and Operational Case Studies

A12 - Hybrid Power Plants ((Wind + PV+ Batteries + at one PCC)

A12.1 Modeling of Hybrid Power Plants (Wind + Batteries + Other Technologies)

A12.2 Project Experience with Hybrid Power Plants (Wind + Batteries + Other Technologies)

A12.3 Battery Storage Aspects: Operation and System Modeling

WIND POWER RELATED TOPICS

W1 - Grid Integration of Wind Power Plants

W1.1 Project Experience with Grid Integration of Wind Power Plants

W1.2 Transmission Grid and Power System Integration Aspects

W1.3 Distribution Grid Challenges for Wind Power Integration

W1.4 Power Quality Aspects in Wind Energy Integration

W1.5 Ancillary Services from Wind power Plants: Frequency Regulation, Spinning Reserve, and Voltage Support

W2 - Offshore Wind Power Systems

W2.1 Offshore Wind Power System Modelling

W2.2 Offshore Wind Power Projects with HVDC Systems

W2.3 Project Experience in Offshore Wind Power Integration

W3 - Wind Power System Studies and Modelling

W3.1 Power System Studies for Wind Energy Integration

W3.2 Challenges and Solutions in Wind Power System Modelling

W3 - Wind Power System Studies and Modeling

W3.1 Power System Studies for Wind Energy Integration

W3.2 Challenges and Solutions in Wind Power System Modeling

SOLAR POWER RELATED TOPICS

S1 Grid Integration of Solar PV and Battery Systems

S1.1 Case Studies and Lessons Learned: Integrating PV and Battery Systems into Transmission Grids

S1.2 Power System Studies: Stability, Capacity, and Operational Behavior with High PV Penetration

S1.3 Distribution Grid Challenges: Voltage Regulation, Load Balancing, and Infrastructure Upgrades with PV Integration

S1.4 Transmission Grid Challenges: Stability, Capacity, and Reactive Power Management for High PV Penetration

S1.5 Power Quality Aspects: Addressing Harmonics, Voltage Fluctuations, and Flicker in PV-Integrated Grids

S1.6 Ancillary Services from PV and Battery Systems: Frequency Regulation, Spinning Reserve, and Voltage Support

S1.7 Power System Balancing: Strategies for Managing Variable Solar PV Generation

S2 - Modelling and Operational Strategies for PV and Storage Systems

S2.1 Modelling Challenges: Simulating PV and Battery System Behavior Under Varying Conditions

S2.2 Battery Storage Operation and System Modelling: Performance Optimization in Grid Applications

S3 - Digitalization, Forecasting, and Smart Grid Solutions

S3.1 Aggregation and Management of Distributed Energy Resources (DER): Coordinating Distributed Solar PV Resources for Grid Services

S3.2 Forecasting Solar PV Generation: Optimizing Grid Operations and Market Participation

S3.3 Smart Grid Technologies and IT Innovations: Enhancing PV Grid Integration and Resilience

S3.4 Artificial Intelligence and Machine Learning: Optimizing Grid Management, Forecasting, and Fault Detection for PV Systems

S4 - Energy Market, Policy, and Sector Coupling

S4.1 Energy Market Structures and Regulatory Frameworks: Governing PV and Battery Storage Integration

S4.2 Sector Coupling Solutions: Integrating PV Systems with Hydrogen Production and Storage

S4.3 Decarbonization of Energy Sectors: Leveraging PV and Battery Storage to Reduce Carbon Emissions

HYDROGEN RELATED TOPICS

H1. Hydrogen for Power System Stability and Balancing

H1.1 Power System Balancing with Hydrogen-Based Solutions: Stabilizing Electricity Supply and Demand through Hydrogen Production, Storage, and Consumption

H1.2 Ancillary Services from Hydrogen Systems: Frequency Regulation, Voltage Control, and Reserve Power Provided by Hydrogen Technologies

H2. Modelling and Simulation of Hydrogen Systems

H2.1 Electrolyzer System Modelling for Grid Integration: Simulation of Electrolyzer Behavior and Performance in Power Systems

H2.2 Electrolyzer Modelling for Power System Studies: Detailed Analysis of Electrolyzer Operation in Grid Applications

H2.3 Fuel Cell System Modelling: Simulating Fuel Cell Performance for Integration into Energy Systems

2.4 Hydrogen Plant and System Modelling: Comprehensive Modelling of Hydrogen Systems for Grid Applications

H3. Renewable Hydrogen Technologies and Applications

H3.1 Renewable Hydrogen Technologies: Innovations in Hydrogen Production, Storage, and Consumption for Renewable Energy Integration

H3.2 Applications of Hydrogen in Renewable Energy Systems: Practical Deployment and Use Cases of Hydrogen in Power and Energy Sectors

H4. Energy System Management and Hydrogen Integration

H4.1 Energy System Management with Hydrogen: Strategies for Coordinating Hydrogen Production, Storage, and Consumption in Energy Systems

H4.2 Energy System Modelling with Hydrogen: Analyzing Hydrogen's Role in Optimizing Energy Flows and Enhancing Grid Stability

H5. Hydrogen Market Dynamics and Regulations

H5.1 Hydrogen Energy Market Dynamics: Market Mechanisms and Trading Strategies for Hydrogen in the Energy Sector

H5.2 Regulatory Frameworks for Hydrogen: Policies and Standards Governing Hydrogen Systems in Energy Markets