

Power systems of the future

ELECTRIC POWER SYSTEM CONTROL AND OPERATION DEPARTMENT

We provide research and development services in the field of operation and management of power systems, focusing on the use of smart grid technologies, information and communication technologies and innovative services, approaches and tools.



Research and development of advanced power system solutions and services.



Co-creating digital and green transformation of the electricity sector.



Participation in international R&D projects of the future.

We are experts in sustainable digital transformation of the energy sector, which means that we are actively involved in the implementation of information and communication technologies for more efficient and reliable operation of power systems.

Our research and development activities are focused on the latest technological trends in the operation of power systems and smart grid solutions.

OPERATION AND MANAGEMENT OF ELECTRIC POWER SYSTEMS

- Stationary analyses in the electric power system.
 - Power flow calculations.
 - Calculation of the permissible power size of the generating units at the energy site.
 - Safety statistical analyses.
 - Short circuit analyses.
- Dynamic analyses in the electric power system.
 - Electromechanical and electromagnetic stability analyses.
 - Behaviour of protective elements.
 - Dynamic response verifications.
 - WAMS/PMU analyses.
- Analyses of the integration of new generation sources and of the integration and operation of dispersed sources.
- Calculations for dynamic assessment of transmission capacity of transmission lines.
- Performing WAMS and PMU metering analyses.
- Providing voltage and supply quality services.
- Preparing operational analyses in the electricity generation sector (hydro-thermal coordination).
- Developing and analysing various system services.
- Developing and analysing solutions in the field of power plant protection.
 - Implementing and updating control systems (SCADA, EMS, DMS, etc.).
 - Developing conceptual designs.
 - Performing tender documents.
 - Acceptance testing (FAT, SAT, SI).

SMART ELECTRICITY GRIDS

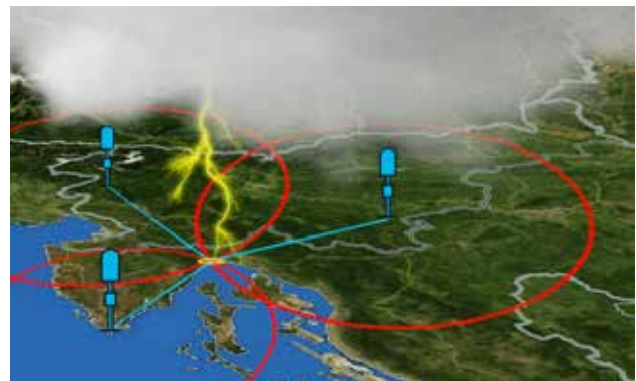
- Developing smart grid concepts.
- Researching power and ICT technologies to develop smart grid solutions.
- Researching and supporting the development of regulatory frameworks and rule.
- Providing support in putting regulatory requirements into practice.
- Designing and managing demonstration and pilot projects.
- Developing project ideas and participating in international projects.
- Developing and improving information and communication technologies.
 - Semantic technologies and data modelling to achieve data interoperability in modern power systems (CIM).
 - Advising technology providers on upgrading existing systems with CIM information exchange functionality.
 - Developing use cases for the development of technology solutions, including as deployments of new business processes in smart grids in accordance with IEC 62559-2.
 - Developing state-of-the-art reference models and ICT architectures in smart grids.
- Seamless integration of IT and OT systems in the electricity sector.
- Advising on the upgrade of existing systems with the functionality to communicate with established modern ICT platforms in smart grids.
- Software planning and conceptual design.
- Implementing state-of-the-art information and communication technology.
- Implementing advanced electricity metering systems.
 - Developing plans for the deployment of metering systems.
 - Preparation of tender documentation.
 - Acceptance tests (FAT, SAT, SIT).
 - Analysis and development of new concepts.
- Developing data analytics using machine learning and artificial intelligence.
- Developing and designing systems for data capture, processing and visualisation.
- Developing computational models and algorithms.
- Performing training in semantic modelling, tailored to individual client needs.

Reliable and safe operation of power systems using state-of-the-art technologies, approaches and services is at the core of our R&D activities.

LIGHTNING LOCALISATION SERVICES – SCALAR SYSTEM

SCALAR's innovative services are the result of our expertise. With state-of-the-art technology upgrades, we cover Slovenia and the Western Balkans and are part of the European Euclid Atmospheric Discharge Detection Network. We are developing the technological solutions that SCALAR provides today in cooperation with our users and tailored to their business processes.

- Providing integrated services for the localisation of atmospheric discharges (lightning):
 - Real-time atmospheric discharge data.
 - Real-time radar data of precipitation and lightning.
 - Archiving of atmospheric discharge data.
 - Lightning alerting.
- Determining the correlation of power line outages with real-time atmospheric discharges.
- Managing risks from lightning strikes (in accordance with SIST EN 62305, Part 2).
- Providing statistical data.
- Determining the exposure of individual areas to lightning strikes (according to high resolution lightning density and probabilistic calculations of current intensity occurrence).
- Carrying out advanced research and develop support services.



Real-time detection of atmospheric discharges

OTHER INTELLECTUAL SERVICES

- New business models development.
- Expert trainings.
- Expert opinions.
- Feasibility studies.
- Techno-economic analyses.
- Drafting regulations and rules.
- Benchmarking studies.