

# SCCER - FURIES

Shaping the **F**UtuRe Swiss **E**lectrical Infr**S**tructure

ADDED VALUE  
FOR THE  
SWISS INDUSTRY

## Our mission

For the implementation of the Swiss Energy Strategy 2050, technical and socio-economic challenges should be overpassed and innovative solutions to be deployed across the Swiss energy system. At the electrical infrastructure, the Smart Grid concept should be rolled out for the maintenance of the stability and reliability of the power grid.

**The Swiss Competence Centre for the Future Electrical Infrastructure (SCCER-FURIES)** unites the competences of the key 31 academic and 52 industrial actors in the area of swiss power grids. Our common vision is to enable the seamless and sustainable powering of Swiss residents. Therefore, we work on the shaping of the next generation of the Swiss electrical infrastructure, enabling a vast penetration of cleaner and reliable power supply and storage facilities.

*"Since 2013, Romande Energie's participation to the center enabled us to capitalise on previous efforts by consolidating and validating existing results, and take strategic decision faster than what we could have done otherwise. Currently, we scale up our FURIES activities and seek to demonstrate possible interactions between Smart Grid technologies and the open grid flexibility market. This requires multi-disciplinary skills that were accessible to our company thanks to the SCCER-FURIES."*

**Arnoud Bifrare, Head of Smart Grid Technology at Romande Energy**

## Activities

SCCER-FURIES' partners work in all layers of the power grid from transmission to distribution and their components. We provide the grid operators with intelligence-enhanced planning, monitoring and devices such as:

### Transmission scale



- Simulation of the Swiss and European whole-sale power markets
- Model of the power transmission grid
- Study of risk propagation
- Planning of new transmission lines
- Planning of hydro storage and Power-to-Gas installations

### Distribution scale



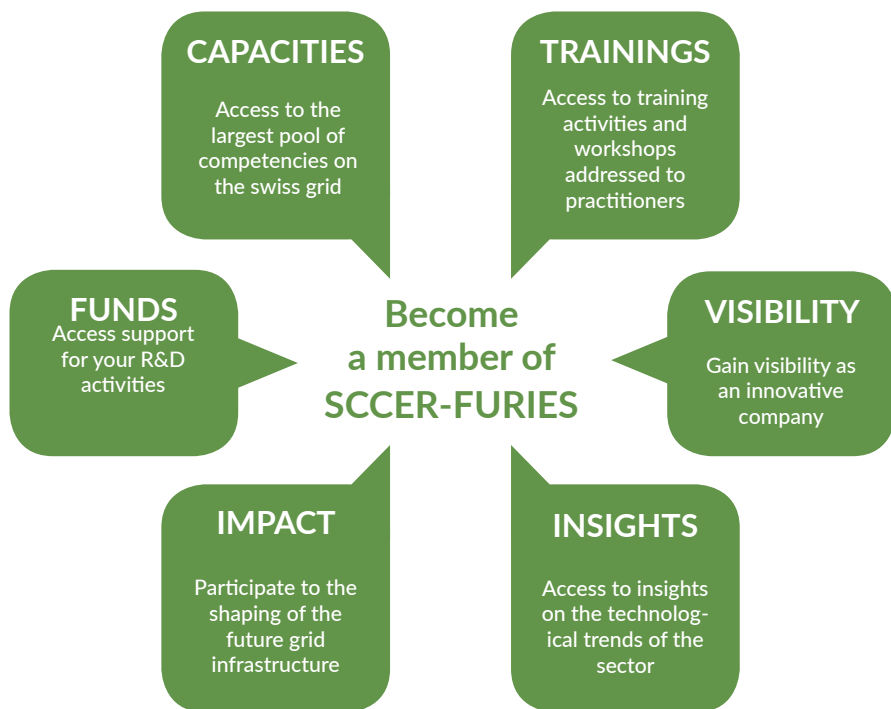
- Advanced grid monitoring solutions and control strategies
- Contracting schemes
- Management of "Shiftable" loads
- Optimization tools for wind farms and small pump storage plants
- Planning of Multi-energy hubs

### Component scale



- Fault detection and clearing in multi-terminal HVDC
- Converter technologies
- Novel solid-state transformer
- Multiphysics simulations
- MV and HV insulation systems
- Hydro-power, PV and Storage assets grid integration

## Partnership



**At SCCER-FURIES, partnership is key.** We believe that scientific research is all about collaboration.



*"Participating to the SCCER-FURIES has highly enabled Leclanché to build projects that now serve as show-cases for our products. It has also provides our company with insights on technologies that will shape the future of the swiss power grid, which is fundamental for the adaptation of our international strategy."*

**Fabrizio Marzolini, Executive Vice-President system engineering of Leclanché**

Our pool of competencies includes academic partners from the ETH domain, Universities of Applied Science and Cantonal Universities and industrial partners from accross the value chain of the energy sector. Therefore, we combine a wide range of competencies on various fields such as: electrical, mechanical and micro-engineering; computer and communication sciences; mathematics; geo-informatics; hydrology; and economics.

We believe that one should always seek new points of view and new capabilities. Thus we are always open to new and interesting partnerships from both academic and industrial sectors. For further details on how to become a partner, please follow the link: <https://sccer-furies.epfl.ch/lang/en/Home/Partners/BecomePartner>

## About SCCERs and FURIES

The **Swiss Competence Centres for Energy Research** ( SCCERs ) were established in 2014 in support of the Swiss Energy Strategy 2050 (ES2015) and funded by the Commission for Technology and Innovation (CTI). These competence centres are the scientific arms of this energy strategy aiming to ensure seamless transition from a centralized nuclear-based power system to a decentralized renewable sources-based one. There are 8 SCCERs established covering the entire value chain of the energy sector. SCCER-FURIES is the national competence center focused on the upgrading of the Swiss electrical infrastructure.

## Key figures (as of 2017)

- ▶ **105 ongoing projects** in Switzerland and abroad
- ▶ **186 innovative solutions produced**, including 14 patents, 5 licences, 5 spin-offs, 52 demos/prototypes, 40 innovative solutions, 70 models and datasets
- ▶ **62 industrial partners**, including 27 DSOs, the national TSO (Swissgrid), the national railway (SBB-CFF-FFS), and gas (Swissgas) 32 providers of technology and services and 8 Centers, Associations and Foundations
- ▶ **400 publications** in peer-review journals and conferences
- ▶ **200 scientists** funded by FURIES and associated activities
- ▶ **2000 young scientists**, students and practitioners trained

## Knowledge Hub

Transfer to the market of the knowledge and technology developed in the frame of FURIES is at the core of our business. The SCCER-FURIES Knowledge Hub serves this purpose by facilitating discoverability and accessibility of the capacities and ongoing activities in Switzerland. This tool is accessible through the following link:

[https://sccer-furies.epfl.ch/lang/en/Home/KnowledgeHub/Knowledge\\_hub](https://sccer-furies.epfl.ch/lang/en/Home/KnowledgeHub/Knowledge_hub)



### In cooperation with the CTI



**Energy funding programme**  
Swiss Competence Centers for Energy Research



Schweizerische Eidgenossenschaft  
Confédération suisse  
Confederazione Svizzera  
Confederaziun svizra

Swiss Confederation

Commission for Technology and Innovation CTI

### Contact

SCCER-FURIES  
[sccer-furies@epfl.ch](mailto:sccer-furies@epfl.ch)  
+41 (0) 21 693 27 86

[sccer-furies.epfl.ch](https://sccer-furies.epfl.ch)