



Foreword

Welcome to our first HYPERRIDE newsletter!

Just as HYPERRIDE stands for "HYbrid Provision of Energy based on Reliability and Resiliency via Integration of DC Equipment", it is also our goal to inform you reliably and regularly about the project activities. Therefore, we are planning to provide our HYPERRIDE NEWS quarterly.

If you have any comment or suggestion regarding the content, please feel free to contact us. We hope you enjoy reading it.

The HYPERRIDE Consortium

In order to take into account all levels, key technologies for DC grid protection (DC circuit breakers) and grid automation (DC sensors) are being further developed.

On the other hand, automation algorithms are being created whose validity will first be tested in a test platform and then transferred towards the three demonstration sites.

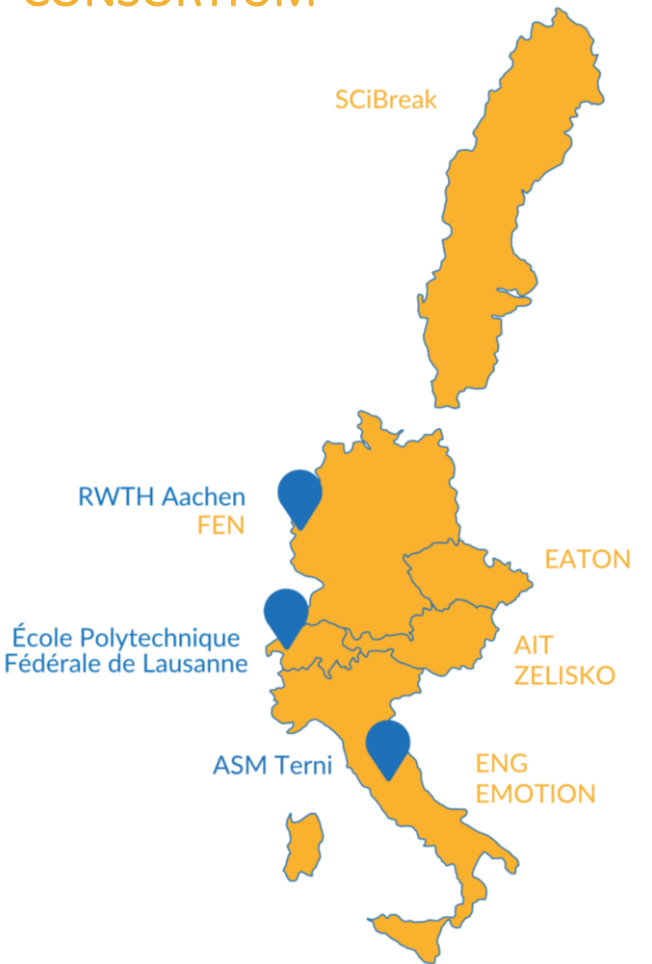
Furthermore, concepts and solutions in the area of cyber security and fault detection will be integrated into these processes as well. These and the previously mentioned basic technologies will be demonstrated in a variety of use cases in three pilot demonstrators located in Germany, Switzerland and Italy.

Overview of HYPERRIDE

HYPERRIDE is a European project established under the H2020 call "LC-SC3-ES-10-2020 - DC - AC-DC hybrid grid for a modular, resilient and high RES share grid development", which runs from 2020-2024. The project has a total budget of 8.2 M€.

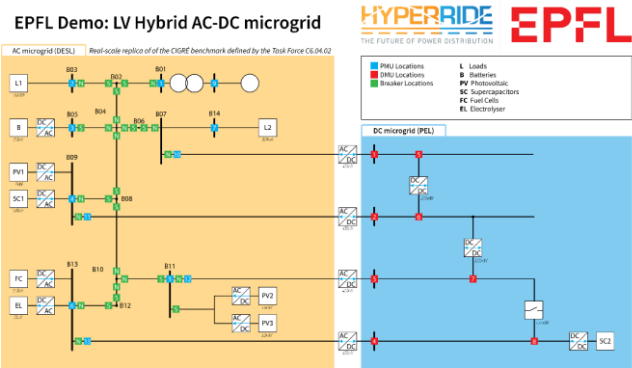
The project aim is to successfully deploy new infrastructure concepts across Europe and to overcome barriers by providing and identifying solutions for the implementation of DC and hybrid AC-DC grids. Besides the definition of the most relevant application areas for DC grids, the focus will be on the specification and development of enabling technologies and their guidelines relevant for grid planning and commissioning.

CONSORTIUM



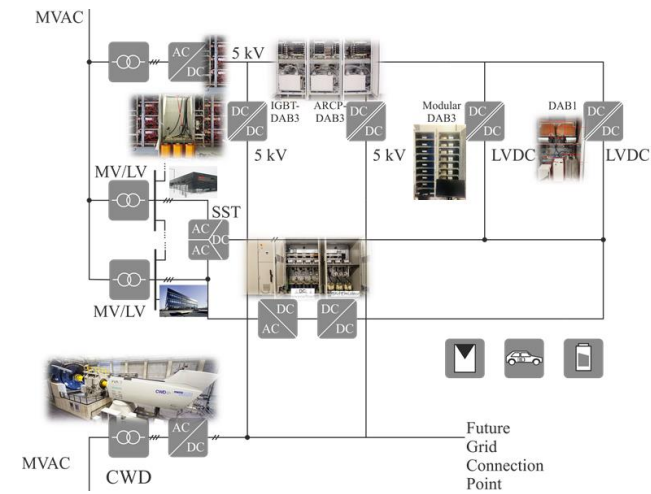
Three Pilot Sites

The three pilot sites in Germany, Switzerland and Italy have been chosen to cover different application focus areas and yet have relevant synergies to demonstrate the applicability of HYPERRIDE. This diversity in the pilot environments will ensure and demonstrate that the results of the project can be easily replicated in other areas of interest in Europe. The virtual connection of the pilot sites will enable an intensive and efficient exchange of research on the respective application focus areas.



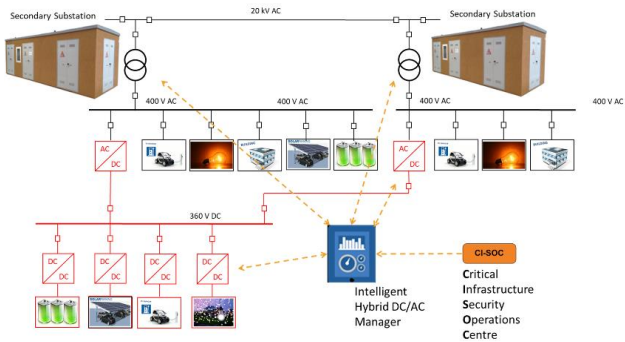
EPFL Demo: LV Hybrid AC-DC microgrid.

The **Swiss EPFL pilot site** in Lausanne consists of the Distributed Electrical System Laboratory (DESL) and the Power Electronics Laboratory (PEL). These two laboratories are interconnected. The main goal of this pilot site is to test optimal control strategies for hybrid AC-DC networks and also adaptive reconfiguration approaches. Equal attention is given to protection coordination and stability investigation of hybrid AC-DC networks.



Complex Architecture controlled by an Intelligent Hybrid DC/AC Manager

The **German pilot site** is based on the existing infrastructure and converter technologies, which have already been developed in previous projects at RWTH Aachen University. These converter technologies enable the testing of different network architectures through an easily reconfigurable, modular design. This in turn is significant for HYPERRIDE, whose goal is to demonstrate different hybrid AC-DC architectures to increase the technological readiness of key technologies and systems.



Architecture of a LV/MV Power Grid

The application focus of the **Italian pilot station** (run by ASM Terni) demonstrates the potential offered by a modular (cellular) smart hybrid AC-DC distributed operation of the MV/LV power grid to increase the efficiency of grid operation, reduce the backflow towards the MV and reduce the cybersecurity risk.

Best Practice Exchange and Methodology Workshop

HYPERRIDE is also a technical community with 10 partners from 6 countries that cover all the system integration levels. To facilitate continuous progress in the demonstration sites and promote best practice sharing among partners, a series of monthly methodology workshops have been successfully organized. Up to now, four partners have presented their relevant research and innovation activities in the HYPERRIDE.

Starting on Feb. 14th, 2021, colleagues from SCiBreak presented their state-of-the-art DC circuit breaker using the VSC-assisted resonant current (VARC) technology. Compared to other solid-state or hybrid DC circuit breakers, the VARC has numerous advantages including a low number of semiconductors, low stress on passive components and low control complexity, which makes it suitable in MV and HV DC applications.

On March 15th, colleagues from RWTH Aachen University made a comprehensive introduction of their featured research on power electronics in MVDC, synchronous measurements and power system automation. These innovative technologies will be implemented in the German Pilot to demonstrate the resilient operation of hybrid AC-DC grids on the MV level.

On April 19th, colleagues from EATON shared their experiences in DC power systems and related products with all other partners. The focus was on demonstrations how LVDC microgrids are designed for industrial and campus applications with high-performance power electronics, DC circuit breakers and energy management systems.

On May 18th, colleagues from EPFL presented their work on the LV hybrid AC-DC grid in the Swiss Pilot and highlighted the key components such as bidirectional isolated DC-DC converters and algorithms for the optimal power flow control. If you are interested in any of these topics, the presentation slides are available on Zenodo (<https://zenodo.org/communities/hyperride/?page=1&size=20>).

HYPERRIDE joins BRIDGE Initiative



BRIDGE is a European Commission initiative that unites Smart Grids, Energy Storage, Islands and Digitalisation projects to create a structured view of cross-cutting issues. BRIDGE is organised along four working groups: Data management, Regulation, Business models and Consumer and Citizens engagement.

The BRIDGE General Assembly (held from May 3-5, 2021) was open for participation of other initiatives, external projects and platforms such as the ETIP SNET, the Low TRL energy project cluster, the Clean Energy Transition and the 2ZERO Partnerships. It is considered important to strengthen the sharing of experiences and identify of potential synergies. The European Commission and the BRIDGE Secretariat will therefore continue to involve external stakeholders, in a flexible manner, to define common priority topics, synchronise efforts and optimise the global use of resources towards a sustainable energy transition.

Sharing data, experiences, working methods and best practices was highlighted as an important added value of BRIDGE. The Commission (JRC and ENER), with PANTERA H2020 project, ETIP SNET and the BRIDGE initiative, are working together to create a Knowledge Management and Sharing Platform (EIRIE platform) as a first step, but a continuous improvement and further discussion on how to optimise and make it useful for all projects will be necessary.

<https://www.h2020-bridge.eu/>

BRIDGE Working Group

HYPERRIDE at BRIDGE Consumer and Citizen Engagement Working Group (CCE WG) – attending the Kick-off meeting

HYPERRIDE was invited to join the 4 main working groups of the BRIDGE initiative and is now actively taking part in all of them. The BRIDGE CCE WG started in 2021, based on the agreed priority topics, in a meeting on April 15, 2021.

Chairman Stanislas d’Herbemont introduced the work performed in 2020 and highlighted the mandate of building an engagement framework for R&I projects to motivate, assess and mature collective action schemes of consumers in the energy markets. The WG objectives for participating European R&I projects are firstly, to promote exchange and best practice sharing around consumer engagement throughout the BRIDGE initiative. Secondly, the WG aims to analyse barriers and develop methods to overcome them to build strong community-based engagement strategies and processes.

Additional objectives arisen from the General Assembly 2021 are:

- to implement more direct communication channels to engage project partners
- to use more engaging formats in deliverables (video, graphic presentation)
- to form a group of community building specialists in BRIDGE to reach concerned partners.

The HYPERRIDE partners expect to receive valuable inputs from the work in the CCE WG for their interaction with industrial users.

A new structure of the WG was created with 4 thematic Sub Groups

Sub Group Structure

Sub Group	Scope	Leader
Drivers and Indicators of engagement	To collect evidence around user profiles and drivers triggering consumer engagement. To collect indicators to assess this engagement.	Johanna Irene Höffken (MUSEGRID)
Strategies of engagement	To collect strategies and methods used by projects to engage consumers and citizens, through collective action schemes.	Panagiotis Ktenidis (TILOS)
Governance models for collective action	To collect models to create citizen-led organization, and favor the market integration of such organisations.	Josh Roberts (COMPILE)
Smart tools for Engagement	To collect an exhaustive list of tools and technologies supporting consumer participation and the ways those tools are supporting the involvement of consumers.	Diego Casado Mansilla (PARITY)



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HYPERRIDE at IEEE Smart Grids for Smart Cities 21



HYPERRIDE was part of the IEEE International Forum on Smart Grids for Smart Cities, which was held virtually from March 17 to 23, 2021. The conference focused on projects that contribute to the implementation of smart cities and smart grids and aimS to enable sustainable lifestyles for the environmentally conscious citizens of the 21st century.

In the project zone, HYPERRIDE presented a virtual booth to showcase the project's activities and network with other researchers participating in the forum. This was a unique opportunity for visitors of the event to interact with the members of the HYPERRIDE consortium and address them directly.

You can visit the conference website for more information <https://ieeesg4sc.org/>

HYPERRIDE at ENLIT Europe 2021



Within the Enlit Europe Marketplace HYPERRIDE will be located at the EU Project Zone, taking part with a [virtual booth](#).

At the European edition, the Enlit community will come together in an [online platform](#) and for three days in Milan from 30 Nov. through to 2 Dec. 2021, to meet and to develop their discussions and actions to take steps forward in the energy transition.

We hope you could get a first impression of the **HYPERRIDE project**. We are already looking forward to informing you about the project progress and results in our next newsletters.



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This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 957788.

