NEWSLETTER
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First edition

Co-funded by the European Commission's Horizon Europe programme, "Enabling interoperability of multi-vendor high-voltage direct current (HVDC) grids" (InterOPERA) brings 21 European partners together to unlock the potential of HVDC grids and to enable the large-scale transition of the European energy sector.

InterOPERA's main objective is to make future HVDC systems mutually compatible and interoperable by design, to improve the grid forming capabilities of offshore and onshore converters and to pave the way for the first HVDC multi-terminal, multi-vendor, multi-purpose real-life projects in Europe.

A SUCCESSFUL KICK-OFF IN LYON

On 17-19 January project partners met at the RTE Campus Transfo in Lyon, France to officially kick-off the InterOPERA project.

The kick-off meeting had keynote speeches from the European Commission and high-level speakers from partner organisations. Speakers highlighted the great achievement of the project in bringing together more than 20 partners to work toward an improved, interoperable and better integrated future energy systems. Innovation and collaboration are the keys to success!

Over three days, project partners reviewed project activities, milestones and expected outcomes. Work Package leaders laid out the objectives of each Work Package and the main activities during the first six months of the project.

InterOPERA's main objective is to make future HVDC systems mutually compatible and interoperable by design, and to improve grid forming capabilities of offshore and onshore converters. Future HVDC systems will be modular. The technical and commercial maturity of these systems is essential for the European Union to deliver on its 300 GW offshore wind capacity target by 2050. Future offshore transmission systems won't just transmit electricity to shore but will also serve as interconnectors between Member States.

InterOPERA, one of the biggest Horizon Europe projects in terms of funding received, will run until 2027.

Do you want to stay informed about InterOPERA's most recent developments and activities? Subscribe to our quarterly newsletter here and visit the project website!

UPDATES FROM WORKING PACKAGES

Work Package 1 “Development of standardised interaction study processes and interfaces”

One of the main objectives of InterOPERA is to obtain adequate HVDC and wind power plant models and replicas to assess interoperability. The core objective of Work Package 1 (WP1) is to prepare and to make preliminary tests during the first phase of the project (2023-2025), before shifting the focus on the real-time physical demonstrator.

And WP1 has an important role. What exactly will WP1 do?

WP1 will define the requirements of the models and the control and protection cubicles that will be provided by the vendors to perform offline and real-time interaction studies, such as energisation of the direct current grid and alternate current offshore grid, management of the power and voltage on these grids, robustness of the system in case of a trip of one component, etc.

It will also carry out dry-run tests with template models and control and protection cubicles. Dry-run tests are important to ensure that these requirements are adequate and that there are no numerical interactions.

During the first months of the project, participants in WP1 have mainly been working on the requirements for offline studies and the requirements for software in the loop and hardware in the loop for real-time simulations. By the end of April, WP1 will already have a first draft of the report on this topic.

What’s next? WP1 will start working on the report into the minimum technical requirements related to the simulation platforms and start planning for the upcoming report on the definition of a standard process for interaction studies with Electro-Magnetic Transient (EMT) simulation in multi-vendor projects.

Work Package 2 “Requirements and assessment of interoperability for multi-vendor multi-terminal HVDC systems"

Today, the technological base for multi-vendor multi-terminal systems is strong but HVDC technologies from different manufacturers are not compatible.

InterOPERA’s Work Package 2 (WP2) experts, led by Delft University of Technology (TU Delft), will work to change this!

WP2 will ensure that HVDC components from different suppliers can work together – making them “interoperable” and modular by design. And this is a top priority in accelerating Europe’s energy transition.

The work has already started. At this stage our experts are focused on two tasks. The first is to establish functional requirements for multi-vendor HVDC grid systems and the second is to develop functional requirements for grid-forming.

WP2 experts have met twice already, in Frankfurt (14-15 February) and in Delft (24-25 February) to kick off their work and to discuss working on these two tasks.

At the same time, the WP2 team is working on a literature review of the available grid forming functional requirements. This will allow to align the definitions of grid-forming control for multi-terminal HVDC grids and to define the overall functional concepts.

Work Package 3 “Multi-vendor multi-terminal demonstrator project”

InterOPERA will pave the way for the first HVDC multi-terminal, multi-vendor, multi-purpose real-life projects in Europe.

The second phase of the project (2025-2027) will be all about the real-time physical demonstrator. But the preparatory work on the demonstrator project has already begun! What is a demonstrator project? We need a definition and WP3 has started working on that.

As a first step, WP3’s work is focused on identifying and consolidating multi-terminal HVDC use-cases based on a dialogue with relevant stakeholders on the description of existing and planned infrastructure and the technical specifications.

The WP3 team carried out interviews with all stakeholders, including transmission system operators and asset owners, HVDC system manufacturers and sub-system suppliers, wind turbine manufacturers/project developers, and external partners from the United Kingdom, the United States and Japan.

WP3 has made significant progress. A working version of the report “Demonstrator project definition and system design studies” is already available to project partners.

What are the next steps? Project partners will build consensus and align on the

process to define the demonstrator. This could stem from the MT-HVDC use-cases list, but other options cannot be excluded yet. Further on, they will review the identified criteria to select the most interesting cases and begin all necessary studies to simulate the response of the selected project to several (extreme) operational conditions – investigating its security, reliability and resilience.

On 29 March project partners met at the T&D Europe Offices in Brussels to officially kick-off WP3, to check work progress and to discuss issues and risks that could affect their work.

Work Package 4 "Cooperation framework and governance"

InterOPERA is a unique project bringing together more than 20 partners at the forefront of renewable energy development, power system operation and grid management. The diverse set of partners effectively represents the entire European value chain.

Efficient cooperation and governance are critical for the success of such a project setup, and this is what Work Package 4 (WP4) focuses on.

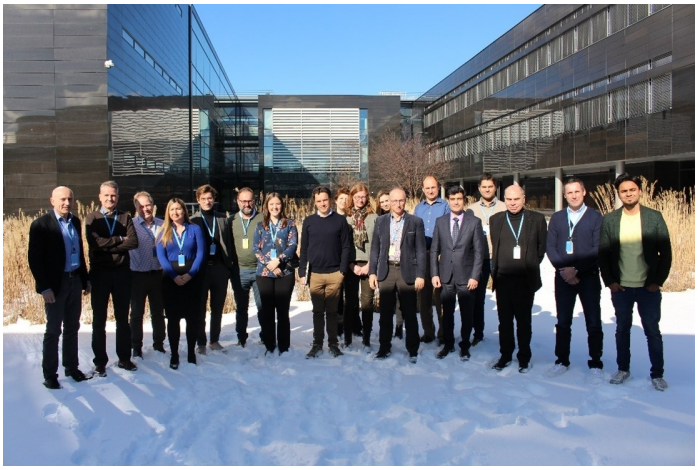
What will WP4 do exactly?

WP4 will develop two important cooperation frameworks that are necessary for a multi-terminal multi-vendor HVDC system.

By June WP4 will deliver the first internal framework, among directly involved InterOPERA partners. The purpose of this framework is to handle complex multi-stakeholder engagement throughout the project lifetime, and it covers for example the sharing of data and models that are important for project activities, intellectual property rights, competition etc.

WP4 will also align with remaining Work Packages over the 4-year period to periodically include and address relevant challenges that arise, which will then be used for the generalised framework.

The generalised multi-vendor cooperation framework will be applicable to future real-life projects. And it will also enable both future expandability as well as dynamic system studies at early stages of planning and detailed control and protection development.



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Do you want to learn more about InterOPERA or have questions on our work?
Get in touch at info@interopera.eu

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