



NEWSLETTER

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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.

Updates from Work Packages

Work Package 1 "Development of standardised interaction study processes and interfaces"

During the final quarter of 2025, the laboratories carried out iterations with vendors in the offline environment to complete the dry-run tests with both ElectroMagnetic Transients (EMT) tools (namely PSCAD and EMTP tools). The team has identified areas for improvement to prepare for the demonstrator.

The dry-run real-time platform is now complete after installing and commissioning the last replicas at the TU Delft and RTE sites. The platform includes a replica from the SuperGrid Institute for the DC Grid Controller and replicas from Siemens Energy, Siemens Gamesa, GE Vernova, Hitachi Energy, Scibreak, and Vestas for HVDC converter stations, DC Switching Stations and Power Park Modules. It also includes a DC protection relay from Mitsubishi Electric, that recently joined the project consortium as an associated partner.

Several vendors have also delivered major hardware and software updates to support further testing. These updates include improvements to the models and interfaces with the real-time simulators (RTDS and HYPERSIM) and with the DC Grid Controller. This work will continue in the coming months to address recurrent technical challenges and take stock of learning opportunities.

On 12-13 November 2025, RTE and Equinor held the first workshop for the Task on the 'Definition of a standard process for interaction studies with ElectroMagnetic Transients (EMT) simulation in multi-vendor projects'. This task will issue a report on lessons learned and recommendations for Multi-Vendor HVDC System Interaction Studies. The Task group members finalised the scope and objectives of the document. The team has now started to draft the content, drawing on experience from the dry-run and the demonstrator.

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

The team continued working on three main areas: functional requirements for grid-forming control, the interaction study using offline ElectroMagnetic Transients (EMT), and proposals for updates to the HVDC network code.

The report "Functional requirements for HVDC grid systems and subsystems" was updated in the final quarter of 2025. It guides the development of functional specifications for the demonstrator, recommendations for future updates to the network codes, and technical specifications for procurement in Multi-Vendor Multi-Terminal HVDC systems.

The team is also optimising the tests for the interaction studies while continuing the work on developing connection network code recommendations for DC connection points and requirements for future DC ancillary services.

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

The team continued developing the models for each subsystem of the demonstrator and carried out the first interface tests at the laboratories.

The next major milestone is due at the end of June. By then, all models will come together in the demonstrator. This step will allow us to check that every model is ready for the full test programme that will follow. The first run of the full system will happen at a later stage.

Work Package 4 “Cooperation framework and governance”

The team developed a detailed questionnaire to collect feedback from all partners on the Multi-Party Cooperation Framework (MPCF) which will undergo revision. The team will collect and analyse all answers and will start drafting the updated version of the MPCF.

The fourth technical InterOPERA workshop event added an important external perspective to the questionnaire. An interactive session with participants looked at several topics included in the questionnaire, and the initial insights provided first feedback on whether the Framework should function as a legally binding document or as a guideline, and which type of organisation should host it after InterOPERA concludes.

The team is also developing a pre-contract tender process. This process brings together many workstreams from within the project and aims to clarify what type of collaboration partners need before signing any contract. Once complete, it will be the basis for updating the Cooperation Framework, which will play an important role in the early concept phase of future projects. It will also support the first Multi-Terminal Multi-Vendor HVDC project.

Work Package 5 “Procurement Strategy and Future Projects Preparation”

During the final quarter of 2025, several workstreams on procurement for future Multi-Terminal, Multi-Vendor HVDC projects moved forward.

The team has built a practical framework for procurement. It links value levers, cost, time, quality and flexibility, rating their risk profile that shows how likely issues are to arise and how much they could potentially affect a project. This document recommends choosing sourcing strategies that fit the project objectives and market conditions, combining value and risk in a single method.

The team also moved ahead with the contract development work. They defined clear patterns for key contract clauses and explained when and why each pattern fits best. Scenario-based workshops looked at potential conflicts early on, reducing the chance of disputes later in the process. The team also set a concise method, with templates and sets of rules, for writing requirements, which are clear, testable statements of what a system must do. This method keeps the quality of requirements consistent.

The end-to-end pipeline for interoperability requirements keeps different systems aligned and ensures they work together without any extra effort. Each requirement links directly to its test and to the part of the system it influences. This will expose any gaps and make impact analysis more timely. It also sets out how to map these requirements into common tools that store and link the requirements.

Lastly, a short guide now captures the key risk insights that highlight root causes and early warning signs. The results from related studies feed into a shared coordination process that improves the system-wide visibility of the risks and helps to fast-track decision making.

Get in touch with us:

Want to learn more about InterOPERA? Or have any questions about our work?

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