

New AC grid access: offshore transformer module

AC transmission is the most widely deployed technology for the connection of offshore wind farms. Since 2008 ten Siemens offshore platforms have been contracted for, and those completed have been successfully delivered. Unlocking the potential for offshore wind power within the wider energy mix remains dependent upon being able to innovate and reduce the levelized cost of energy.

Siemens has taken the lead in utilizing its experience in generation and grid access to innovate its portfolio. This innovation enables us to reduce both capital and operational expenditure, meaning we are on track to help our customers achieve the goal of reducing the levelized cost of energy to €0.10/kilowatt by 2020.

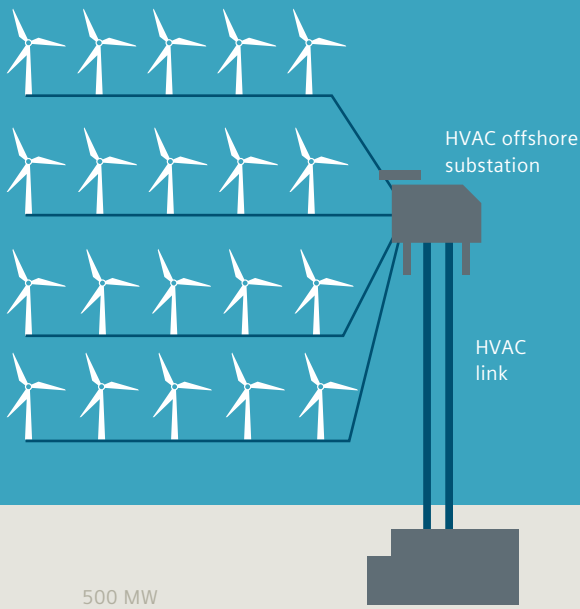
Our new innovative solution is based on the concept of two smaller and significantly lighter platform modules to replace the single large platforms currently deployed. The solution allows for the connection of the same rated power in total. It also offers high flexibility by allowing the modules to be installed and integrated with the wind turbine foundation or independently based on the customer's requirements.

The solution has various options which can be deployed to suit the needs of each project while maintaining the optimized price level required by the market.

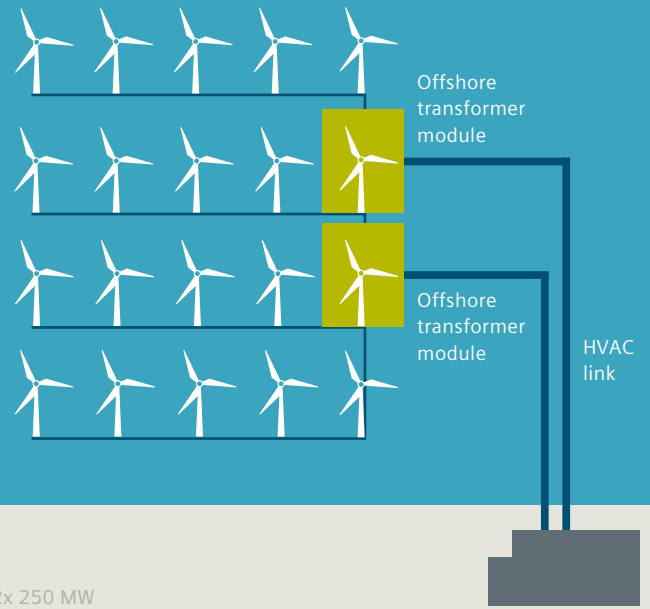
New AC grid access solution – saving weight, space, and costs by:

- ability to integrate with the turbine foundation or to be deployed separately
- installation by foundation/turbine installation vessels
- fire safe and environmentally friendly by deploying MIDL technology
- simple and rugged design
- electrical components optimized from our accumulated life cycle experience
- modular approach to enhance operational performance, maintenance, and availability

Current status



New concept



Allowing for the transmission of the same amount of power than a conventional large platform, Siemens' new AC grid access solution uses two smaller, substantially lighter modules. Allowing both independent installation of these modules or integration with the wind turbines' foundations, the new solution provides a new level of flexibility. Further technical options ensure optimal adaptation to individual requirements at optimized cost, which helps lower the levelized cost of energy.

The new solution has been designed considering the wind farm as a holistic asset. By doing so we can utilize synergies to ensure the lowest cost solution can be realized for the grid access. By fully utilizing the potential of the wind farm as an integrated system, we are able to leverage the following:

- using the wind turbines to provide reactive power, thus eliminating the need for offshore reactors
- using end-of-array connections to provide flexibility and remove the need for diesel generators
- using wind turbine tower emergency refuge and heli-hoist to reduce equipment and servicing requirements

AC grid access, general data

| | |
|-------------------------|----------|
| Rated power (MW) | 250 |
| Rated HVAC voltage (kV) | 220 |
| Rated MVAC voltage (kV) | 33 or 66 |
| Platform weight (t) | 652 |

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