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a sustainable future

Welcome to the monthly **HVDC-VSC** Newsletter!

July 2026

Power Electronics & Studies Department

Service Provider for Power System

THE TEAM

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Installation work at the entrance to the Cap Breton micro-tunnel for Biscay Gulf Interconnector. Credit: RTE/Hipolito

Meet us at CIGRE Paris!

Our RTEi teams will be at CIGRE Paris from 24-26 August.

Join us on Monday at 11:00 am at the RTE stand, where we will present our work on semi-automated grid code compliance verification and showcase our other HVDC and FACTS services.

We look forward to seeing you there!

News

2 GW France–Spain Link Enters Subsea Cable-Laying Phase

Offshore cable laying starts for the Biscay Gulf interconnector

Installation of the subsea cables for the Biscay Gulf HVDC interconnector between France and Spain has begun and is now under way. Three cable-laying vessels are being deployed in France to install the two links from the various landing points, marking major milestone in the project. [1]

A 2 GW interconnector project

Led by INELFE, a joint venture between French grid operator RTE and its Spanish counterpart Red Eléctrica, the project comprises two ±400 kV, 1,000 MW HVDC-VSC links, providing 2,000 MW of total capacity. The 400 km route connects the Cubnezais converter station, north of Bordeaux, to Gatika, near Bilbao, with around 300 km subsea and the remainder underground. It bypasses the Capbreton subsea canyon via an overland route along the French coast. [2]

Figure 1: Route map of the Biscay Gulf interconnector project. Credit: RTE

Nearly 10 years of development and construction

The technical studies began in 2017, alongside the public consultation. In 2019, geotechnical studies revealed instability in the Capbreton Canyon, requiring a route change. Administrative authorisation applications were submitted in late 2021 in both countries. The EPC contracts were awarded in March 2023, ahead of the start of onshore construction work in October the same year. [2]

Alongside the conversion stations at Cubnezais in France and Gatika in Spain, nearly 105 km of underground cables have already been laid in France. The project also required three micro-tunnels beneath the dunes at Le Porge, Seignosse and Capbreton landfalls, plus two major directional drillings under the Dordogne and Garonne rivers, each approximately 1.3 km long. [2]

Work in progress

Prysmian's *Monna Lisa* has completed an initial 12 km laying campaign from Capbreton and is due to continue from Seignosse northwards for approximately 90 km. The *Leonardo da Vinci*, also operated by Prysmian, has been deployed since late June from Le Porge for a campaign of around 100 km southwards. NKT's *Victoria* is working on the second link at the Capbreton and Seignosse landing points before moving to Le Porge in July. [1]

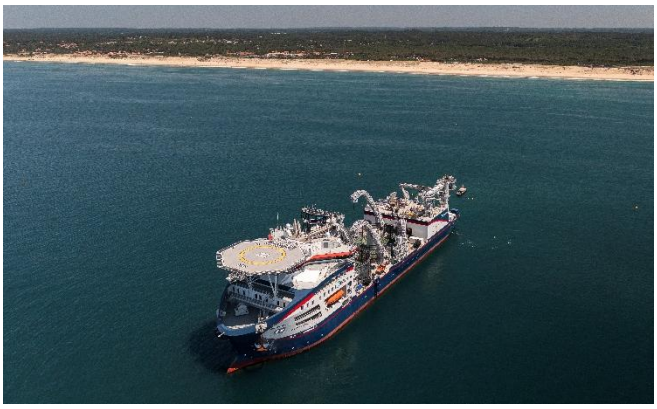

Figure 2: Cable-laying operation from the Capbreton landfall by Prysmian's Leonardo Da Vinci vessel. Credit: LLyod Images

Subsea cable laying in French and Spanish waters will continue until April 2027, followed by testing at the Cubnezais and Gatika converter stations from mid-2027. The two HVDC links are scheduled to enter service in early 2028 and will increase bilateral exchange capacity from 2,800 to 5,000 MW. [1][2]

References:

[1] https://www.rte-france.com/actualites/2026-05-28-landes-pose-cables-interconnexion-france-espagne
[2] https://www.inelfe.eu/en/projects/bay-biscay

980 MW Project Moves Forward

BorWin6 onshore converter shell completed

The BorWin6 project has reached a key milestone with the completion of the shell of the Büttel onshore converter station, paving the way for the installation of technical equipment, major cabling and assembly works. [3]

Figure 3: BorWin6 converter station in Büttel. Credit: TenneT [3]

Led by TenneT, BorWin6 is a 980 MW, 320 kV HVDC-VSC link connecting the Nordlicht I offshore wind farm in the North Sea to the German grid at Büttel, Schleswig-Holstein, via 235 km of subsea and underground cables. [4]

The BorWin kappa offshore converter station, built by McDermott, is under construction and scheduled for installation at sea by the end of 2026 [5]. The steel jacket structure, meanwhile, was installed at sea in March 2026 [6]. Commissioning of this entire project is scheduled for 2027.[4]

Figure 4: BorWin6 offshore converter platform (topside) at Jebel Ali Port in the UAE. Credit: McDermott [5]

References:

[3] https://www.linkedin.com/posts/tennet-germany_borwin6-offshore-lightingthewayaheadtogether-activity-7482358739119968256-wfBJ
[4] https://www.tennet.eu/de-en/projects/borwin6
[5] https://www.linkedin.com/posts/mcdermott-international-inc-_mcdermottmilestone-buildingenergysfuture-activity-7472637626215350273-c-GJ
[6] https://www.linkedin.com/posts/makingtheimpossiblepossibleoffshore-offshorewind-share-7440752932142104576-l8Yj/

North-South Power Corridor Cross River in Germany

Elbe tunnelling works completed for SuedLink

SuedLink is one of several north-south HVDC link planned in Germany. It is designed to connect the wind power regions of northern Germany with the industrial locations of Bavaria and Baden-Württemberg, transporting wind power roughly 700 km south. The project is jointly developed by the TSOs TenneT and TransnetBW [7].

One of the most demanding sections is the ElbX crossing beneath the Elbe River, linking Schleswig-Holstein and Lower Saxony. Built by the ARGE Tunnel ElbX consortium, with tunnelling works carried out by PORR using a tunnel boring machine (TBM) supplied by Herrenknecht, the crossing runs about 5.2 km through challenging geological and water-bearing conditions [8].

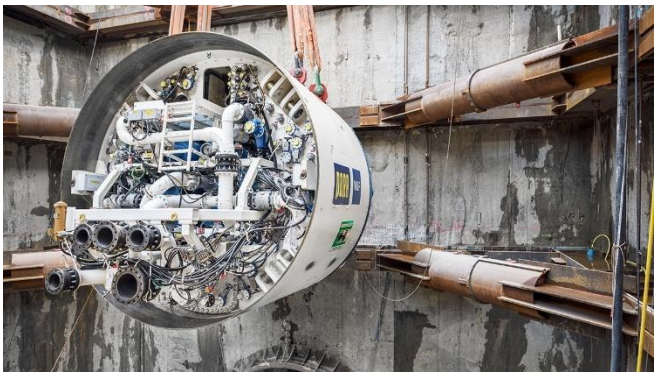

Figure 5 : Tunnel Boring Machine that dug the tunnel. Credit: Herrenknecht [7].

The consortium has now achieved a successful breakthrough ahead of schedule. Attention now turns to the interior works and technical fit-out, preparing the tunnel to carry SuedLink's cables. [7][8]

References:

[7] https://www.herrenknecht.com/en/references/referencesdetail/elbx-elbe-river-crossing-of-high-voltage-direct-current-transmission-line-suedlink/
[8] https://www.porr-group.com/en/press/press-releases/detail/breakthrough-of-elbx-tunnel-crossing

First 525 kV Classe Project in the German Baltic Sea

First steel cut for the Ostwind 4 project platform

Drydocks World has celebrated the start of fabrication of the topside of the Ostwind 4 offshore HVDC conversion platform at its shipyard in Dubai, marking a key milestone in the project's construction. [9]

Figure 6: First steel cut for the Ostwind 4 project. Credit: Drydocks World

Ostwind 4 is the fourth connection to the 50Hertz HVDC grid, located north-east of the island of Rügen in the German Baltic Sea. It will connect the OstSee Energies wind farm, developed by TotalEnergies, to the mainland via a 2,000 MW, 525 kV bipolar HVDC-VSC system. The offshore platform, which will be located in the Arkona Basin, approximately 40 km north-east of Rügen, will be connected to the Stilow substation by approximately 110 km of subsea cable and 4 km of onshore cable. [10]

The consortium comprising GE Vernova and Drydocks World was awarded the contract by 50Hertz in December 2024. GE Vernova is supplying the HVDC technology, whilst Drydocks World is responsible for the topside of the offshore converter and the jacket foundation. NKT holds the contracts for the subsea and onshore cables, which were awarded separately in 2023. [11]

With a transmission capacity of 2,000 MW, Ostwind 4 is expected to be completed by May 2031. [10]

References:

[9] https://www.linkedin.com/posts/drydocks-world_drydocksworld-ostwind4-offshorewind-activity-7482728684076990464-7rZt
[10] https://www.50hertz.com/en/Grid/Griddevelopement/Offshoreprojects/Ostwind4/
[11] https://www.50hertz.com/en/News/FullarticleNewsof50Hertz/15264/50hertz-appoints-ge-vernova-and-drydocks-world-consortium-to-build-first-acdc-converters-in-the-baltic-sea

SSEN Secures Contracts for Offshore Interconnector

BAM wins Eastern Green Link 3 north converter civil works contract

SSEN Transmission has signed an Early Contractor Involvement (ECI) agreement with BAM for the civil engineering works at the Eastern Green Link 3 (EGL3) North Converter site, near Peterhead in Aberdeenshire, UK. [12]

EGL3 is a 2 GW, 525 kV HVDC link stretching approximately 680 km between Peterhead and Norfolk, being developed jointly by SSEN Transmission and National Grid Electricity Transmission. The scope of the ECI agreement with BAM covers design and feasibility support for the converter station, as well as the associated civil engineering works; a full construction contract is expected to be awarded in 2027. [12]

The Netherton Hub site in Aberdeenshire has been granted planning consent in principle. Subject to the necessary authorisations being obtained, construction is scheduled for 2028, with the link due to be commissioned in 2033. [12]

References:

[12] https://www.ssen-transmission.co.uk/news/news--views/2026/6/another-major-contract-signed-for-the-uks-biggest-electricity-transmission-project--egl3/

Sumitomo Electric and Van Oord sign framework agreement with SSEN

SSEN Transmission has signed a long-term framework agreement concerning HVDC technology with Sumitomo Electric and Van Oord. [13]

The flagship project is the 525 kV 'Shetland 2' HVDC link planned between the Shetland Islands and the Scottish mainland. Sumitomo Electric will supply and manufacture the HVDC cable systems; Van Oord will be responsible for offshore transport and installation. [13]

An on-demand contract for the manufacture of the cables is expected to be finalised in the course of 2026, with production due to commence in the second quarter of 2027 at Sumitomo Electric's new factory, currently under construction at the port of Nigg in Scotland, UK. [13]

References:

[13] https://sumitomoelectric.com/press/2026/07/prs029

+6 GW North-South HVDC Capacity Planned in GB

NESO's recommends three more HVDC projects

The National Energy System Operator (NESO), the independent organisation responsible for planning and operating Great Britain's energy system, published the *Beyond 2030* report in March 2024, outlining the transmission network needed in the 2030s. The June 2026 update provides revised advice on network reinforcement needs, delivery timing, and value for money, with greater emphasis on offshore transmission to support renewable generation, reduce reliance on volatile international energy markets, and increase grid capacity. [14]

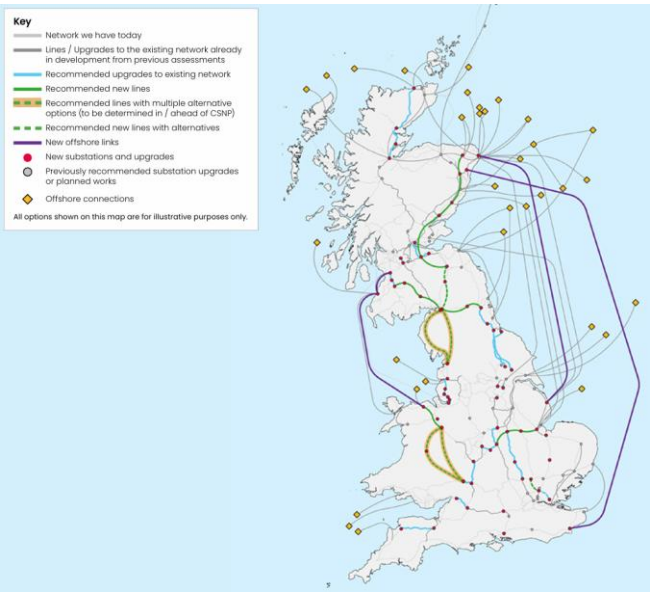

Figure 7: Map of the recommended network. Credit: NESO

The update confirms two new offshore HVDC links on the East Coast: **EGL5**, connecting Northeast Scotland and Lincolnshire by 2037, and **EGL6**, linking Northeast Scotland and Southeast England by 2045. Both will support future offshore wind generation, strengthen north-to-south power transfers, and reduce the need for additional onshore reinforcement through a coordinated offshore network. [14]

It also recommends **WCD4**, a new 2 GW offshore HVDC link between Ayrshire and North Wales by 2041. Combined with onshore reinforcement in Wales, the project is considered the optimal solution for increasing north-to-south power transfers across all scenarios. [14]

References:

[14] https://www.neso.energy/publications/beyond-2030

France-Morocco Plan Europe-Africa Power Link

France and Morocco launch call for Europe-Africa electricity link

France and Morocco launched a call for expressions of interest for a bilateral electricity interconnection between Europe and North Africa at the 15th French-Moroccan High-Level Meeting in Rabat on 16 July 2026. [15]

The meeting was chaired by French Prime Minister Sébastien Lecornu alongside twelve French ministers and their Moroccan counterparts. The interconnection forms part of a wider agenda of energy connectivity between Europe and North Africa; no technical specifications have been stated. [15]

References:

[15] https://www.info.gouv.fr/actualite/sebastien-lecornu-au-maroc-pour-la-15e-reunion-de-haut-niveau-franco-marocaine

Canada's Grid Expansion

Canada identifies five priority power-line projects

Canada has identified five priority electricity transmission projects to support a power system where demand is expected to double by 2050, driven by industry, electric vehicles, heat pumps and artificial intelligence. [16]

The federal government will provide financial and regulatory support for new interties (high-capacity transmission lines that connect provinces or regions and enable electricity to flow in both directions) to improve reliability, lower costs and support economic growth. [16]

Among the five priority projects is the **British Columbia–Yukon Grid Connect**, a 200 kV HVDC interconnector project, approximately 800 km long, linking the Yukon's electricity grid to that of British Columbia. The project is expected to contribute to the Yukon's industrial and economic development, particularly in the critical minerals sector. [16]

All five projects will benefit from support under a new federal-provincial-territorial framework on interties. [16]

References:

[16] https://www.canada.ca/en/natural-resources-canada/news/2026/06/canada-takes-action-to-advance-a-stronger-grid-and-increase-reliable-affordable-energy.html

Recent papers

Conferences

2026 IEEE Eighth International Conference on DC Microgrids (ICDCM)

1. L. Liu et al., "**Instantaneous Energy Kurtosis-Based Protection for MMC-HVDC System Using VMD-HT**," 2026 IEEE Eighth International Conference on DC Microgrids (ICDCM), Xi'an, China, 2026, pp. 1-5, doi: 10.1109/ICDCM67837.2026.11594525.
2. X. Huang, T. Liu, Y. Yuan, D. Cai, W. Huang and Y. Zhong, "**Comparative Fault Performance of GFL and GFM Controls in MMC-MTDC Systems**," 2026 IEEE Eighth International Conference on DC Microgrids (ICDCM), Xi'an, China, 2026, pp. 1-6, doi: 10.1109/ICDCM67837.2026.11594481.
3. X. Lifang, H. Yinghong and C. Peng, "**Mechanism Analysis of High-Frequency Resonance in MMC Islanded Systems induced by Electromagnetic Current Transformer Secondary Cable**," 2026 IEEE Eighth International Conference on DC Microgrids (ICDCM), Xi'an, China, 2026, pp. 1-5, doi: 10.1109/ICDCM67837.2026.11594546.

2026 International Power Electronics Conference (IPEC-Nagasaki 2026 - ECCE Asia)

4. Z. Xu, L. Zhao, X. Wang and I. Jahn, "**Enhanced Inertia Provision of Grid-Forming MMC in HVDC Systems**," 2026 International Power Electronics Conference (IPEC-Nagasaki 2026 - ECCE Asia), Nagasaki, Japan, 2026, pp. 1-5, doi: 10.23919/IPEC-Nagasaki2026-EC64663.2026.11597493.
5. B. Lee and J. Sun, "**Control of Grid-Forming HVDC Converters for Offshore Wind Application**," 2026 International Power Electronics Conference (IPEC-Nagasaki 2026 - ECCE Asia), Nagasaki, Japan, 2026, pp. 1-8, doi: 10.23919/IPEC-Nagasaki2026-EC64663.2026.11597268.
6. T. Kajiyama, K. Nada and T. Fujii, "**Impact of Negative-Sequence Current Injection on Converter Design of Modular Multilevel Converters**," 2026 International Power Electronics Conference (IPEC-Nagasaki 2026 - ECCE Asia), Nagasaki, Japan, 2026, pp. 1-6, doi: 10.23919/IPEC-Nagasaki2026-EC64663.2026.11597442.

2026 IEEE 9th International Electrical and Energy Conference (CIEEC)

7. Y. Guo, B. Yuan, B. Zhou and T. Li, "**Generation mechanism and suppression measures of Flexible DC converter Ultra-high frequency harmonic**," 2026 IEEE 9th International Electrical and Energy Conference (CIEEC), Tianjin, China, 2026, pp. 2862-2868, doi: 10.1109/CIEEC69682.2026.11572333.
8. X. Chen et al., "**Research on MMC Operation Control Strategy Based on DSOGI-PLL**," 2026 IEEE 9th International Electrical and Energy Conference (CIEEC), Tianjin, China, 2026, pp. 206-211, doi: 10.1109/CIEEC69682.2026.11572234.
9. T. Li et al., "**LVRT Control Strategy for MMC-HVDC Based on Coordination of Sub-Module Capacitor Active Energy Absorption and Wind Farm Load Reduction**," 2026 IEEE 9th International Electrical and Energy Conference (CIEEC), Tianjin, China, 2026, pp. 3506-3511, doi: 10.1109/CIEEC69682.2026.11572357.
10. Y. Xiong, H. Peng, S. Tan, M. Wang, Y. Zhou and Y. Wu, "**Dual-Voltage-Overshoot in Turn-off Transient of Press-Packed IGBT Device: Characteristics and Modelling**," 2026 IEEE 9th International Electrical and Energy Conference (CIEEC), Tianjin, China, 2026, pp. 2487-2493, doi: 10.1109/CIEEC69682.2026.11572554.
11. Z. Wang, Y. Lu, J. Feng, X. Zhao, Q. Xin and Z. Wang, "**Stability Analysis of Offshore Wind Power Integration through MMC-HVDC Systems under Frequency Coupling Effects**," 2026 IEEE 9th International Electrical and Energy Conference (CIEEC), Tianjin, China, 2026, pp. 1113-1118, doi: 10.1109/CIEEC69682.2026.11572310.
12. A. Li, Y. Teng, Z. Zhang, Q. Qiu, L. Jing and L. Xiao, "**Semi-Analytical EMT Fault Calculation for MMC–HVDC Grids with Shunt-MOV Reactors**," 2026 IEEE 9th International Electrical and Energy Conference (CIEEC), Tianjin, China, 2026, pp. 3243-3248, doi: 10.1109/CIEEC69682.2026.11572460.
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14. X. Wang, L. Xiu, Y. Zhang, B. Ding, L. Liu and Y. Xie, "**Power Smoothing Control Strategy Based on MMC Submodule Capacitors**," 2026 IEEE 9th International Electrical and Energy Conference (CIEEC), Tianjin, China, 2026, pp. 2043-2048, doi: 10.1109/CIEEC69682.2026.11572693.
15. H. Zhou, D. Zhang, Y. Wu, X. Wang, H. Qin and X. Xie, "**Composite Filtered Phase Locked Loop Based Stabilization Control in Wind Power System Connected via VSC-HVDC**," 2026 IEEE 9th International Electrical and Energy Conference (CIEEC), Tianjin, China, 2026, pp. 1119-1123, doi: 10.1109/CIEEC69682.2026.11571978.
16. L. Mingzhe et al., "**Reliability Analysis and Fault-Induced Loss Assessment Methodology for Offshore Wind Power VSC-HVDC Transmission Projects**," 2026 IEEE 9th International Electrical and Energy Conference (CIEEC), Tianjin, China, 2026, pp. 126-133, doi: 10.1109/CIEEC69682.2026.11572681.
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19. Z. Hong, D. Chen, Y. Zhang and H. Wei, "**An Adaptive Frequency Control Strategy for Coordinated MMC-HVDC Converter Stations and Wind Turbines**," 2026 IEEE 9th International Electrical and Energy Conference (CIEEC), Tianjin, China, 2026, pp. 2822-2827, doi: 10.1109/CIEEC69682.2026.11571950.
20. Guo and G. Li, "**Subsynchronous Oscillation Suppression Strategy for MMC-HVDC-based Renewable Energy Transmission with Series Compensation**," 2026 IEEE 9th International Electrical and Energy Conference (CIEEC), Tianjin, China, 2026, pp. 2780-2786, doi: 10.1109/CIEEC69682.2026.11572502.

Other conferences

21. B. Li et al., "**Novel fault area identification scheme for VSC-HVDC grids based on traveling-wave dispersion coefficient**," China HVDC and Power Electronics Annual Meeting of CSEE (DCPE 2025), Beijing, China, 2026, pp. 6-11, doi: 10.1049/icp.2026.0651.
22. L. Xu et al., "**Synchronous Stability Analysis and Enhancement of Solar–Hydro Integrated System via VSC-HVDC Transmission**," 2026 9th International Conference on Energy, Electrical and Power Engineering (CEEPE), Nanjing, China, 2026, pp. 514-519, doi: 10.1109/CEEPE69795.2026.11552264.
23. S. Jiao, G. Lai, H. Zeng and K. Chen, "**A CNN–LSTM–Based Fault Diagnosis Method for Valve-Cooling Equipment in VSC-HVDC Converter Stations**," 2025 7th International Conference on Frontier Technologies of Information and Computer (ICFTIC), Qingdao, China, 2025, pp. 1313-1317, doi: 10.1109/ICFTIC68075.2025.11324502.
24. Li, Shihao, and Cheng Wang. "**A frequency support method for the receiving-end grid based on renewable energy bases and multiterminal VSC-HVDC system**." International Conference on Electrical Engineering and Intelligent Systems (IC2EIS 2026). Vol. 14240. SPIE, 2026.
25. Deng, Shaokun, et al. "**Online monitoring of key components and switching frequency protection for flexible DC converter valves**." International Conference on Electronic Devices and Intelligent Control (EDIC 2026). Vol. 14300. SPIE, 2026.
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Journals

CSEE Journal of Power and Energy Systems

27. Z. Zhao, Y. Shen, V. A. Lacerda, Y. Li and O. Gomis-Bellmunt, "**Traveling wave protection scheme designed for borderless VSC-HVDC grids with variable terminal topologies**," in CSEE Journal of Power and Energy Systems, doi: 10.17775/CSEEJPES.2025.09110.

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28. G. Wang, J. Liu, Y. Huang, M. Guan, W. Hua and C. Zhang, "**Delay-Resilient Load Frequency Control for Multi-Infeed MMC-HVDC Systems Under Stochastic Cyber-Uncertainties**," in IEEE Transactions on Power Delivery, doi: 10.1109/TPWRD.2026.3713309.
29. Y. Wang et al., "**Distributionally Robust Damping Optimization for Wind-Integrated VSC-MTDC Systems Considering Stochastic Power Fluctuations**," in IEEE Transactions on Power Delivery, doi: 10.1109/TPWRD.2026.3713127.
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32. Q. Li et al., "**Radiated Emissions Mechanisms and Modeling of Large-Capacity ±500 kV MMC-HVDC Systems**," in IEEE Transactions on Electromagnetic Compatibility, doi: 10.1109/TEMC.2026.3696457.

IEEE Canadian Journal of Electrical and Computer Engineering

33. J. Ma et al., "**Generalized Nonlinear State-Space Modeling and Bifurcation Analysis of VSG-Controlled Grid-Forming MMC Under Saturation Constraints**," in IEEE Canadian Journal of Electrical and Computer Engineering, vol. 49, no. 3, pp. 443-458, Summer 2026, doi: 10.1109/ICJECE.2026.3683098.

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34. Z. Li, W. Du, Q. Fu and H. Wang, "**Frequency-Domain Method for Supplementary Damping Controller Configuration using Extended Impedance Model in Wind Farms Connected via MMC-HVDC**," in Journal of Modern Power Systems and Clean Energy, doi: 10.35833/MPCE.2025.001072.

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35. Yan, Renwu, et al. "**Single-ended transient protection method for MMC-HVDC lines based on SGA-VMD and high-frequency energy spectrum relative entropy**." Electric Power Systems Research 262 (2027): 113642.

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36. Hosseini, Seyed Amir, and Behrooz Taheri. "**Variance-Empirical Mode Decomposition Method for Fault Detection in MMC-HVDC Transmission Lines**." Energy Science & Engineering (2026).

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37. Wang, Zhuzhu, et al. "**Adaptive fast frequency support control for VSC-HVDC interconnected offshore wind turbines with exponential trajectory recovery**." Renewable Energy (2026): 125727.

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38. Liu, Hang, et al. "**Flexible power reversal strategy for LUXI back-to-back HVDC project to address minimum power constraints**." Energy Reports 16 (2026): 109430.

Overview of HVDC-VSC Systems

Operational systems

Reference: VSC-HVDC Newsletter 06-2022, Prof. Mike Barnes. Supplemented and continuously updated by RTE international. New updates for this month are highlighted in **blue**.

	Name	Year commissi-oned	Power (MW)	Voltage DC (kV)	Voltage AC (kV)	Transmission Length (km)	Converter Manufacturer	Reference
1	Hällsjön, Sweden	1997	3	±10	10	10 OHL	ABB	https://www.hitachienergy.com/about-us/customer-success-stories/hallsjon-the-first-hvdc-light-transmission
2	Gotland, Sweden	1999	50	±80	77	70 underground	ABB	https://www.hitachienergy.com/about-us/customer-success-stories/the-gotland-hvdc-link
3	Eagle Pass, USA	2000	36	±15.9	138	Back-to-Back	ABB	https://www.hitachienergy.com/about-us/customer-success-stories/eagle-pass
4	Direct Link / TerraNora, Australia	2000	3x60	±80	132/110	65 underground	ABB	https://www.hitachienergy.com/about-us/customer-success-stories/terranora-interconnector
5	Tjaereborg, Denmark	2000	7,2	±9	10,5	4.3 underground	ABB	https://www.hitachienergy.com/about-us/customer-success-stories/tjaereborg
6	Murraylink, Australia	2002	220	±150	132/220	180 underground	ABB	https://www.hitachienergy.com/about-us/customer-success-stories/murraylink
7	Cross Sound, USA	2002	330	±150	345/138	40 subsea	ABB	https://www.hitachienergy.com/about-us/customer-success-stories/cross-sound-cable
8	Troll A 1&2, Norway	2005	2x44	±60	56/132	70 subsea	ABB	https://www.hitachienergy.com/about-us/customer-success-stories/troll-a
9	Estlink-1, Estonia-Finland	2006	350	±150	400/330	74 subsea 31 underground	ABB	https://www.hitachienergy.com/about-us/customer-success-stories/estlink
10	Caprivi Link, Namibia	2010	300	±350	330/400	950 OHL	ABB	https://www.hitachienergy.com/about-us/customer-success-stories/caprivi-link
11	Trans Bay Cable, USA	2010	400	±200	230/138	85 subsea	Siemens	http://www.transbaycable.com/
12	Valhall, Norway	2011	78	-150	11/300	292 subsea	ABB	https://www.hitachienergy.com/about-us/customer-success-stories/valhall
13	Nanhui, China	2011	18	±30	35/35	8.4 underground	C-EPRI	https://www.iere.jp/contents/Activities/Workshop/Nanjing_Workshop/Abstract/S2-1.pdf
14	BorWin1, Germany	2012	400	±150	170/380	125 subsea 75 underground	ABB	https://www.hitachienergy.com/about-us/customer-success-stories/borwin1
15	Nan'ao Island, China	2013	200, 150, 50	±160	110	Multi-terminal underground	RXHK, XiDian, NR-Electric	https://www.rxhk.co.uk/solutions/smart-vsc-hvdc-transmission/smart-vsc-hvdc-transmission/nanao-multi-terminal-vsc-hvdc/
16	East West Interconnector, Ireland-UK	2013	500	±200	400/400	186 subsea 75 underground	ABB	https://www.hitachienergy.com/about-us/customer-success-stories/east-west-interconnector

	Name	Year commissi-oned	Power (MW)	Voltage DC (kV)	Voltage AC (kV)	Transmission Length (km)	Converter Manufacturer	Reference
17	Zhoushan, China	2014	400 300 3x100	±200	110/220	129 subsea	XuJi Electric, NR Electric	https://www.tdworld.com/digital-innovations/article/20969421/china-upgrades-capacity-to-the-zhoushan-islands
18	Mackinac, USA	2014	200	±71	138/138	Back-to-Back	ABB	https://www.hitachienergy.com/about-us/customer-success-stories/mackinac
19	Skagerrak 4, Norway-Denmark	2014	700	±500	400/400	140 subsea 104 underground	ABB	https://www.hitachienergy.com/about-us/customer-success-stories/skagerrak
20	INELFE, France-Spain	2015	2x1000	±320	400/400	65 underground	Siemens	https://www.inelfe.eu/en/projects/baixas-santa-llogaia
21	Åland, Finland	2015	100	±80	110/100	158 subsea	ABB	https://www.hitachienergy.com/about-us/customer-success-stories/aland
22	HelWin1, Germany	2015	576	±250	155/400	85 subsea 45 underground	Siemens	https://www.tennet.eu/projects/helwin1 https://www.realwire.com/releases/Successful-Commissioning-Of-BorWin2-And-HelWin1-HVDC-Grid-Connections
23	HelWin2, Germany	2015	690	±320	155/400	85 subsea 45 underground	Siemens	https://www.tennet.eu/projects/helwin2
24	Troll A 3&4, Norway	2015	2x50	±60	66/132	70 subsea	ABB	https://www.hitachienergy.com/about-us/customer-success-stories/troll-a
25	SylWin1, Germany	2015	864	±320	155/400	160 subsea 45 underground	Siemens	https://www.tennet.eu/projects/sylwin1
26	BorWin2, Germany	2015	800	±300	155/400	125 subsea 75 underground	Siemens	https://www.tennet.eu/projects/borwin2
27	Dolwin1, Germany	2015	800	±320	155/380	75 subsea 90 underground	ABB	https://www.hitachienergy.com/about-us/customer-success-stories/dolwin1
28	Xiamen, China	2015	1000	±320	220	6 subsea 5 underground	C-EPRI	https://ieeexplore.ieee.org/document/7800677 https://www.power-technology.com/marketdata/xiamen-mainland-xiamen-island-hvdc-line-china/
29	Luxi, China	2016	1000	±350	500	Back-to-Back	China Southern Grid, RXHK (Yunnan) XD Group/IEECAS (Guangxi)	https://hvdcnewschina.blogspot.com/2017/09/luxi-hybrid-btb-converter-station.html https://www.rxhk.co.uk/solutions/smart-vsc-hvdc-transmission/smart-vsc-hvdc-transmission/yunnan-luxi-b2b/
30	NordBalt, Sweden-Lithuania	2017	700	±300	400/330	400 subsea 40+10 underground	ABB	https://www.hitachienergy.com/about-us/customer-success-stories/nordbalt
31	DolWin2, Germany	2017	916	±320	155/380	90 subsea 45 underground	ABB	https://www.hitachienergy.com/about-us/customer-success-stories/dolwin2
32	Johan Sverdrup Phase 1, Norway	2018	100	±80	33/300	200 subsea	ABB	https://www.hitachienergy.com/about-us/customer-success-stories/johan-sverdrup

	Name	Year commissi-oned	Power (MW)	Voltage DC (kV)	Voltage AC (kV)	Transmission Length (km)	Converter Manufacturer	Reference
33	Caithness Moray, UK	2018	800/ 1200	±320	230/400	113 subsea 37 OHL	ABB	https://www.hitachienergy.com/about-us/customer-success-stories/caithness-moray-hvdc-link
34	Maritime Link, Canada	2018	500	±200	230/345	180 subsea 187 OHL	ABB	https://www.hitachienergy.com/about-us/customer-success-stories/maritime-link
35	DolWin3, Germany	2018	900	±320	155/400	83 subsea 78 underground	GE	https://www.tennet.eu/projects/dolwin3
36	New Hokkaido-Honshu pole 1, Japan	2019	300	250	275	24 underground 98 OHL	Toshiba	https://www.global.toshiba/ww/news/energy/2019/03/news-20190328-02.html
37	Yu'E, China	2019	4x1250	±420	/	Back-to-Back	RXHK, XuJi Electric and C-EPRI	https://www.rxhk.co.uk/solutions/smart-vsc-hvdc-transmission/smart-vsc-hvdc-transmission/yue-b2b-hvdc/ https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=8779807
38	COBRAcable, Denmark-Netherlands	2019	700	±320	400/400	307 subsea 22 underground	Siemens	https://en.energinet.dk/infrastructure-projects/finished-projects/cobracable/
39	BorWin3, Gemany	2019	900	±320	155/400	130 subsea 30 underground	Siemens	https://www.tennet.eu/projects/borwin3
40	Nemo Link, UK-Belgium	2019	1000	±400	400/380	130 subsea 10 underground	Siemens	https://www.nemolink.co.uk/
41	ALEGrO, Germany-Belgium	2020	1000	±320	380/380	90 underground	Siemens Energy	https://www.amprion.net/Grid-expansion/Our-Projects/ALEGrO/
42	Zhangbei Phase 1, China	2020	2x3000 2x1500	±535	500/500	Multi-terminal 666 OHL	NR Electric, XuJi Electric, C-EPRI, SiFang and Hitachi ABB	https://nrec.com/en/web/upload/2019/05/13/155770883678038egom.pdf https://www.hitachienergy.com/about-us/customer-success-stories/zhangbei https://news.bjx.com.cn/html/20180327/888109-1.shtml
43	Kriegers-Flak Combined Solution, Germany-Denmark	2020	410	±140	150/400	Back-to-Back	Hitachi ABB	https://www.50hertz.com/en/Grid/Griddevelopement/Concludedprojects/CombinedGridSolution https://www.hitachienergy.com/about-us/customer-success-stories/kriegers-flak-combined-grid-solutions--kf-cgs--hvdc
44	NordLink, Norway-Germany	2020	1400	±525	400/380	516 subsea 54 underground 53 OHL	Hitachi ABB	https://www.hitachienergy.com/about-us/customer-success-stories/nordlink
45	KunLiuLong / Wudongde CSG, China	2020	5000 3000	±800	525	1452 for three terminals OHL	RXHK, Xuji, TBEA, NARI, Xidian	https://www.rxhk.co.uk/corporate/news/wudongde-uhvdc-scheme-commercial-operation/
46	IFA2, UK-France	2021	1000	±320	400/400	240 subsea	Hitachi ABB	https://www.hitachienergy.com/about-us/customer-success-stories/ifa2 https://ifa1interconnector.com/ifa2/

	Name	Year commissi-oned	Power (MW)	Voltage DC (kV)	Voltage AC (kV)	Transmission Length (km)	Converter Manufacturer	Reference
47	SW Link, Sweden	2021	2x720	±300	400	190 underground 60 OHL	GE	https://www.gegridsolutions.com/products/applications/HVDC/South-West-Link-HVDC-case-study-EN-2015-10-Grid-PEA-0574.pdf https://www.svk.se/sydvastlanken
48	Rudong offshore wind farm, China	2021	1100	±400	220/500	100 subsea	RXHK, XJ Group	https://www.rxhk.co.uk/corporate/news/rudong-owf-hvdc-link-goes-live/ https://www.nrec.com/en/index.php/about/newsInfo/107.html
49	North Sea Link, Norway-UK	2021	1400	±515	420/400	720 subsea	Hitachi ABB	https://www.hitachienergy.com/about-us/customer-success-stories/nsl-link http://www.northsealink.com/
50	Pugalur-Thrissur, India	2021	2x1000	±320	400	32 underground 170 OHL	Siemens Energy	https://assets.siemens-energy.com/siemens/assets/api/uuid:a6cb3b5d-ac70-41e9-8b9a-21e0968937b8/2021-11-24-hvdc-referenceflyer.pdf https://www.nsenergybusiness.com/projects/raigarh-pugalur-trichur-high-voltage-direct-current-hvdc-transmission-project/
51	ElecLink, UK-France	2022	1000	±320	400/400	51 subsea	Siemens Energy	http://www.eleclink.co.uk/
52	Guangdong B2B, Guangzhou and Dongguan, China	2022	4x1500	±300	/	Back-to-back	RXHK, NR Electric	https://www.rxhk.co.uk/solutions/smart-vsc-hvdc-transmission/smart-vsc-hvdc-transmission/guangdong-b2b-hvdc/ https://www.nrec.com/en/index.php/about/newsInfo/117.html http://global.chinadaily.com.cn/a/202206/14/WS62a7f8a3a310fd2b29e629e8.html
53	Baihetan-Jiangsu UHVDC, China	2022	3x1334	±400	510	2080 OHL	RXHK, NR-Electric, C-EPRI	https://www.rxhk.co.uk/corporate/news/baihetan-jiangsu-uhvdc-transmission-project-contract-award/ https://nrec.com/en/index.php/about/newsInfo/125.html http://news.jschina.com.cn/qyxw/202207/t20220706_3031103.shtml
54	Johan Sverdrup Phase 2, Norway	2022	200	±80	110/300	200 subsea	Siemens Energy	https://energy.ec.europa.eu/system/files/2020-05/10._sharifabadi_kamran_-_multivendor_hvdc_links_supplying_oil_and_gas_installations_0.pdf
55	Savoie-Piedmont, Italy-France	2022	2x600	±320	/	190 underground	GE	https://www.rte-france.com/en/projects/savoie-piemont-190-km-of-european-solidarity-from-chambery-to-turin https://www.gegridsolutions.com/products/applications/hvdc/france-italy-hvdc-link-casestudy-en-2018-02-grid-pea-1641.pdf
56	DolWin6, Germany	2023	900	±320	/	45 subsea 45 underground	Siemens Energy	https://www.tennet.eu/projects/dolwin6
57	Viking Link, UK-Denmark	2023	1400	±525	400/400	630 subsea 135 underground	Siemens Energy	http://viking-link.com/
58	Dogger Bank A, UK	2023	1200	±320	66/420	205 subsea 19 underground	Hitachi Energy	https://www.hitachienergy.com/news-and-events/customer-stories/dogger-bank
59	Yangju VSC, South Korea	2024	200	±120	154/154	Back-to-back	Hyosung Heavy Industries	https://www.koreaittimes.com/news/articleView.html?idxno=133145

	Name	Year commissi-oned	Power (MW)	Voltage DC (kV)	Voltage AC (kV)	Transmission Length (km)	Converter Manufacturer	Reference
60	Shetland, UK	2024	600	±320	132	267 subsea	Hitachi Energy	https://www.hitachienergy.com/about-us/customer-success-stories/shetland https://www.ssen-transmission.co.uk/projects/project-map/shetland/
61	Wando-DongJeju Jeju Island, South Korea	2024	200	±150	154/154	100 subsea	Hitachi Energy	https://www.hitachienergy.com/about-us/customer-success-stories/wando-dongjeju-3-hvdc-converter-station-project
62	Greenlink, UK-Ireland	2024	500	±320	400/220	160 subsea 30 underground	Siemens Energy	https://www.greenlink.ie/
63	Dogger Bank B, UK	2024	1200	±320	66/420	205 subsea 19 underground	Hitachi Energy	https://www.hitachienergy.com/news-and-events/customer-stories/dogger-bank
64	Crete-Attica, Greece	2025	1000	±500	150/400	335 subsea 30 underground	Siemens Energy	https://www.ariadne-interconnection.gr/en https://www.siemens-energy.com/global/en/home/press-releases/siemens-hvdc-power-bridge-will-connect-crete-mainland-greece.html
65	DolWin5, Germany	2025	900	±320	66/380	100 subsea 30 underground	Hitachi Energy	https://www.tennet.eu/projects/dolwin5 https://www.hitachienergy.com/about-us/customer-success-stories/dolwin-5
66	Quebec - New England (NECEC) interconnection, Canada-USA	2026	1200	±320	735/345	333 OHL	Hitachi Energy	https://www.iberdrola.com/about-us/what-we-do/smart-grids/necec-project-canada-united-states-and-new-england https://www.hydroquebec.com/projects/appalaches-maine-interconnection/ https://www.hitachienergy.com/news-and-events/customer-stories/new-england-clean-energy-connect
67	Kudus-Aarey, Mumbai, India	2026	1000	±320	220/400	50 underground 20-30 OHL	Hitachi Energy	https://www.hitachienergy.com/about-us/customer-success-stories/mumbai
68	Champlain Hudson Power Express, USA	2026	1250	±400	735/345	330 subsea 220 underground	Hitachi Energy	https://chpexpress.com/ https://www.hitachienergy.com/about-us/customer-success-stories/champlain-hudson-power-express-chpe
69	SunZia Transmission, USA	2026	3000	±525	525/345	885 OHL	Hitachi Energy	https://patternenergy.com/projects/sunzia/ https://www.hitachienergy.com/about-us/customer-success-stories/sunzia

Future projects (details subject to change)

Reference: VSC-HVDC Newsletter 06-2022, Prof. Mike Barnes. Supplemented and continuously updated by RTE international. New updates for this month are highlighted in **blue**.

	Name	Year commissi-onned	Power (MW)	Voltage DC (kV)	Voltage AC (kV)	Transmission Length (km)	Converter Manufacturer	Reference
1	Shin-bupyeong, South Korea	2026	500	±130	345/345	Back-to-back	GE	https://www.gevernova.com/grid-solutions/news-press/ge-and-kapes-awarded-contract-power-south-koreas-electric-grid-using-latest-hvdc http://www.kapes.co.kr/business/business03.asp
2	Project Lightning Das Island, United Arab Emirates	2026	2000	±400	132/400	150 subsea	Hitachi Energy	https://www.hitachienergy.com/about-us/customer-success-stories/project-lightning
3	Project Lightning Al Ghallan, United Arab Emirates	2026	1200	±320	132/400	134 subsea 4 underground	Hitachi Energy	https://www.hitachienergy.com/about-us/customer-success-stories/project-lightning
4	BorWin5, Germany	2026	900	±320	66/380	120 subsea 110 underground	Siemens Energy	https://www.tennet.eu/projects/borwin5
5	Zhangjiang, Guangdong Yangjiang Qingzhou 5 and 7 OWF, China	2026	2000	±500	66	92 subsea	RXHK, Xuji Electric	
6	Sofia, UK	2026	1320	±320	400	220 subsea 7 underground	GE	https://sofiawindfarm.com/ https://www.gevernova.com/grid-solutions/press/gepress/ge-consortium-awarded-contract-to-build-state-of-the-art-hvdc-system.htm
7	Dogger Bank C, UK	2026	1200	±320	66/420	270 subsea 7 underground	Hitachi Energy	https://www.hitachienergy.com/about-us/customer-success-stories/dogger-bank
8	Ultranet, Germany	2026	2000	±380	400	340 OHL	Siemens Energy	https://www.amprion.net/Grid-expansion/Our-Projects/Ultranet/
9	East Anglia THREE, UK	2026	1400	±320	/	150 subsea 37 underground	Siemens Energy	https://www.scottishpowerrenewables.com/pages/east_anglia_three.aspx
10	Sunrise wind, USA	2027	924	±320	66/138	160 subsea 27 underground	Siemens Energy	https://sunrisewindny.com/ https://www.boem.gov/renewable-energy/state-activities/sunrise-wind
11	SuedOstLink, Germany	2027	2000	±525	/	580 underground	Siemens Energy	https://www.50hertz.com/en/Grid/Griddevelopement/Onshoreprojects/SuedOstLink https://www.tennet.eu/de/projekte/suedostlink
12	Riyadh-Jeddah (COA-WOA), Saudi Arabia	2027	3000	±500	380/380	800 OHL	RXHK	https://ecp.sgcc.com.cn/ecp2.0/portal/#/doc/doci-win/2407160254483887_2018060501171107 https://www.rxhk.com/gongsixinwen/311.html
13	Riyadh-Jizan (COA-SOA), Saudi Arabia	2027	2x2000	±500	380	1089 OHL	C-EPRI, Xuji Electric	https://ecp.sgcc.com.cn/ecp2.0/portal/#/doc/doci-win/2407160254483887_2018060501171107 http://xjgc.com/en/details_hot_IR768763310309105664.html

	Name	Year commissi-onned	Power (MW)	Voltage DC (kV)	Voltage AC (kV)	Transmission Length (km)	Converter Manufacturer	Reference
14	Châteauguay, Canada-USA	2027	2x750	/	735/765	Back-to-back	Hitachi Energy	https://www.hitachienergy.com/about-us/customer-success-stories/chateauguay
15	A-Nord, Germany	2027	2000	±380	380	300 underground	Siemens Energy	https://a-nord.amprion.net/Projekt/
16	Suedlink - DC3, Germany	2027	2000	±525	400/400	700 underground	Siemens Energy	https://www.transnetbw.de/de/suedlink https://www.tennet.eu/de/projekte/suedlink
17	Yanbu-NIC, Saudi Arabia	2027	3000	±525	380/380	635 OHL	Hitachi Energy	https://www.hitachienergy.com/about-us/customer-success-stories/yanbu-nic
18	Borwin6, Germany	2027	980	±320	66/380	190 subsea 45 underground	GEIRI/C-EPRI	https://www.tennet.eu/projects/borwin6 https://www.tennet.eu/news/tennet-awards-land-and-sea-station-grid-connection-project-borwin6-international-consortium
19	Hornsea 3, UK	2027	2x1320	±320	66/400	170 subsea 50 underground	Hitachi Energy	https://www.hitachienergy.com/about-us/customer-success-stories/hornsea-3
20	Gansu-Zhejiang, China	2027	8000	±800	750/500	2370 OHL	C-EPRI/Hitachi Energy	https://news.bjx.com.cn/html/20240730/1391785.shtml http://www.sgcc.com.cn/html/sgcc/col2022121225/2024-07/29/20240729154613799358345_1.shtml
21	New Hokkaido-Honshu pole 2, Japan	2027	300	250	275	24 underground 98 OHL	Toshiba	https://sumitomoelectric.com/press/2024/05/prs014
22	Corinth-Kos, Dodecanese islands, Greece	2027	1000	/	/	380 subsea	/	https://www.admie.gr/en/kentro-typoy/press-releases/map-interconnections-be-completed-2030 https://www.eib.org/en/projects/all/20250177
23	Mengxi-Beijing-Tianjin-Hebei, China	2027	8000	±800	500/500	703 OHL	RXHK	http://www.sgcc.com.cn/html/sgcc_main/gb/xwzx/yw/20251230/794700202512301816000001.shtml
24	Chongqing-Guizhou B2B, China	2027	3000	/	/	Back-to-back	/	https://paper.people.com.cn/rmrb/pc/content/202511/20/content_30115862.html https://paper.people.com.cn/zgnyb/pc/content/202511/24/content_30116854.html
25	Hunan-Guizhou B2B, China	2027	3000	/	/	Back-to-back	/	https://paper.people.com.cn/rmrb/pc/content/202511/20/content_30115862.html https://paper.people.com.cn/zgnyb/pc/content/202511/24/content_30116854.html
26	Hunan-Guangdong B2B (Xiangyue), China	2027	3000	/	/	Back-to-back	RXHK	https://paper.people.com.cn/rmrb/pc/content/202511/20/content_30115862.html https://www.rxhk.com/gongsixinwen/353.html
27	Fujian-Jiangxi B2B, China	2027	3000	/	/	Back-to-back	/	https://paper.people.com.cn/rmrb/pc/content/202511/20/content_30115862.html https://paper.people.com.cn/zgnyb/pc/content/202511/24/content_30116854.html
28	Anhui-Hubei B2B, China	2027	3000	/	/	Back-to-back	/	https://paper.people.com.cn/rmrb/pc/content/202511/20/content_30115862.html

	Name	Year commissi-onned	Power (MW)	Voltage DC (kV)	Voltage AC (kV)	Transmission Length (km)	Converter Manufacturer	Reference
								https://paper.people.com.cn/zgnyb/pc/content/202511/24/content_30116854.html
29	Celtic Interconnector Ireland-France	2028	700	±320	220/400	500 subsea 35+40 underground	Siemens Energy	https://www.celticinterconnector.eu/ https://www.eirgrid.ie/celticinterconnector
30	Bay of Biscay, France-Spain	2028	2x1000	±400	400/400	300 subsea 80+30+13 underground	Hitachi Energy	https://www.inelfe.eu/en/projects/bay-biscay https://www.hitachienergy.com/about-us/customer-success-stories/biscay-gulf
31	BorWin4, Germany	2028	900	±320	/	130 subsea 130 underground	Siemens Energy	https://www.siemens-energy.com/global/en/home/press-releases/wind-power-18-million-people-siemens-energy-wins-largest-grid-connection-order-date.html https://www.amprion.net/Press/Press-Detail-Page_44160.html
32	DolWin4, Germany	2028	900	±320	/	60 subsea 150 underground	Siemens Energy	https://www.siemens-energy.com/global/en/home/press-releases/wind-power-18-million-people-siemens-energy-wins-largest-grid-connection-order-date.html https://www.amprion.net/Press/Press-Detail-Page_44160.html
33	Higashi-Shimizu, Japan	2028	600	/	275	Back-to-back	Hitachi Energy	https://www.hitachienergy.com/about-us/customer-success-stories/higashi-shimizu
34	Shin-Sakuma, Japan	2028	300	/	/	Back-to-back	Mitsubishi	https://www.mitsubishielectric.com/news/2023/1002.html
35	Neuconnect, UK-Germany	2028	1400	±525	400	710 subsea 15 underground	Siemens Energy	https://neuconnect-interconnector.com/
36	Adriatic Link, Italy	2028	1000	±500	400/400	210 subsea 40 underground	Siemens Energy	https://www.terna.it/en/projects/public-engagement/adriatic-link
37	Tyrrhenian Link East Sicily-Campania, Italy	2028	1000	±500	380/380	490 subsea	Siemens Energy	https://www.terna.it/en/projects/public-engagement/Tyrrhenian-link https://www.siemens-energy.com/global/en/home/press-releases/ramping-up-renewable-energy-siemens-energy-connects-italys-largest-islands-to-the-mainland.html
38	Tyrrhenian Link West Sicily-Sardinia, Italy	2028	1000	±500	380/380	480 subsea	Siemens Energy	https://www.terna.it/en/projects/public-engagement/Tyrrhenian-link https://www.siemens-energy.com/global/en/home/press-releases/ramping-up-renewable-energy-siemens-energy-connects-italys-largest-islands-to-the-mainland.html
39	ELMED interconnector, Italy-Tunisia	2028	600	±500	/	230 subsea	/	https://elmedproject.com/ https://www.terna.it/en/projects/projects-common-interest/italy-tunisia-interconnection
40	Grain Belt Express phase 1, USA	2028	5000	±600	345/345	850 OHL	Siemens Energy	https://grainbeltexpress.com/
41	Three Corners Connector, USA	2028	/	±525	/	480 OHL	/	https://threecornersconnector.com/

	Name	Year commissi-onned	Power (MW)	Voltage DC (kV)	Voltage AC (kV)	Transmission Length (km)	Converter Manufacturer	Reference
42	Power Santa Clara Valley (Metcalf - San Jose B), USA	2028	1000	±320	500/230	20 underground	/	https://ceqanet.lci.ca.gov/2024090200/3 https://powerthebay.com/
43	Sanshan Island Offshore Wind Farm 1-4, China	2028	2000	±500	/	115 subsea 180 OHL	/	https://www.gdaec.com.cn/NewsDetail/5282180.html
44	IJmuiden Ver Beta, Netherlands	2029	2000	±525	/	/	GE	https://www.tennet.eu/about-tennet/innovations/2gw-program https://www.tennet.eu/news/around-eu30-billion-europes-largest-ever-contracting-pack-age-security-supply-energy
45	IJmuiden Ver Alpha, Netherlands	2029	2000	±525	66/380	164 subsea 12 underground	Hitachi Energy	https://www.tennet.eu/about-tennet/innovations/2gw-program https://www.tennet.eu/news/around-eu30-billion-europes-largest-ever-contracting-pack-age-security-supply-energy
46	IJMUiden Ver Gamma, Netherlands	2029	2000	±525	/	/	GE	https://www.tennet.eu/about-tennet/innovations/2gw-program https://www.tennet.eu/news/around-eu30-billion-europes-largest-ever-contracting-pack-age-security-supply-energy
47	Suedlink - DC4, Germany	2029	2000	±525	400/400	550 underground	Hitachi Energy	https://www.transnetbw.de/de/suedlink https://www.tennet.eu/de/projekte/suedlink https://www.hitachienergy.com/about-us/customer-success-stories/suedlink-dc4
48	Eastern Green Link 2, UK	2029	2000	±525	/	440 subsea 67 underground	Hitachi Energy	https://www.ssen-transmission.co.uk/projects/project-map/eastern-green-link-2/ https://www.easterngreenlink2.co.uk/
49	Khavda-III - South Olpad, India	2029	2500	±500	400/400	600 OHL	GE Vernova	https://www.gevernova.com/news/press-releases/ge-vernova-awarded-major-contract-deliver-hvdc https://www.pfcclindia.com/download/khavda-hvdc-part-c-8Gw-itp-76-rfp-05-08-2024.pdf
50	BalWin4, Germany	2029	2000	±525	66/380	165 subsea 110 underground	GE	https://www.tennet.eu/about-tennet/innovations/2gw-program https://www.tennet.eu/projects/balwin4-lanwin1
51	MaresConnect, UK-Ireland	2029	750	±400	400/220	245 subsea	/	https://maresconnect.ie/
52	Great Sea Interconnector phase 1, Greece-Cyprus	2029	2000	±525	/	898 subsea 10 underground	Siemens Energy	https://www.great-sea-interconnector.com/en
53	Eastern Green Link 1, UK	2030	2000	±525	400/400	176 subsea 20 underground	GE	https://www.nationalgrid.com/electricity-transmission/network-and-infrastructure/segl1
54	Norfolk Vanguard West, UK	2030	1400	/	66/400	~50 subsea ~60 underground	Siemens Energy	https://group.vattenfall.com/uk/what-we-do/our-projects/vattenfallinnorfolk https://uk.rwe.com/press-and-news/2023-12-21-rwe-acquires-4-2-gigawatt-uk-offshore-wind-development-portfolio-from-vattenfall/
55	Norfolk Vanguard East, UK	2030	1400	/	66/400	~50 subsea ~60 underground	Siemens Energy	https://group.vattenfall.com/uk/what-we-do/our-projects/vattenfallinnorfolk

	Name	Year commissi-onned	Power (MW)	Voltage DC (kV)	Voltage AC (kV)	Transmission Length (km)	Converter Manufacturer	Reference
								https://uk.rwe.com/press-and-news/2023-12-21-rwe-acquires-4-2-gigawatt-uk-offshore-wind-development-portfolio-from-vattenfall/
56	Norfolk Boreas, UK	2030	1400	/	66/400	~50 subsea ~60 underground	Siemens Energy	https://group.vattenfall.com/uk/what-we-do/our-projects/vattenfallinnorfolk https://uk.rwe.com/press-and-news/2023-12-21-rwe-acquires-4-2-gigawatt-uk-offshore-wind-development-portfolio-from-vattenfall/
57	SouthCoast Wind 1, USA	2030	1200	±320	69/345	/	/	https://southcoastwind.com/southcoast-wind-1/
58	Square Butte HVDC modernization, USA	2030	/	±250	345/345	750 OHL	Siemens Energy	https://puc.eip.mn.gov/web/project/15051 https://www.mnpower.com/Company/Transmission https://www.psc.nd.gov/webdocs/case/24-0382/001-020.pdf
59	TransWest Express (TWE), USA	2030	3000	±500	500/345	650 OHL	Siemens Energy	https://www.transwestexpress.net/about/ferc.shtml
60	Marinus Link stage 1, Australia	2030	750	±320	500/220	255 subsea 90 underground	Hitachi Energy	https://www.marinuslink.com.au/overview/
61	BalWin1, Germany	2030	2000	±525	380	170 subsea 220 underground	Siemens Energy	https://offshore.amprion.net/Offshore-Projekte/LanWin1-LanWin3/ https://www.siemens-energy.com/global/en/home/press-releases/wind-power-18-million-people-siemens-energy-wins-largest-grid-connection-order-date.html
62	LanWin1, Germany	2030	2000	±525	66/380	165 subsea 110 underground	GE	https://www.tennet.eu/about-tennet/innovations/2gw-program https://www.tennet.eu/projects/balwin4-lanwin1
63	Nederwiek 1, Netherlands	2030	2000	±525	66/380	208 subsea 9 underground	Hitachi Energy	https://www.tennet.eu/about-tennet/innovations/2gw-program https://www.tennet.eu/news/around-eu30-billion-europes-largest-ever-contracting-pack-age-security-supply-energy
64	Nederwiek 2, Netherlands	2030	2000	±525	/	/	GE	https://www.tennet.eu/about-tennet/innovations/2gw-program https://www.tennet.eu/news/around-eu30-billion-europes-largest-ever-contracting-pack-age-security-supply-energy
65	Western Isles (Arnish-Beauly) Scotland, UK	2030	2000	±525	400	81 subsea 80 underground	Hitachi Energy	https://www.ssen-transmission.co.uk/projects/project-map/western-isles/ https://www.hitachienergy.com/news/press-releases/2023/07/hitachi-energy-selected-for-multi-project-agreement-to-secure-large-scale-renewable-integration-in-scotland
66	Spittal-Peterhead Scotland, UK	2030	2000	±525	400/400	170 subsea 30-50 underground	Hitachi Energy	https://www.ssen-transmission.co.uk/projects/project-map/spittal--peterhead-subsea-cable-link/ https://www.hitachienergy.com/news/press-releases/2023/07/hitachi-energy-selected-for-multi-project-agreement-to-secure-large-scale-renewable-integration-in-scotland
67	SACOI3, Sardinia-Corsica-Italy	2030	400	±200	/	300 subsea and underground	Hitachi Energy	https://www.terna.it/en/projects/projects-common-interest/sardinia-corsica-mainland-italy-electrical-interconnection https://tyndp2022-project-platform.azurewebsites.net/projectsheets/transmission/299

	Name	Year commissi-onned	Power (MW)	Voltage DC (kV)	Voltage AC (kV)	Transmission Length (km)	Converter Manufacturer	Reference
68	GRITA 2, Italy-Greece	2030	1000	±500	/	250 subsea 50 underground	/	https://www.terna.it/en/projects/public-engagement/italy-greece-grita-2 https://tyndp2024.entsoe.eu/projects-map/transmission/1112
69	Attentive Energy One, USA	2030	1400	/	/	~ 190 subsea	/	https://attentiveenergy.com/ https://www.nyserda.ny.gov/All-Programs/Offshore-Wind/Focus-Areas/Offshore-Wind-Solicitations/2022-Solicitation
70	Community Offshore Wind, USA	2030	1300	/	/	/	/	https://communityoffshorewind.com/ https://www.nyserda.ny.gov/All-Programs/Offshore-Wind/Focus-Areas/Offshore-Wind-Solicitations/2022-Solicitation
71	Excelsior Wind, USA	2030	1300	/	/	/	/	https://www.vineyardoffshore.com/excelsiorwind https://www.nyserda.ny.gov/All-Programs/Offshore-Wind/Focus-Areas/Offshore-Wind-Solicitations/2022-Solicitation
72	Triton Link, Belgium-Denmark	2030	2000	±525	/	773 subsea	/	https://www.elia.be/fr/infrastructure-et-projets/projets-infrastructure/tritonlink https://tyndp2022-project-platform.azurewebsites.net/projectsheets/transmission/1092
73	Princess Elisabeth Energy Island, Belgium	2030	3500	±525	/	60 subsea	/	https://www.elia.be/en/infrastructure-and-projects/infrastructure-projects/princess-elisabeth-island
74	Tarchon Energy, Germany-UK	2030	1400	±525	400	610 subsea	/	https://www.tarchonenergy.net/ https://tyndp2022-project-platform.azurewebsites.net/projectsheets/transmission/1050
75	SuedOstLink+, Germany	2030	2000	±525	/	780 underground	Siemens Energy	https://www.50hertz.com/en/Grid/Griddevelopement/Onshoreprojects/SuedOstLinkPlus https://www.tennet.eu/de/projekte/suedostlink
76	LanWin2, Germany	2030	2000	±525	/	~270 subsea	Siemens Energy	https://www.tennet.eu/projects/lanwin2 https://www.tennet.eu/news/around-eu30-billion-europes-largest-ever-contracting-pack-age-security-supply-energy
77	Continental Connector, USA	2030	3000	/	/	800 OHL	/	https://continentalconnectorllc.com/
78	Sea Link, UK	2031	2000	/	400/400	130 subsea 12 underground	Siemens Energy	https://www.nationalgrid.com/electricity-transmission/document/146196/download
79	Southern Spirit Transmission, USA	2031	3000	±525	/	515 OHL	/	https://patternenergy.com/projects/southern-spirit-transmission/
80	Paradeep - Andaman Island (phase 1), India	2031	250	±320	/	1150 subsea	/	https://www.andamanchronicle.net/index.php/31479-electricity-department-takes-decisive-actions-to-meet-power-supply-demand-and-minimize-load-shedding https://powermin.gov.in/sites/default/files/uploads/National_Electricity_Plan_Volume_II_Transmission.pdf

	Name	Year commissi-onned	Power (MW)	Voltage DC (kV)	Voltage AC (kV)	Transmission Length (km)	Converter Manufacturer	Reference
81	BalWin2, Germany	2031	2000	±525	380	160 subsea 230 underground	Siemens Energy	https://offshore.amprion.net/Offshore-Projekte/LanWin1-LanWin3/ https://www.siemens-energy.com/global/en/home/press-releases/wind-power-18-million-people-siemens-energy-wins-largest-grid-connection-order-date.html
82	LionLink hybrid interconnector - Nederwiek 3 OWF, UK-Netherlands	2031	2000	±525	400/66 /380	/	Hitachi Energy tbc	https://www.tennet.eu/lionlink https://www.tennet.eu/news/interconnector-lionlink-developed-through-offshore-grid-project-nederwiek-3 https://www.tennet.eu/news/around-eu30-billion-europes-largest-ever-contracting-pack-age-security-supply-energy
83	Doordewind 1, Netherlands	2031	2000	±525	/	/	Hitachi Energy	https://www.tennet.eu/about-tennet/innovations/2gw-program https://www.tennet.eu/news/around-eu30-billion-europes-largest-ever-contracting-pack-age-security-supply-energy
84	Doordewind 2, Netherlands	2031	2000	±525	/	/	Hitachi Energy	https://www.tennet.eu/about-tennet/innovations/2gw-program https://www.tennet.eu/news/around-eu30-billion-europes-largest-ever-contracting-pack-age-security-supply-energy
85	BalWin3, Germany	2031	2000	±525	66/380	200 subsea 45 underground	Siemens Energy	https://www.tennet.eu/projects/balwin3-lanwin4 https://www.tennet.eu/news/around-eu30-billion-europes-largest-ever-contracting-pack-age-security-supply-energy
86	LanWin4, Germany	2031	2000	±525	66/380	180 subsea 45 underground	Siemens Energy	https://www.tennet.eu/projects/balwin3-lanwin4 https://www.tennet.eu/news/around-eu30-billion-europes-largest-ever-contracting-pack-age-security-supply-energy
87	LanWin5, Germany	2031	2000	±525	/	~290 subsea	Hitachi Energy	https://www.tennet.eu/projects/lanwin5 https://www.tennet.eu/news/around-eu30-billion-europes-largest-ever-contracting-pack-age-security-supply-energy
88	West Coast Energy Expressway, South Korea	2031-2038	4x2000	±525	345/345	220 + 290 + 350 + 210	/	https://www.chosun.com/english/industry-en/2025/05/28/PBQB57WEJVDVDDV5DR46T4OYB4/ https://www.businesskorea.co.kr/news/articleView.html?idxno=243305
89	Attentive Energy Two, NY, USA	2031	1300	/	/	/	/	https://attentiveenergy.com/attentive-energy-two/
90	Syncline Community Cable, Australia	2031	/	±525 kV	/	265 underground	/	https://www.synclinecommunitycable.com.au/
91	Hokkaido-Honshu pole 1, Japan	2031	300	250	275	43 subsea 27 + 97 OHL	Toshiba	https://www.global.toshiba/ww/news/energy/2026/03/news-20260316-01.html
92	Hostos project, Dominican Republic-Puerto Rico	2031	500	±320	345	150 subsea	Siemens Energy	https://caribbeantransmission.com/nuestro-proyecto/ https://www.federalregister.gov/documents/2024/03/14/2024-05413/application-for-presidential-permit-caribbean-transmission-development-co-llc
93	GREGY Interconnector, Greece-Egypt	2031	3000	±525	/	1400 subsea	/	https://elicagroup.gr/en/gregy/ https://tyndp2022-project-platform.azurewebsites.net/projectsheets/transmission/1041
94	Centre Manche 1, France	2032	1250	±320	132/400	100 subsea	Hitachi Energy	https://www.hitachienergy.com/news-and-events/customer-success-stories/centre-manche-1

	Name	Year commissi-onned	Power (MW)	Voltage DC (kV)	Voltage AC (kV)	Transmission Length (km)	Converter Manufacturer	Reference
								https://www.rte-france.com/projets/nos-projets/raccordement-parc-eolien-mer-centre-manche-1
95	Nautilus, UK-Belgium	2032	1400	±525	400	140 subsea	/	https://tyndp2022-project-platform.azurewebsites.net/projectsheets/transmission/121 https://www.nationalgrid.com/national-grid-ventures/interconnectors-connecting-cleaner-future/nautilus-interconnector
96	SOO Green HVDC Link, USA	2032	2100	±525	345/345	560 underground	Siemens Energy	https://soogreen.com/ https://www.utilitydive.com/news/soo-green-transmission-miso-pjm-interregional-big-wires-act-hickenlooper/693916/
97	North Plains Connector, USA	2032	3000	±525	500/345	670 OHL	/	https://northplainsconnector.com/
98	North Path Transmission, USA	2032	4000	±525	/	643 OHL	/	https://northpath.invenergy.com/ https://nmreta.com/north-path-transmission-project/
99	Cimarron Link, USA	2032	1900	/	/	640 OHL	/	https://cimarronlink.com/
100	Wyoming Intertie, USA	2032	3000	/	/	160 OHL	/	https://wyomingintertie.com/
101	Marinus Link stage 2, Australia	2032	750	±320	500/220	255 subsea 90 underground	/	https://www.marinuslink.com.au/overview/
102	Korridor-B V48, Germany	2032	2000	±525	/	391 underground	Hitachi Energy	https://www.netzausbau.de/Vorhaben/ansicht/de.html?cms_nummer=48&cms_gruppe=bbplg https://korridor-b.amprion.net/
103	Korridor-B V49, Germany	2032	2000	±525	/	262 underground	Hitachi Energy	https://www.netzausbau.de/Vorhaben/ansicht/de.html?cms_nummer=49&cms_gruppe=bbplg https://korridor-b.amprion.net/
104	NordOstLink (DC31), Germany	2032	2000	±525	/	~212 underground	/	https://www.50hertz.com/en/Grid/Griddevelopement/Onshoreprojects/NordOstLink
105	Cronos Energy, Belgium-UK	2032	1400	±525	/	~200 subsea	/	https://www.cronos-energy.net/ https://tyndp2022-project-platform.azurewebsites.net/projectsheets/transmission/1049
106	Aminth Energy Interconnector, Denmark-UK	2032	1400	±525	/	580 subsea	/	https://aminthenergy.net/about-us/ https://tyndp2022-project-platform.azurewebsites.net/projectsheets/transmission/1051
107	BorWin7 (NOR-6-4), Germany	2032	2000	±525	/	454 underground	/	https://offshore.amprion.net/Offshore-Projekte/Windader-West/ https://www.netzentwicklungsplan.de/sites/default/files/2023-07/NEP_2037_2045_V2023_2_Entwurf_Teil1_1.pdf
108	Madurai-Mannar, India-Sri Lanka	2032	1000	±320	400	120 subsea 112+10 OHL	/	https://powermin.gov.in/sites/default/files/uploads/National_Electricity_Plan_Volume_II_Transmission.pdf
109	Milan-Montalto, Italy	2032	2000	±525	/	400 OHL and subsea	/	https://www.terna.it/en/electric-system/efficient-territorial-planning/national-electricity-transmission-grid-development-plan

	Name	Year commissi-onned	Power (MW)	Voltage DC (kV)	Voltage AC (kV)	Transmission Length (km)	Converter Manufacturer	Reference
110	AAPowerLink (DarwinLink) Australia	2032	6400	±525	/	800 OHL	/	https://www.suncable.energy/our-projects https://www.infrastructureaustralia.gov.au/projects/australia-asia-powerlink
111	AAPowerLink (SingaporeLink), Australia-Singapore	2032	2000	±525	/	4300 subsea and underground	/	https://www.suncable.energy/our-projects https://www.infrastructureaustralia.gov.au/projects/australia-asia-powerlink
112	Lanwin3 (NOR-11-1), Germany	2032	2000	±525	/	200 subsea 15 underground	Siemens Energy	https://www.50hertz.com/en/Grid/Griddevelopement/Offshoreprojects/LanWin3 https://www.50hertz.com/en/News/FullarticleNewsof50Hertz/14755/50hertz-siemens-energy-and-dragados-offshore-conclude-contract-for-converter-system-in-the-north-sea-and-on-land
113	LirIc, Ireland-UK	2032	730 à 500 ß	±320	275/400	142 subsea	/	https://tinv.com/intercon-projects/liric/ https://tyndp2024.entsoe.eu/projects-map/transmission/1040
114	BalWin5, Germany	2032	2000	±525	/	390 subsea and underground	GE Vernova	https://www.tennet.eu/de/projekte/balwin5 https://www.gevernova.com/news/press-releases/ge-vernova-seatrium-secure-major-contract-tennet
115	Centre Manche 2, France	2033	1250	±320	132/400	105 subsea	Hitachi Energy	https://www.hitachienergy.com/news-and-events/customer-success-stories/centre-manche-2 https://www.rte-france.com/projets/nos-projets/raccordement-parc-eolien-mer-centre-manche-2
116	Oléron 1, France	2033	1250	±320	400	/	Hitachi Energy	https://www.eoliennesenmer.fr/sites/eoliennesenmer/files/fichiers/2023/05/Pr%C3%A9sentation%20ETAT-RTE.pdf
117	Eastern Green Link 3, UK	2033	2000	±525	400/400	680 subsea and underground	Hitachi Energy	https://www.nationalgrid.com/the-great-grid-upgrade/eastern-green-link-3-and-4
118	Rhine-Main-Link (DC34), Germany	2033	2000	±525	/	~600 underground	/	https://www.amprion.net/Netzausbau/Aktuelle-Projekte/Rhein-Main-Link/
119	Kusenhorst I (NOR-9-5), Germany	2033	2000	±525	/	~290 underground	/	https://offshore.amprion.net/Offshore-Projekte/Windader-West/
120	Rommerskirchen (NOR-x-1), Germany	2034	2000	±525	/	~410 underground	/	https://offshore.amprion.net/Offshore-Projekte/Windader-West/
121	Eastern Green Link 4, UK	2033	2000	±525	400/400	530 subsea 14+100 underground	Siemens Energy	https://www.nationalgrid.com/the-great-grid-upgrade/eastern-green-link-3-and-4
122	GiLA, France	2034	2x1200	±320	/	/	/	https://tyndp2024.entsoe.eu/projects-map/transmission/1134 https://www.rte-france.com/projets/nos-projets/nouvel-axe-electrique-facade-atlantique
123	LanWin7, Germany	2034	2000	±525	/	320 subsea and underground	/	https://www.nkt.com/news-press-releases/nkt-awarded-two-high-voltage-projects-under-existing-framework-agreement-with-tennet
124	Bornholm - Zealand Interconnector, Denmark	2034	1200	±525	/	200 subsea 17 underground	Siemens Energy	https://bornholmenergyisland.eu/en/ https://www.nkt.com/news-press-releases/nkt-awarded-the-power-cable-connection-between-bornholm-energy-island-and-zealand-in-denmark

	Name	Year commissi-onned	Power (MW)	Voltage DC (kV)	Voltage AC (kV)	Transmission Length (km)	Converter Manufacturer	Reference
125	Bornholm - Germany Interconnector Denmark-Germany	2034	2000	±525	/	160 subsea	Siemens Energy	https://bornholmenergyisland.eu/en https://energinet.dk/bornholminterconnector/ https://www.50hertz.com/en/BEI/
126	Oléron 2, France	2035	1250	±320	400	/	/	https://www.eoliennesenmer.fr/facades-maritimes-en-france/facade-sud-atlantique/oleron/oleron-2
127	HansaLink, UK - Germany	2035	2000	±525	/	850 subsea	/	https://tyndp2024.entsoe.eu/projects-map/transmission/1193 https://www.windgrid.com/
128	Kusenhorst II (NOR-x-2), Germany	2035	2000	±525	/	~290 underground	/	/
129	Rhine-Main-Link (DC35), Germany	2035	2000	±525	/	~550 underground	/	https://www.amprion.net/Netzausbau/Aktuelle-Projekte/Rhein-Main-Link/
130	Ionian-Tyrrhenian backbone, Italy	2035	2000 1000 1000	±525	/	200 + 200 + 400 OHL and subsea	/	https://www.terna.it/en/electric-system/efficient-territorial-planning/national-electricity-transmission-grid-development-plan
131	Shetland 2, UK	2035	2000	±525	/	/	/	https://www.sse.com/news-and-views/2024/05/ssen-transmission-selects-sumitomo-electric-van-oord-consortium-as-preferred-bidder-for-shetland-2-hvdc-link/
132	New Humboldt-Collinsville, USA	2035	3000	±525	500/500	420 OHL	/	https://www.caiso.com/documents/appendix-i-board-approved-2023-2024-transmission-plan.pdf
133	Northeast Bipole II (Angicos – Itaporanga 2), Brazil	2035	3000	600	/	2500 OHL	/	https://www.epe.gov.br/pt/imprensa/noticias/epe-inova-ao-publicar-estudo-de-expansao-da-capacidade-das-interligacoes-regionais-recomendando-a-aplicacao-da-tecnologia-hvdc-vsc-de-forma-inedita-no-sin-com-flexibilidade-tecnologica-para-os-leiloes-de-transmissao
134	NordOstLink+ (DC32), Germany	2035	2000	±525	/	~185 underground	/	https://www.50hertz.com/en/News/FullarticleNewsof50Hertz/13735/50hertz-signs-contracts-with-nkt-and-prysmian-group-for-at-least-3-500-km-of-submarine-and-land-cable https://www.netzausbau.de/Vorhaben/ansicht/de.html?cms_nummer=81&cms_gruppe=bbplg
135	LanWin6, Germany	2035	2000	±525	/	~900 subsea	/	https://www.50hertz.com/en/News/FullarticleNewsof50Hertz/13735/50hertz-signs-contracts-with-nkt-and-prysmian-group-for-at-least-3-500-km-of-submarine-and-land-cable
136	Ostwind 4, Germany	2035	2000	±525	/	~345 subsea	GE	https://www.50hertz.com/Grid/Griddevelopement/Offshoreprojects/Ostwind4 https://www.50hertz.com/en/News/FullarticleNewsof50Hertz/13735/50hertz-signs-contracts-with-nkt-and-prysmian-group-for-at-least-3-500-km-of-submarine-and-land-cable
137	Estlink 3, Estonia-Finland	2035	700	±450	400/330	~80 subsea	/	https://elering.ee/en/elering-considering-northwestern-estonia-onshore-connection-estlink-3 https://tyndp2024.entsoe.eu/projects-map/transmission/1094
138	Fécamp Grand Large 1, France	2035	~2000	±525	/	/	/	https://www.eoliennesenmer.fr/planification-et-participation-du-public2

	Name	Year commissi-onned	Power (MW)	Voltage DC (kV)	Voltage AC (kV)	Transmission Length (km)	Converter Manufacturer	Reference
139	Fécamp Grand Large 2, France	2035	~2000	±525	/	/	/	https://www.eoliennesenmer.fr/planification-et-participation-du-public2
140	Bretagne Nord Ouest, France	2035	~2000	±525	/	/	/	https://www.eoliennesenmer.fr/planification-et-participation-du-public2
141	Golfe de Gascogne Sud, France	2035	~1200	±320	/	/	/	https://www.eoliennesenmer.fr/planification-et-participation-du-public2
142	Golfe du Lion Centre, France	2035	~2000	±525	/	/	/	https://www.eoliennesenmer.fr/planification-et-participation-du-public2
143	Eastern Green Link 5, UK	2035	2000	±525	400/400	585 subsea and underground	/	https://www.ssen-transmission.co.uk/projects/project-map/eastern-green-link-5/ https://www.nationalgrid.com/the-great-grid-upgrade/eastern-green-link-5
144	Western Link 2, UK	2035	2000	±525	400/400	~182 + 341 + 43 subsea	/	https://www.spenergynetworks.co.uk/pages/western_link_2.aspx https://www.nationalgrid.com/electricity-transmission/network-and-infrastructure/infrastructure-projects/western-link-2
145	Konti-Skan upgrade, Denmark-Sweden	2036	1000	±320	400/400	160 subsea	/	https://www.svk.se/en/grid-development/grid-projects/konti-skan-connect/ https://tyndp2024.entsoe.eu/projects-map/transmission/1097 https://www.svk.se/utveckling-av-kraftsystemet/transmissionsnatet/transmissionsnatsprojekt/konti-skan-connect/
146	Rhine-Main-Link NOR-x-4 (onshore-part), Germany	2036	2000	±525	/	~700 underground	/	https://www.amprion.net/Netzausbau/Aktuelle-Projekte/Rhein-Main-Link/
147	Oberzier (NOR-x-5), Germany	2036	2000	±525	/	~410 underground	/	https://offshore.amprion.net/Offshore-Projekte/Windader-West/
148	Adriatic backbone (Foggia-Forlì), Italy	2036	2000 1000 2000	±525	/	500 OHL and subsea	/	https://www.terna.it/en/electric-system/efficient-territorial-planning/national-electricity-transmission-grid-development-plan
149	Navarra-Landes, Spain-France	2036	2x1000	±320	400/400	225 underground or OHL	/	https://tyndp2024.entsoe.eu/projects-map/transmission/276
150	Rhine-Main-Link NOR-x-8 (onshore-part), Germany	2037	2000	±525	/	~700 underground	/	https://www.amprion.net/Netzausbau/Aktuelle-Projekte/Rhein-Main-Link/
151	Fenno-Skan 3, Sweden-Finland	2038	800	/	/	250 subsea	/	https://www.fingrid.fi/en/news/news/2025/fingrid-and-svenska-kraftnat-initiate-planning-for-fenno-skan-3-submarine-cable-between-finland-and-sweden/ https://tyndp2024.entsoe.eu/projects-map/transmission/239
152	OstWestLink (DC40), Germany	2040	2000	/	/	~600 underground	/	https://www.50hertz.com/de/Netz/Netzausbau/ProjekteanLand/OstWestLink https://www.transnetbw.de/de/newsroom/presseinformationen/fuer-

	Name	Year commissi-onned	Power (MW)	Voltage DC (kV)	Voltage AC (kV)	Transmission Length (km)	Converter Manufacturer	Reference
								eine-sichere-energiezukunft-50hertz-tennet-und-transnetbw-realisieren-gemeinsam-neue-gleichstrom-verbindungen
153	NordWestLink (DC41), Germany	2040	2000	/	/	~600 underground	/	https://www.tennet.eu/de/projekte/nordwestlink https://www.transnetbw.de/de/newsroom/presseinformationen/fuer-eine-sichere-energiezukunft-50hertz-tennet-und-transnetbw-realisieren-gemeinsam-neue-gleichstrom-verbindungen
154	SuedWestLink (DC42), Germany	2040	2000	/	/	~740 underground	/	https://www.50hertz.com/Netz/Netzausbau/ProjekteanLand/SuedWestLink https://www.transnetbw.de/de/newsroom/presseinformationen/fuer-eine-sichere-energiezukunft-50hertz-tennet-und-transnetbw-realisieren-gemeinsam-neue-gleichstrom-verbindungen
155	Fiumesanto-Montalto (SAPEI 2), Italy	2040	2000	/	/	650 subsea and OHL	/	https://www.terna.it/en/electric-system/efficient-territorial-planning/national-electricity-transmission-grid-development-plan
156	Roches-Douvres, France	2040	~2000	±525	/	/	/	https://www.eoliennesenmer.fr/planification-et-participation-du-public2
157	Bretagne Nord Est, France	2040	~2000	±525	/	/	/	https://www.eoliennesenmer.fr/planification-et-participation-du-public2
158	Golfe de Gascogne Nord, France	2040	~1200	±320	/	/	/	https://www.eoliennesenmer.fr/planification-et-participation-du-public2
159	Golfe du Lion Est, France	2040	~1100	±320	/	/	/	https://www.eoliennesenmer.fr/planification-et-participation-du-public2
160	GriffinLink, UK-Germany	2040	2000 multi-terminal	/	/	/	/	https://www.nationalgrid.com/national-grid-tennet-germany-launch-griffinlink-first-kind-project-maximise-offshore-wind
161	Aragón-Atlantic Pyrenees, Spain-France	2041	2000	±320	400/400	120 underground or OHL	/	https://tyndp2024.entsoe.eu/projects-map/transmission/270
162	IC3, Malta-Italy	In planning	200	/	/	/	/	https://www.gov.mt/en/Government/DOI/Press%20Releases/Pages/2026/05/11/PR260827en.aspx
163	Medlink link 1, Italy-Algeria	In planning	2000	±525	/	975 subsea	/	https://tyndp2024.entsoe.eu/projects-map/transmission/1208
164	Medlink link 2, Italy-Tunisia	In planning	2000	±525	/	600 subsea	/	https://tyndp2024.entsoe.eu/projects-map/transmission/1208
165	Lake Erie Connector, Canada-USA	In planning		/	/	57 subsea	/	https://www.nexteraenergytransmission.com/lake-erie-connector.html https://www.energy.gov/sites/default/files/2025-01/PP-412-1%20Lake%20Eerie%20Connector%20Transmission%2C%20LLC%20Presidential%20Permit%20Order.pdf https://www.pacodeandbulletin.gov/Display/pabull?file=/secure/pabulletin/data/vol56/56-3/84.html

	Name	Year commissi-onned	Power (MW)	Voltage DC (kV)	Voltage AC (kV)	Transmission Length (km)	Converter Manufacturer	Reference
166	Cascade Renewable Transmission, USA	In planning	1100	±400	500/230	130 subsea 30 underground	/	https://www.cascaderenewable.com/project/description
167	Toronto third power Supply, Canada	In planning	/	/	/	/	/	https://www.ieso.ca/-/media/Files/IESO/Document-Library/regional-planning/Toronto/toronto-20250925-presentation.pdf
168	Clean Path New York, USA	In planning	1300	±400	/	280 underground	/	https://www.cleanpathny.com/
169	Beacon Wind 1, USA	In planning	1230	/	/	/	/	https://www.beaconwind.com/ https://www.rechargenews.com/wind/equinor-and-bp-to-pioneer-high-voltage-offshore-wind-export-lines-in-us-atlantic/2-1-1012225
170	Dogger Bank South East and West, UK	In planning	2x1500	/	/	/	/	https://doggerbanksouth.co.uk/
171	FAB Link, UK-France	In planning	1250	±320	400/400	170 subsea 15+25 underground	/	http://www.fablink.net/
172	Gridlink, UK-France	In planning	1400	±525	400	140 subsea 20 underground	/	https://gridlinkinterconnector.com/ https://tyndp2024.entsoe.eu/projects-map/transmission/285
173	Aquind, UK-France	In planning	2x1000	±320	400/400	242 subsea	/	http://aquind.co.uk/
174	Grain Belt Express phase 2, USA	In planning	5000	±600	345/345	430 OHL	/	https://grainbeltexpress.com/
175	Península-Baleares, Spain	In planning	400	±250	/	405 subsea	/	https://www.ree.es/en/press-office/news/press-release/2024/07/agreement-second-electrical-peninsula-balearic-islands
176	Ayrum HVDC Back to Back No.1, Armenia	In planning	350	/	400/500	Back-to-back	/	https://hiqstep.eu/content/caucasus-transmission-network-phase-i
177	Akhaltsikhe HVDC Back to Back No.3, Georgia	In planning	350	/	500/400	Back-to-back	/	https://www.gse.com.ge/sw/static/file/TYNDP_GE-2023-2033_ENG.pdf
178	NU-link, UK-Netherlands	In planning	1200	/	/	/	/	https://tyndp2024.entsoe.eu/projects-map
179	Greenconnector, Switzerland-Italy	In planning	1000	±400	/	150 underground	/	http://www.greenconnector.it/
180	Sasaram B2B upgrade, India	In planning	1000	/	400	Back-to-back	/	https://www.tndindia.com/pgcil-to-upgrade-sasaram-hvdc-project-capacity-to-be-doubled/
181	Baltic-German PowerLink, Germany-Latvia-Lithuania	Being considered	2000	/	/	~600 subsea	/	https://www.litgrid.eu/index.php/news-events-/news/baltic-german-powerlink-germany-latvia-and-lithuania-plan-joint-power-project-in-the-baltic-sea/36465

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182	Sila Atlantik, Morocco-Germany	Being considered	2x1800	±525	/	/	/	https://xlinks.co/ https://tyndp2024.entsoe.eu/projects-map/transmission/1215
183	Taslink, Australia - New Zealand	Being considered	2000 to 3000	/	/	2600 subsea	/	https://taslink.com/
184	EEL Project, Japan-South Korea	Being considered	2000	/	/	220 subsea	/	https://www.japaninterconnector.com/projects
185	FUGU Project, Japan-South Korea	Being considered	2000	/	/	350 subsea	/	https://www.japaninterconnector.com/projects
186	TUNA Project, Japan-Taiwan	Being considered	1400	/	/	1200 subsea	/	https://www.japaninterconnector.com/projects
187	Baltic WindConnector, Germany-Estonia	Being considered	2000	±525	/	750 subsea	/	https://www.elering.ee/en/elering-and-50hertz-explore-possibilities-build-submarine-electricity-cable-between-estonia-and https://tyndp2024.entsoe.eu/projects-map/transmission/1211
188	LaSGo Link, Sweden-Gotland-Latvia	Being considered	500 700	±320	/	125+195 subsea	/	https://tinv.com/intercon-projects/lasgo/ https://tyndp2022-project-platform.azurewebsites.net/projectsheets/transmission/1068
189	Elwind hybrid offshore, Latvia-Estonia	Being considered	1000	±450	/	180 subsea	/	https://elwindoffshore.eu/ https://tyndp2022-project-platform.azurewebsites.net/projectsheets/transmission/1088
190	HVDC Line DE-CH, Germany-Switzerland	Being considered	1000	±400	/	250 underground or OHL	/	https://tyndp2024.entsoe.eu/projects-map/transmission/1058
191	TuNur Malta, Malta-Tunisia	Being considered	500	±320	/	460 subsea	/	https://tyndp2024.entsoe.eu/projects-map/transmission/1230
192	TuNur Italy, Italy-Tunisia	Being considered	2x1000	±525	400	660 subsea and OHL	/	https://www.tunur.tn/portfolio/tunur-italy-transmission-line/ https://tyndp2024.entsoe.eu/projects-map/transmission/283
193	Apollo-Link, Spain-Italy	Being considered	2000	±525	/	350 subsea	/	https://tyndp2024.entsoe.eu/projects-map/transmission/1210
194	IberiaLink, Spain-Italy	Being considered	/	/	/	/	/	https://tyndp2026.entsoe.eu/projects-map
195	Paradeep - Nicobar Island (phase 2), India	Being considered	250	±320	/	/	/	https://www.andamanchronicle.net/index.php/31479-electricity-department-takes-decisive-actions-to-meet-power-supply-demand-and-minimize-load-shedding https://powermin.gov.in/sites/default/files/uploads/National_Electricity_Plan_Volume_II_Transmission.pdf
196	Great Sea Interconnector phase 2, Cyprus-Israel	Being considered	2000	±525	/	310 subsea 13 underground	/	https://www.great-sea-interconnector.com/en

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197	Black Sea Submarine Cable (BSSC), Azerbaijan, Georgia, Romania and Hungary	Being considered	1300	±525	/	1155 offshore and onshore	/	https://gse.com.ge/projects/international-projects/Black-Sea-Submarine-Cable-Project https://tyndp2024.entsoe.eu/projects-map/transmission/1105
198	Green Energy Corridor, Azerbaijan, Georgia, Romania and Hungary	Being considered	/	±525	/	/	/	https://tyndp2026.entsoe.eu/projects-map
199	Romania-Hungary Interconnector, Romania-Hungary	Being considered	2500	±525	/	238 OHL	/	https://tyndp2024.entsoe.eu/projects-map/transmission/1216
200	Romania-Serbia Interconnector, Romania-Serbia	Being considered	/	/	/	/	/	https://tyndp2026.entsoe.eu/projects-map
201	The Green Vein, Egypt-Italy	Being considered	3000	/	/	2800 subsea	/	https://thegreenvein.com/ https://www.zawya.com/en/press-release/companies-news/the-green-vein-sustainable-innovative-electricity-corridor-connecting-egypt-and-italy-yquur4vr
202	GulfLink, Italy- Saudi Arabia	Being considered	3000	/	/	/	/	https://tyndp2026.entsoe.eu/projects-map
203	Qantara Med, Morocco-France	Being considered	/	/	/	/	/	https://tyndp2026.entsoe.eu/projects-map
204	Atlantic Wind Connection (AWC), USA	Being considered	1000	±320	/	Multi-terminal subsea	/	https://www.boem.gov/sites/default/files/renewable-energy-program/State-Activities/ROW-Application-Restated.pdf
205	Pacific Transmission Expansion (PTE), USA	Being considered	2000	±525	500/220	Multi-terminal subsea	/	https://www.caiso.com/documents/appendix-g-board-approved-2023-2024-transmission-plan.pdf
206	Italy-Slovenia, Italy-Slovenia	Being considered	1000	500	/	100 OHL	/	https://tyndp2024.entsoe.eu/projects-map/transmission/150
207	GAP Interconnector, Egypt-Greece	Being considered	2000	±500	/	450 subsea	/	https://tyndp2022-project-platform.azurewebsites.net/projectsheets/transmission/1048 https://eunice-group.com/projects/greece-africa-power-interconnector-gap-interconnector/
208	Atlantic SuperConnection, Iceland-UK	Being considered	1800	/	/	1700 subsea	/	https://atlanticsuperconnection.com/
209	HIP Atlantic Project, UK	Being considered	2000	/	/	/	/	https://indpow.co.uk/hecate-independent-power-ltd/

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210	NATO-L, Canada-Ireland	Being considered	6000	/	/	3500 subsea	/	https://www.nato-l.org/
211	Angola VSC, Angola	Being considered	2000	/	/	/	/	https://www.enerdata.net/publications/daily-energy-news/angola-signs-mou-develop-2-gw-hvdc-transmission-line-project.html

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