



Aisling Hubert
Wire & Cable
Analyst

Construction and electrification drive UK cable demand growth

► UK WIRE AND CABLE OVERVIEW

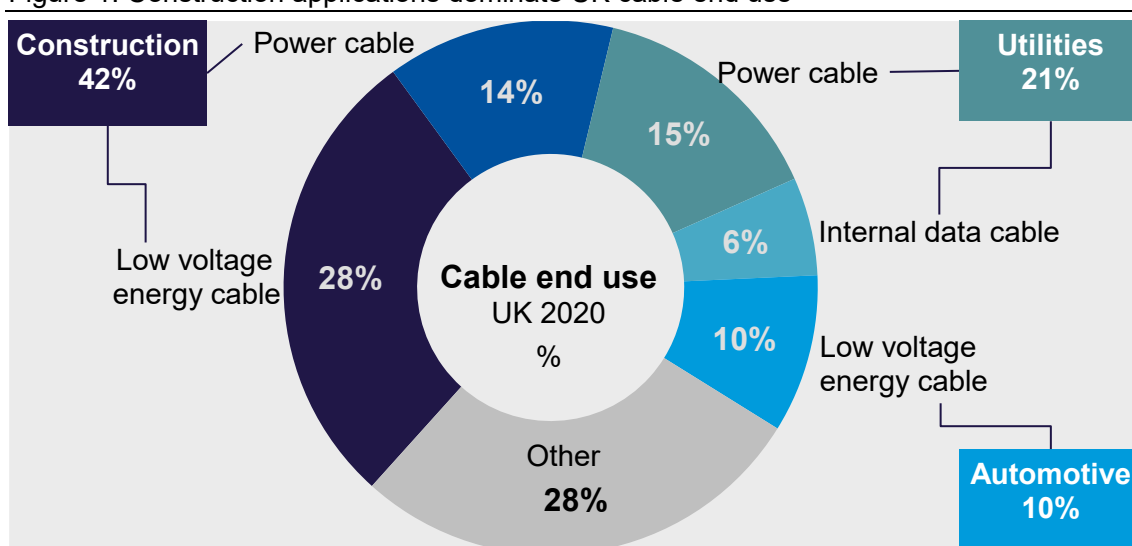
The following report is comprised of excerpts from a recent UK Country Profile, a feature of CRU's Wire and Cable Market Outlook service.

Please note that a more detailed version is available to subscribers of CRU's services.

For more information, please contact aisling.hubert@crugroup.com

In 2021, the UK consumed a total of 241 kt conductors of wire and cable, making it the fifth largest market in Europe. This is expected to rise at a rate of roughly 4% throughout 2022 to a total of 251 kt conductors consumed.

Figure 1: Construction applications dominate UK cable end use

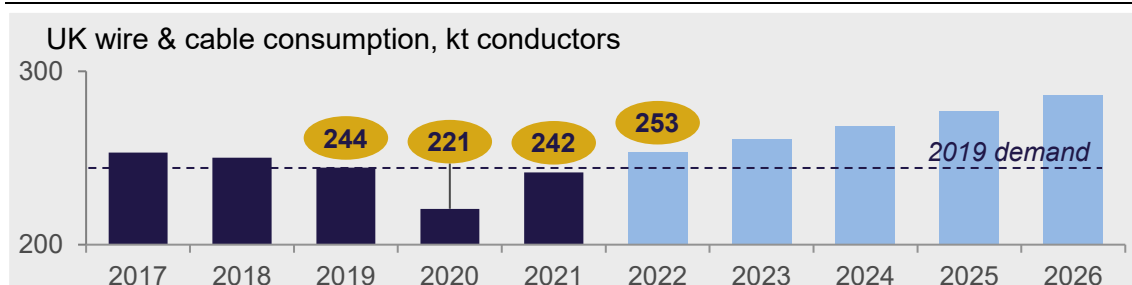


DATA: CRU

Major driving factors of wire and cable consumption within the UK include high levels of residential construction, large national infrastructure projects, as well as power network upgrades to accommodate a growing population and increased electrification due to the green energy transition.

UK wire and cable demand has rebounded strongly after the Covid-19 pandemic. As of 2020, annual demand had fallen by roughly 10%. 2021 saw this demand recover to near pre-pandemic levels.

Figure 2: UK wire and cable has rebounded strongly from Covid-19 demand constraints



DATA: CRU

► UK CONSTRUCTION: LOW VOLTAGE AND POWER CABLE

General overview

Construction output in the UK is more than £110 billion per annum and contributes 7% of GDP. Approximately 60% of construction output is new build, whilst 40% is refurbishment and maintenance. This sector is made up of three key areas:

- Commercial and social (approximately 45%)
- Residential (approximately 40%)
- Infrastructure (approximately 15%)

Figure 3: Total Great Britain construction spend, January 2022 (£GBP million)

Other new work		Repair and maintenance		New housing
Infrastructure, 2581	Private commercial, 1800	Non-housing, 2757	Private housing, 2085	Private, 3187
Public, 680	Private industrial, 500	Public housing, 602		Public, 482

DATA: CRU, Office for National Statistics

UK construction outlook

Total LVE cable demand for construction applications in the UK was 63 kt conductors in 2020, down from pre-pandemic highs of 64 kt in 2019. Power cable demand for construction in 2020 was 31 kt conductors, down from 33 kt in 2019.

2022 Q1 saw construction project starts decline by 24% y/y and 8% down versus 2021 Q4. This was even higher for residential work which was down 32% y/y. This drop has been attributed to the ongoing raw material and energy cost crises as well as persistently disrupted supply chains due to lingering effects of the Covid-19 pandemic and the war in Ukraine, as well as unprecedented demand in 2021 Q1 due to demand rebound.

Though output in 2022 Q1 was up 4% overall, construction starts have declined dramatically. This is indicative of a long-term pessimistic sentiment in the sector as old projects are completed despite little pledging of new projects due to expected future supply chain difficulties.

Overall, LVE cable demand within the UK is expected to experience a growth rate of 4% y/y in 2022. This comparatively strong growth is forecast to slow to an average CAGR of 2% y/y for the period 2023–2026. Should pessimism surrounding construction sector strength prove correct, it is likely that this forecast will experience a revision to the downside.

Infrastructure, which accounts for 18% of UK construction, is traditionally less affected by immediate economic conditions. Large projects such as HS2, Thames Tideway and Hinkley Point C – combined with the five-year spending plans in regulated sectors such as rail, road, and power generation – help to sustain some positive growth in this sector.

► UK UTILITIES: POWER CABLE, INTERCONNECTORS AND THE GRID

Wire and cable use for utilities is dominated by power cable for electricity transmission and distribution as well as communication cables. 32 kt conductors of power cable were consumed for utilities applications in the UK in 2020 – down from a pre-pandemic high of 35 kt conductors in 2019.

Power cable accounts for 31% of the UK's total wire and cable demand as of 2021. Of this, 65% is copper power cable, and 35% is aluminium power cable. This ratio of power cable types is relatively stable and minimal substitution of aluminium for copper is forecast within the UK. 46% of UK power cable is used in utilities, with most of the remainder incorporated into construction projects.

The national grid

The UK national grid network covers the majority of Great Britain and several of the surrounding islands. It does not cover Northern Ireland, which is part of a single electricity market with the Republic of Ireland.

The UK National Grid:

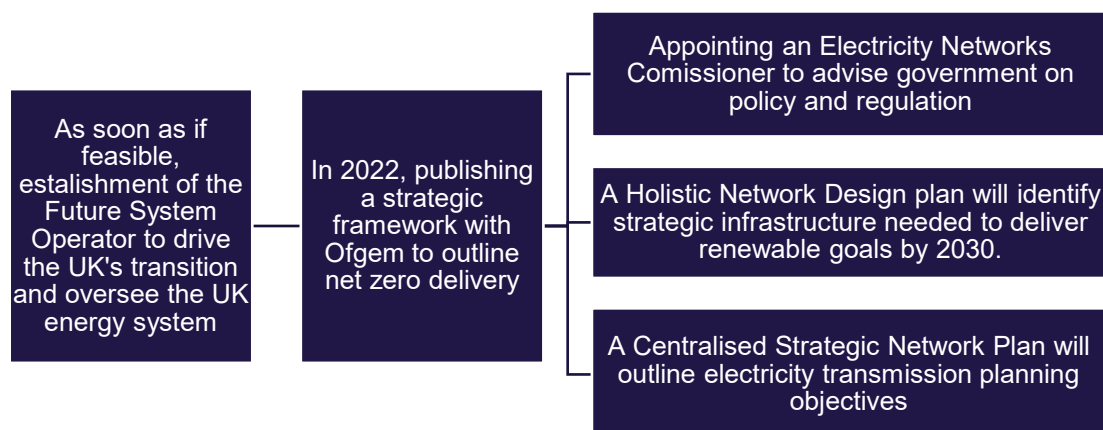
- Average demand: 30.0 GW (max. 63 GW 2005/6, min. 15.3 GW 2020)
- 7,200 kilometres of overhead line
- 1,400 kilometres (870 miles) of underground cable
- ~ 330 substations
- Length of 400 kV grid: 11,500 km (circuit)
- Length of 275 kV grid: 9,800 km (circuit)
- Length of 132 kV (or lower) grid: 5,250 km (circuit)

The national grid invests around £1.3 bn each year to develop its transmissions network. It is expected that total electricity demand could double by 2050.

At present, many new renewable developers are facing waits between six to ten years to connect to region distribution networks due to constraints on the National Grid's network. As part of the UK's Energy Security Strategy unveiled in April 2022, the government has pledged to "reduce timelines for delivering strategic onshore transmission network infrastructure by around three years" – roughly halving average processing times.

The National Grid says it has historically had 40–50 applications for connections in a year, but that this has risen to about 400 as renewables suppliers have proliferated.

Figure 4: Key elements of the UK Energy Security Strategy to the National Grid

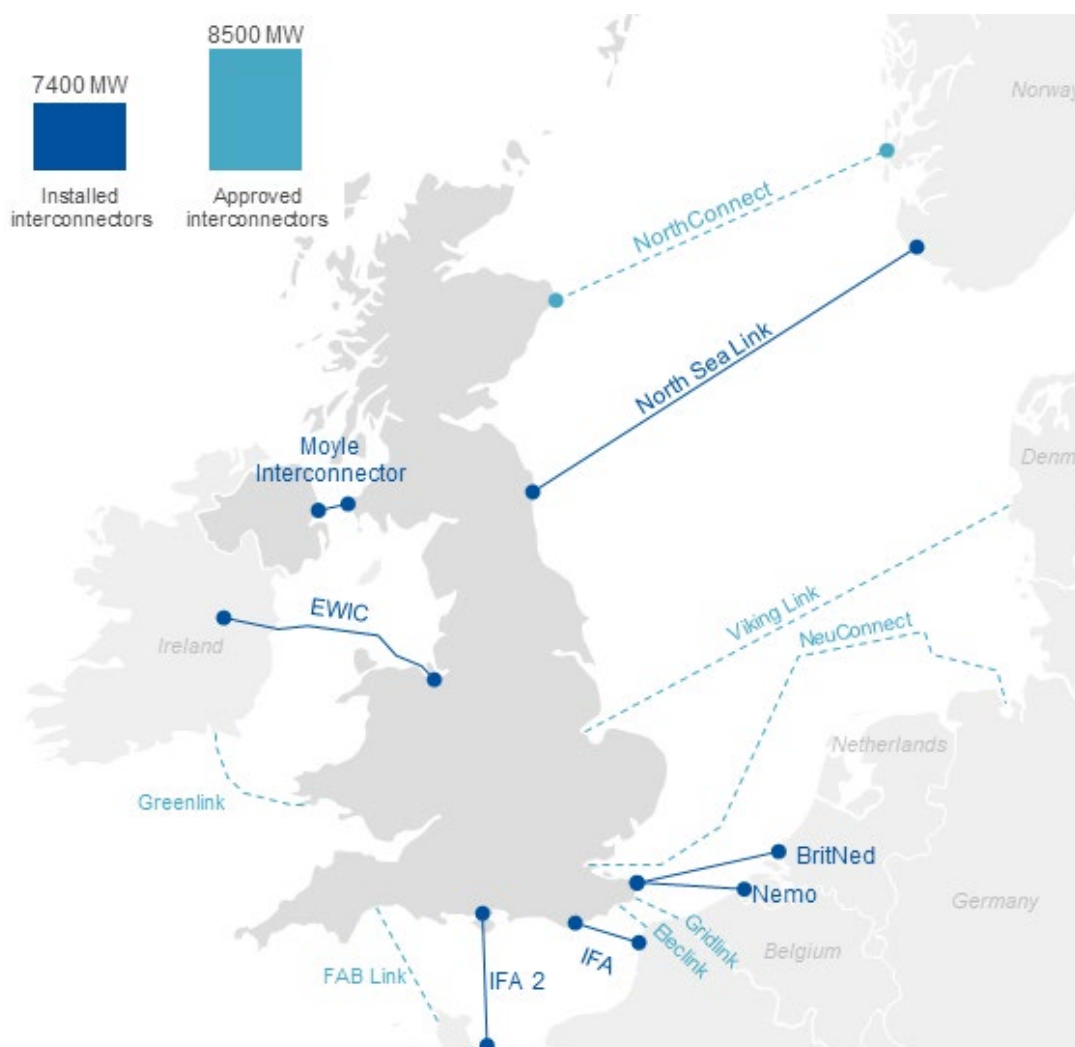


DATA: UK Government, Ofgem

Interconnectors

As part of the UK's plans to reach 100% clean energy by 2035, the UK has a number of plans to expand its interconnectors. Existing interconnectors with France, Belgium, and Norway already supply roughly 10% of the UK's electricity – a figure that could double by 2026, with multiple others under construction or development.

Figure 5: Planned and existing UK interconnectors



DATA: CRU, Ofgem

Table 1: Planned UK interconnectors with GB regulatory approval

Project	Live date	Route	Length	Power
Eleclink	2022	Kent, UK - Peuplingues, FR	51km	1000MW
Viking Link	2023	Lincolnshire, UK – Jutland, DK	765km	1400MW
Greenlink	2023	Pembrokeshire, UK – Wexford, IRE	200km	500MW
NeuConnect	2024	Kent, UK – Lower Saxony, GER	720km	1400MW
Gridlink	2024	Kent, UK – Bourbourg, FR	140km	1400MW
Northconnect	2025	Aberdeenshire, UK – Samnanger, NOR	650km	1400MW
Fablink	2025	Exeter, UK – Normandy, FR	220km	1400MW

DATA: Ofgem

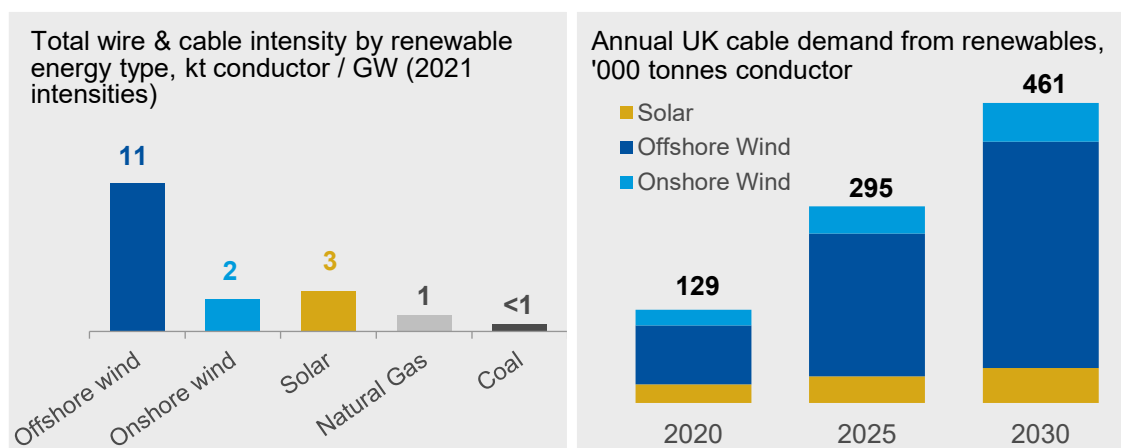
The UK hopes to realise at least 18 GW of total interconnector capacity by 2023. This will require an additional 4,100 MW of interconnectors on top of existing and approved projects.

UK renewables

At present, roughly 41% of the UK's generated energy is derived from fossil fuels, 25% is derived from renewables (hydropower, solar PV and wind), 25% from nuclear, with the remaining 9% shortfall derived from imports via interconnectors.

Wire and cable is used extensively in all the major renewable technologies and as a result, the ongoing energy transition is key to our medium and long-term forecasts. Indeed, CRU estimates that offshore wind consumes over nine times as much wire and cable compared to that of a natural gas per gigawatt capacity installed. Although less intensive, solar PV and onshore wind also consume significantly more cable compared to traditional energy sources.

Figure 6: Renewables represent a fast-growing area of cable demand in the UK

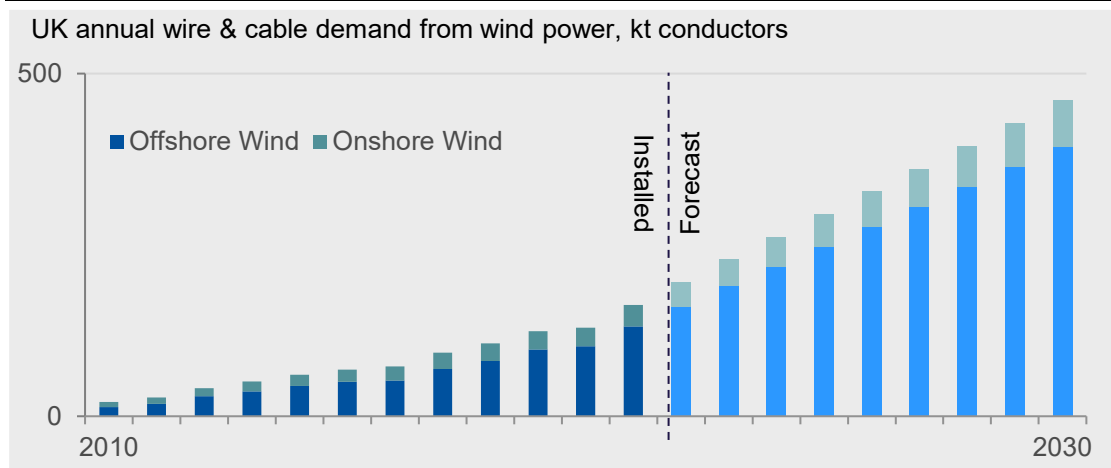


DATA: CRU

Of the UK's renewable energy, roughly 80% is wind. The UK is considered a world leader in the implementation of wind power, with the largest global offshore wind capacity as well as the sixth largest total wind power capacity (onshore & offshore). As of March 2022, the UK had over 11,000 wind turbines producing a total capacity of over 24 GW, 14 GW of onshore capacity and 10 GW of offshore capacity. Roughly 20% of the UK's power generation currently comes from wind power.

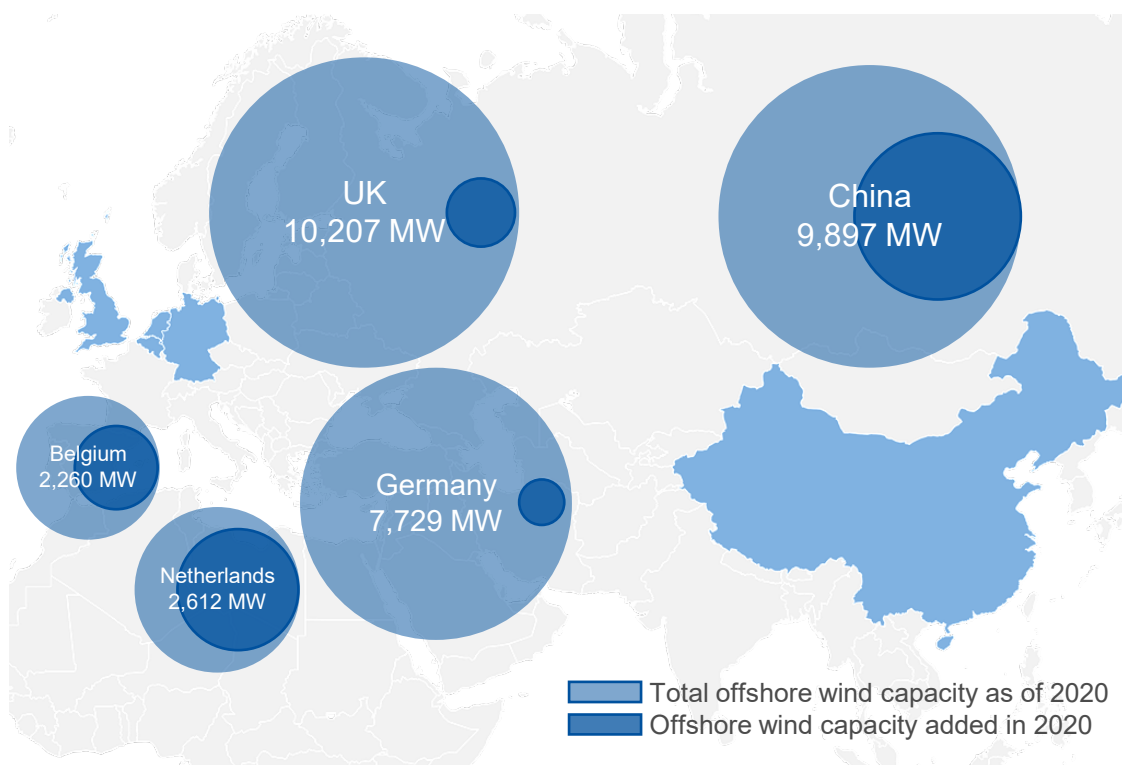
As part of the country's Energy Security Strategy, the UK has pledged that by 2030 it will have a total installed capacity of 90 GW wind power (50 GW offshore, 5 GW floating offshore, 35 GW onshore). This will represent an additional wire and cable demand of roughly 3,000 kt conductor over the period 2022–2030.

Figure 7: Offshore wind represents the greatest cable demand of renewable energy types



DATA: CRU, UK Government National Statistics, IRENA

Figure 8: Global installed offshore wind power, 2020



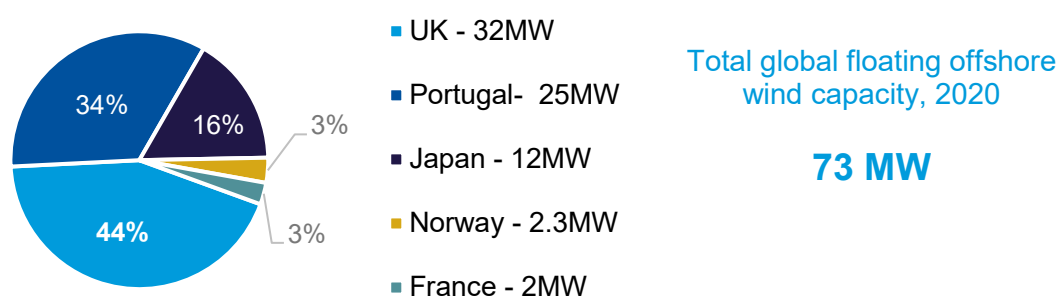
DATA: Global Wind Energy Council

Table 2: UK planned offshore wind projects are some of the largest globally

HORNSEA TWO WIND FARM	SOFIA WIND FARM
Ørsted's 1320 MW Hornsea Project Two, located 89 km off the Yorkshire coast in the North Sea in will become the world's biggest offshore wind farm, once operational in 2022. Inter-array cable system: JDR Cables The inter-array grid cable system consists of 420 km of 66 kV copper-core submarine composite cables. Export cable: NKT NKT has been awarded the contract to supply the project's export cable, consisting of 196 km of 220 kV HVAC XLPE cable.	RWE have designated Van Oord Offshore Wind as their suppliers for engineering and procurement for the 1400 MW Sofia Wind Farm located 195 km off the UK's North-East coast. The project will be one of the largest single offshore wind farms in the world when it comes online in 2026. Inter-array cable system: Hellenic Cables The inter-array grid cable system consists of approx. 360 km of 66 kV XLPE inter-array cables and accessories. Export cable: Prysmian 440 km of 320 kV submarine export cables and 15 km of 320 kV land cables. The cables will run for 227 km between Sofia's offshore substation and the project's onshore converter station in Teesside

Floating offshore wind & high dynamic-stress cable development

Figure 9: Global floating offshore wind installed capacity, 2020



DATA: CRU

The UK is currently committed to a fully decarbonised power system by 2035. Of the 50 GW of offshore wind pledged in the British Energy Security Strategy, 5 GW additional capacity of floating offshore wind is included. As of 2022 Q1, over £31 million of UK government funding, and over £30 million of industry funding, has been pledged to the development of innovative floating offshore wind technologies.

The UK's Department for Business, Energy, and Industrial Strategy (BEIS) awarded £32 million in grant funding for demonstration of innovative floating offshore wind technologies.

Accelerated development of Higher-voltage Export & Array cables for Dynamic applications (AHEAD)

Led by JDR Cable Systems Ltd & Offshore Renewable Energy Catapult

Grant: £1,606,711

No dynamic cable rated above 66kV has ever been deployed in an offshore wind environment. Due to increased turbine sizes, distances from shore, and water depths, in the 2020s the industry will require significantly higher voltage dynamic cables. This project aims to demonstrate the following technologies:

1. Demonstration of innovative polymer insulation systems to be capable of operation above 66 kV and to 132 kV, potentially as a wet-design.
2. Extension of Dynamic Array cable construction to larger and heavily Dynamic Export cables at 132 Kv.
3. Advanced dynamic cable modelling to engineer cable configurations with higher loadings or stiffer cabling.
4. Integration of next generation optical fibre strain sensing technology into Dynamic HV Export and Array cables to improve offshore cable monitoring and maintenance.

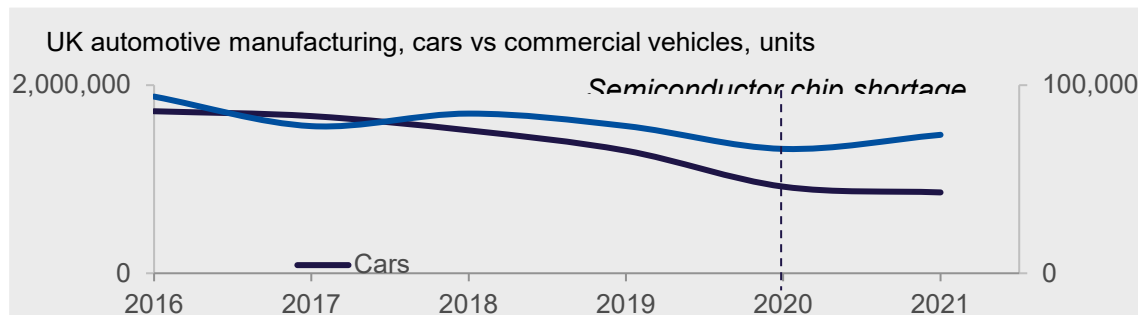
Alongside the UK government funding for the research of high dynamic-stress cables, JDR Cables, based in Hartlepool, UK, are in charge of supplying cables to the Hywind Tampen wind farm, a 88 MW floating wind farm 140 km off the Norwegian coast due for completion in 2022 H2. The wind turbines will be connected in a loop by a 2.5 km-long, 66 kV dynamic inter-array cable system. The loop will be linked with the Snorre A, and Gullfaks A oil and gas platforms, through two separate static export cables of 12.9 km and 16 km length, respectively. Cable installation will be complete by Subsea 7.

► AUTOMOTIVE: LVE CABLE TREND

UK automotive industry outlook

UK automotive production has experienced an extreme divergence in 2022 Q1, with commercial vehicle manufacturing (trucks, taxis, busses and coaches) enjoying its best March in over a decade despite the global semiconductor chip shortage. On the other hand, light vehicle manufacturing has hit its lowest rates of production since 2009.

Figure 10: UK car production has fallen since 2016, prior to 2020 chip shortages



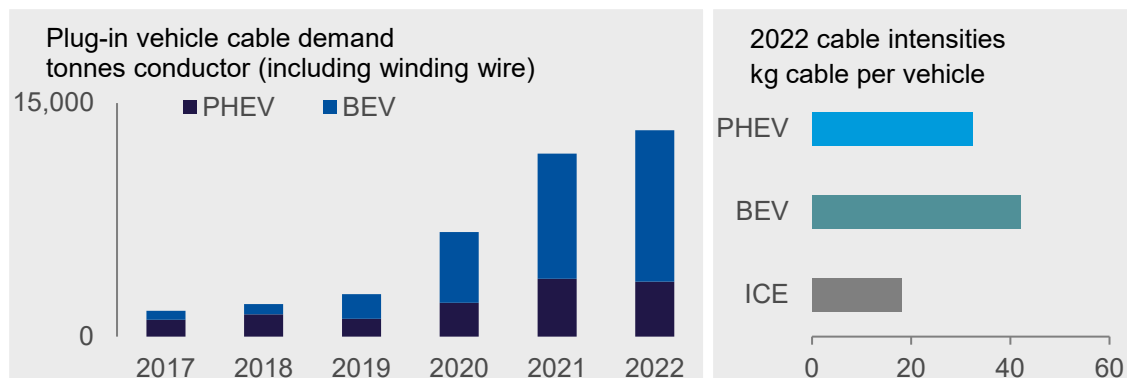
Battery electric and hybrid vehicles

As of the end of February 2022, there were more than 780,000 plug-in vehicles with approximately 420,000 battery electric vehicles (BEVs) and 360,000 plug-in hybrids registered in the UK. 2021 saw the biggest annual increase in number of registrations, with more than 305,000 electric vehicles registered – a growth of 74% y/y. In 2022 Q1, BEVs and plug-in hybrids represented roughly a quarter of new vehicle registrations.

In April 2022, the UK new car market declined by 16% y/y compared to April 2021 – but battery electric car registrations bucked the trend, up 40.9% y/y. This is a trend that is set to continue as the UK hopes to reach its national decarbonisation goals.

The Climate Change Committee has estimated that to facilitate the transition to a net-zero transport sector, 49 million vehicles will need to be battery electric or hybrid by 2050, up from 858,000 as of May 2022 (2.1% of all UK vehicles). It is estimated that 325,000 public charging points would be required to service national demand. As of May 2022, there were approximately 32,000 public charging devices.

Figure 11: Battery electric vehicles consume x2.3 as much cable as PHEVs



This report is comprised of excerpts from a recent UK Country Profile, a feature of CRU's Wire and Cable Market Outlook service.

For more information, please contact aisling.hubert@crugroup.com

Meet the team



Michael Finch

Head of Wire and Cable

t +44 20 7903 2270



Chenfei Wang

Senior Analyst, CRU London

t +44 207 903 2181

e chenfei.wang@crugroup.com



Natalie Noor-Drugan

Editor in Chief, Wire and Cable News

t +44 20 7903 2421

e natalie.noor-drugan@crugroup.com



Aisling Hubert

Analyst

t +44 20 7903 2031

e aisling.hubert@crugroup.com



Emir Ersahin

Research Analyst

t +44 207 903 2054

e emir.ersahin@crugroup.com

