

Siemens Energy (UK) Decarbonisation Programme

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01

Introduction – Siemens Energy Sustainability Programme (UK)

02

Siemens Energy (UK) Carbon Footprint

03

Siemens Energy UK Decarbonisation Programme Targets (UK)

04

Emissions data

05

Case studies

Sustainability at Siemens Energy

01. Introduction

At Siemens Energy, our mission is to empower our customers to meet the growing demand for energy while transitioning to a more sustainable world. With our innovative technologies and extensive energy experience we are committed to decarbonising global energy systems and driving the energy transition.

Our Sustainability Program is integrated into our company strategy and is structured around topics that help us to contribute to the most relevant UN Sustainable Development Goals (SDGs). At the core of our Sustainability Program is the goal of decarbonising our business.

Siemens Energy have three core commitments to decarbonise along the value chain:

- Commitment to decarbonise our product and service portfolio via Science Based Targets initiative (SBTi) with a target of 28% reduction of GHG from the use of sold products by 2030 (from a 2019 baseline)

- Commitment to climate neutrality in our own operations by 2030 with a target reduction of absolute Scope 1 & 2 GHG emissions by at least 46% by 2025 (from a 2019 baseline) (the Climate Neutral Programme or CNP).

- Pursuit of emission reductions throughout our supply chain with a target reduction of relative Scope 3 GHG emissions in our supply chain by 2030 of 30% (kg CO2e/€ PVO spent, base year 2018)

For more detail on the Siemens Energy global Decarbonisation programme, read the Siemens Energy Sustainability Report 2023: **Siemens Energy Sustainability 2023: Moving forward, step by step**

At country level in the UK, we support the global programme focusing on our top emitting sites and activities with additional measures relating to the car fleet and business travel.

Our Sustainability Programme





02. Siemens Energy UK

In the UK, Siemens Energy employs 6,000 people across more than 15 sites, including manufacturing & service centre locations in Lincoln, Hull, Newcastle, Ulverston, Worcester and Aberdeen.

Siemens Energy portfolio of products and services includes conventional and renewable energy technology, such as gas and steam turbines, hybrid power plants, hydrogen electrolysers, switchgear, and transformers.

Siemens Energy includes Siemens Gamesa Renewable Energy (SGRE), a global market leader for renewable energies. From Business Year (BY) 24, the Siemens Energy and Siemens Gamesa decarbonisation programme and targets will become more closely integrated.

Siemens Energy UK Climate Neutral Programme (CNP)

The Climate Neutral Programme (CNP) is focused on our highest emitting activities, and we have set targets to reduce these emissions.

A Decarbonisation Steering Committee, meets quarterly to review progress against targets, supported by Senior Managers and the Vice President of Siemens Energy in the UK & Ireland. Workstreams have been established to focus on delivery of the CNP targets. The UK programme and targets are reviewed annually and updated every three years.

The organisational boundary of the UK carbon footprint covers Siemens Energy sites around the country, for which it procures energy directly, and some smaller offices in sub-let buildings. Business travel is significant and is also included. For the carbon footprint verification, the emission data is compiled for all site locations, but these sites are part of four separate legal entities that all together form Siemens Energy UK. Three of the legal entities meet the threshold for Streamlined Energy and Carbon Reporting (SECR) and emission data is reported separately. For this reason, the emissions for the Siemens Energy UK carbon footprint can only be compared directly with the previous verification in 2021.

We are continuing to invest in infrastructure, including energy-saving measures, decarbonising heating energy, and strategically looking into various options to decarbonise manufacturing processes and testing sites.

Siemens UK Significant Emissions

Gas for testing Small Gas Turbines

Siemens Energy operates a global small gas turbine business and Lincoln is a key manufacturing and service location in the UK. The gas used for testing the turbines is a significant contributor to Siemens Energy carbon footprint in the UK. The small gas turbines can operate using alternative fuels and in future the use of gas will be reduced. There is an ongoing programme to reduce emissions by adjusting test parameters and reducing failures. Significant reductions have been achieved year-on-year by maintaining focus on this activity.

Sulphur Hexafluoride (SF6)

Our Grid Technologies (GT) business faces a particular challenge in reducing leakages of sulphur hexafluoride (SF6), a greenhouse gas with a global warming potential 23,500 times higher than CO₂. The gas is used in cylinder-shaped insulators in high-voltage switchgears, where leakages can occur.

We have a focus on reducing leaks of SF6 from switch gear during installation and we are in the process of moving to an SF6-free Blue Portfolio, based on technical air insulation and vacuum switching technology.

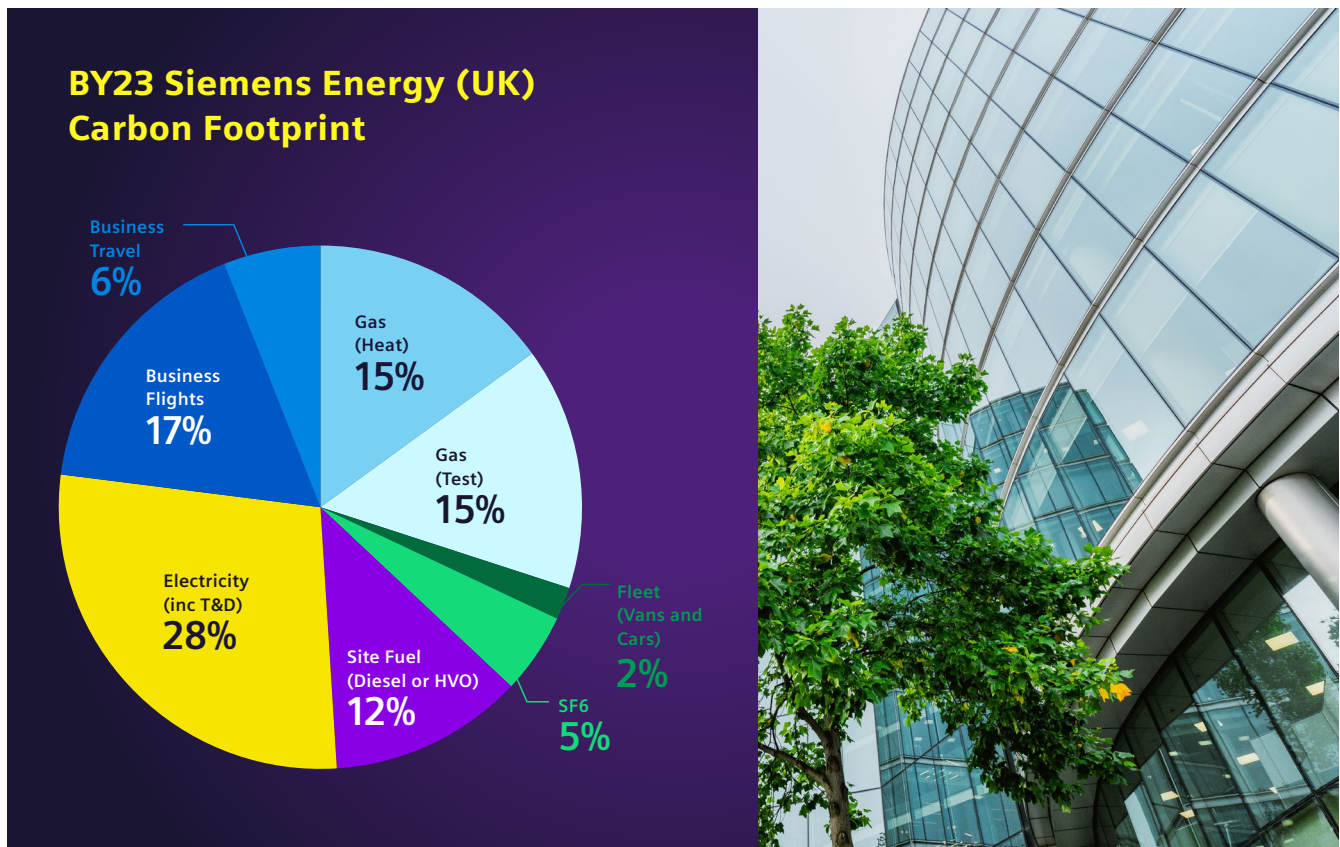
Energy Performance

The energy consumption at our manufacturing sites, offices and projects sites (use of electricity, gas and fuels) contributes to our carbon footprint. We operate an Energy Management System certified to the International Standard ISO 50001:2018 to drive energy performance at all sites. We have a target to remove gas used for heating by 2030 and have a programme for the installation of renewable energy solutions.

Fleet and Business Travel

The emissions associated with business travel (flights, hotels, and rail) were insignificant when measured in our first carbon footprint verification in 2021, as globally we were still under restrictions for Covid. Two years later the picture has changed as we start to travel more frequently. Restricting travel is challenging for Siemens Energy as a service business. Work is ongoing to understand how we can make a positive impact on reducing emissions from air travel.

We are making progress towards our target of 100% low emission vehicles on our company car fleet by 2025.



UK Decarbonisation Programme

Climate Neutral in operations by 2030

50% reduction in absolute emissions by 2025 (from 2019 baseline)

Gas (Turbine Test)

Objective:
Reduce CO2 from testing gas turbines by 5% year-on-year (normalised against demand)

SF6

Objective:
Reduce SF6 leaks and deliver SF6 free products

Fleet

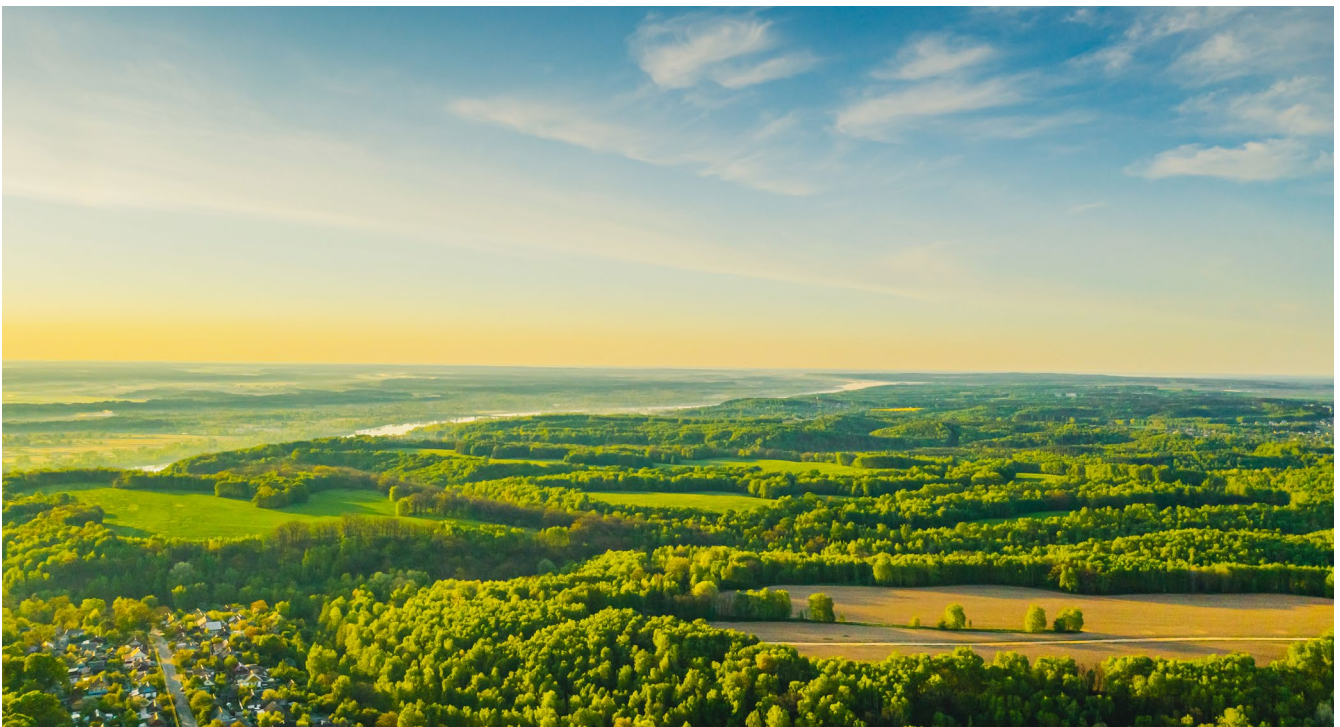
Objective:
Company car vehicle fleet to be 100% low emission vehicles by 2025

Sustainable Procurement

Objective:
Reduction in supply chain emissions by 30% by 2030 vs 2018

Energy Performance (Gas & Electricity)

Objective:
Performance targets, replace gas heating and install renewable energy



03. Siemens Energy UK Decarbonisation Programme Targets (UK)

Scope 1 & 2

Carbon Neutral Programme

- Climate neutral in operations by 2030¹
- 50% reduction in absolute emissions by 2025 (from 2019 baseline)²
- Reduction of carbon emissions from gas used for turbine tests by 5% year-on-year (normalised against test demand)
- Reduce total SF6 emissions year-on-year as a % of total SF6 installed (leak rate)³
- Company car vehicle fleet to be 100% low emission vehicles by 2025

Energy performance

- Annual energy performance targets for all Siemens Energy managed manufacturing sites and offices
- Replace natural gas used for heating at manufacturing sites and offices by 2030
- Programme for installation of local renewable energy on manufacturing sites and offices

Scope 3

Decarbonise the supply chain

- Reduction in supply chain emissions by 30% by 2030 vs 2018

1 Max 10% carbon offset for unavoidable emissions

2 Global target excludes fleet and carbon emissions from construction projects which are reported in UK carbon footprint and for YK regulatory reporting (SECR, ESOS)





Siemens Energy UK Carbon Footprint Verification

In 2023, the consultancy firm Eshcon was tasked to provide independent verification of Siemens Energy UK carbon footprint covering the reporting period October 2022 to September 2023 (BY23) on the following information:

- Scope 1 – Energy Direct emissions: gas and other fuels, company vehicles and refrigerant losses
- Scope 2 – Energy Indirect emissions: purchased electricity
- Scope 3 – Other Indirect emissions: business travel by grey fleet, train, taxi, hires and air, also hotel stays.

Other Scope 3 emissions were not included, such as commuting, working from home and supply chain. The verification was conducted in accordance with ISO 14064-3 (Guidance for the verification and validation of greenhouse gas statements).

Scope 1 emissions

Scope 1 emissions include gas consumed at manufacturing sites, offices, and temporary site locations plus fuel for construction projects and the fleet. The fuel burnt in commercial vehicles and fuel used in processes on-site is included in scope. Sulphur hexafluoride (SF6) used as an insulator in electrical transmission equipment and losses of the gas are included in Scope 1 emissions.

Scope 2 emissions

Scope 2 emissions are those associated with the electricity purchased to power our manufacturing sites, offices, and temporary sites. To determine the greenhouse gases released in the production of this electricity we use carbon conversion factors provided by Defra that represent the current mix of energy sources supplying the national grid.

Siemens Energy has a Renewable Energy Contract with Guarantees of Origin (REGO) for all operations in the UK, but choose to use Location factors to report electricity on our carbon footprint and include reduction in electricity on our energy performance targets.

Scope 3 emissions

Product and service portfolio

To reflect the importance of our products and solutions for decarbonising energy systems worldwide, the use of our sold products is integrated into our global carbon footprint calculation from 2023. The Sustainability Report 2023 includes a disclosure of the figures from fiscal year 2021 onwards to create transparency for our stakeholders.

Sold products make up over 99% of our overall GHG emissions. The main drivers for GHG emissions are the direct combustion of fuels (e.g., natural gas) in our products and the electricity consumption and power losses of our products.

Scope 3 sources for sold products are not included within our UK carbon footprint reporting as it is not possible to attribute the global data to country level.

Decarbonization of our supply chain

Our suppliers are an important part of the value chain and we encourage them to take climate protection measures. Emission reduction is an integral part of supply chain management.

Scope 3 sources are not included within our UK carbon footprint reporting, but a UK target has been set for engagement with the supply chain on decarbonisation.

Business Travel

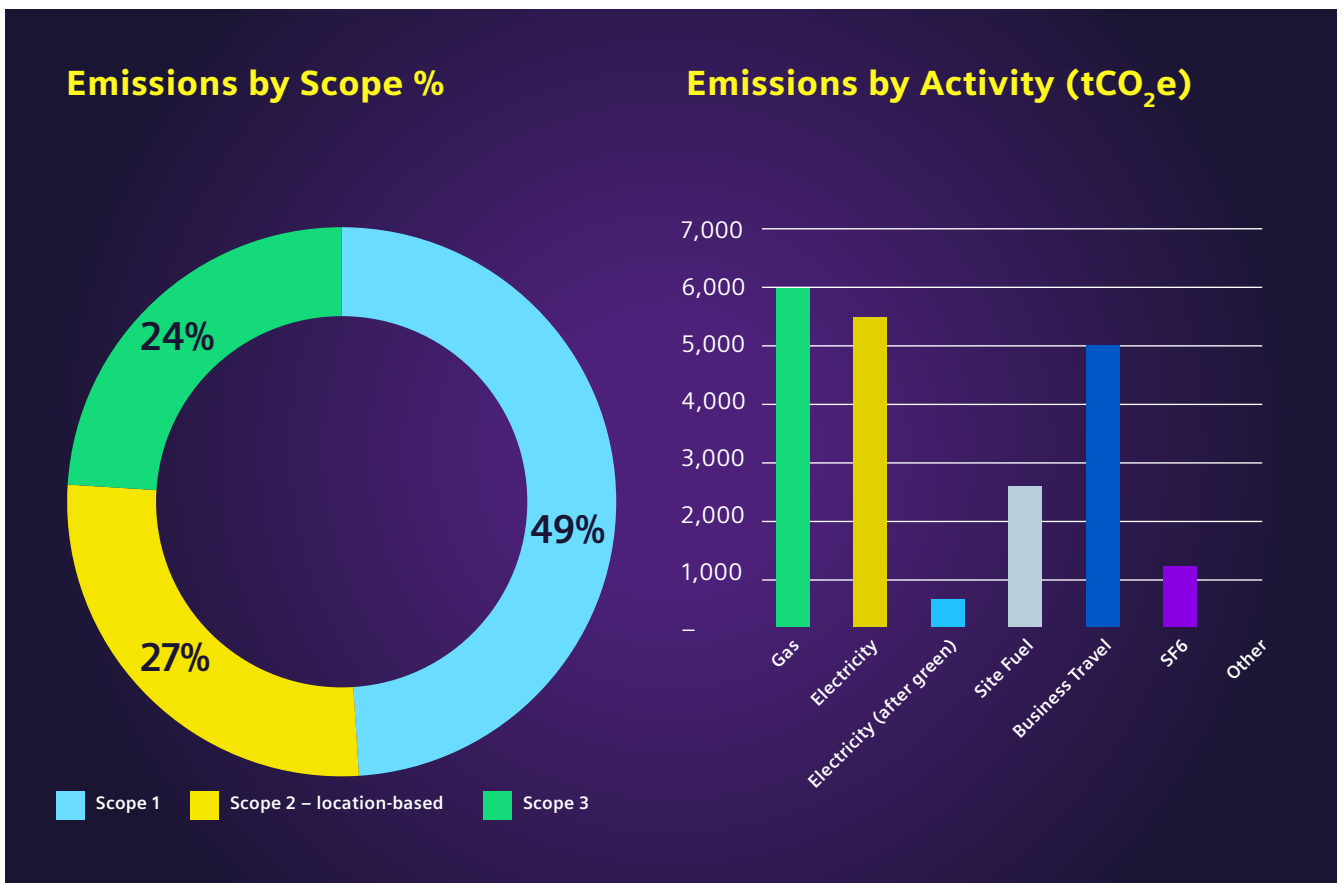
In the UK, Business Travel has been included in the Carbon Footprint. This includes flights, rail, taxis, hotels and hire car data for the reporting period.



04. Emissions Data – Results

Location-based carbon emissions for the reporting year 2022-23 amounted to 19,897 tCO₂e, with 30% arising from gas.

After the purchase of green electricity is taken into account, the market-based emissions amount to 14,929 tCO₂e.



BY2021-BY2023

Reduction in Gas
-50%

Reduction in Electricity
-14%

kWh per mile
-40%

Location-based
emissions (CO₂e)
-38%

Market-based
emissions (CO₂e)
-43%

Reduction in emissions (CO₂e)
from gas turbine testing
-52%

Comparisons with historical data

The previous verification of Siemens UK Carbon Footprint was conducted by the Carbon Trust for the Business Year 2020-21. The figures in the table below have been extracted from the Carbon Trust report (sometimes making assumptions, such as with business travel where only a total figure was given and approximate percentages).

In the two years, total location-based emissions have fallen by 38%; market-based have fallen by 43%. Gas consumption has dropped significantly.

Business travel was far lower in BY21, as this reporting period covered Covid lockdown and travel restrictions. It is also useful to compare emissions to business activity; turnover has increased slightly compared to BY21, but relative (location-based) emissions are down 39%.

| | BY23 | BY21 | % Change |
|---|-------------|-------------|-----------------|
| Scope 1 | 9771 | 25147 | -61% |
| Scope 2 – location based | 5438 | 6159 | -12% |
| Scope 2 – market based (inc T&D) | 471 | 169 | 179% |
| Scope 3 | 4688 | 973 | 382% |
| TOTAL – location-based | 19897 | 32279 | -38% |
| TOTAL – market-based | 14929 | 26289 | -43% |
| Turnover (combined 4 legal entities in UK) | 1182 | 1162 | 2% |
| tCO₂e/£m | 16.8 | 27.8 | -39% |

Verification methodology

The verification process covered:

- Understanding of boundary of carbon footprint and all emissions sources, including sites, locations and activities that are material to overall totals for data examination.
- Review of all figures, cross-references and formulae inserted into Eshcon's Carbon Data Template.
- Identification and checking of evidence for each activity to support the provided data.
- Review of carbon calculations methodology and formulae.
- Checking of emissions factors used for each activity.
- Queries relating to data completeness and errors, supporting evidence and calculations, and further review once corrections are made.
- Identification of data gaps which may require estimations and/or extrapolations to achieve full 12 months of data.
- Review of methodology and formulae for extrapolation of missing data.

Conversion factors

Siemens Energy applies the Defra greenhouse gas conversion factors to calculate carbon and fugitive emissions. Our carbon footprint is reported in tonnes of carbon dioxide equivalence (CO_{2e}). The Kyoto Protocol specifies prominent greenhouse gases with varying global warming potential (GWP): carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF₆). Reporting CO_{2e} allows emissions of these gases to be reported on a like-for-like basis relative to one unit of CO₂.



05. Case Studies

Ulverston, Connectors business

The Ulverston facility is a production site of approximately 11,000 square meters comprised of offices, assembly and test and a mould/machine workshop. The facility is used for the design and manufacture of subsea connection products primarily for the subsea industry. Functions include sales and marketing, engineering, project management, manufacturing, design, procurement, site installation and business support functions. There are currently approximately 300 employees.

Over the last 3 years the Connectors business has built up its knowledge and understanding of its energy performance. An Energy Management System has been implemented and each facility has a detailed view of its energy consumption and the impact of changes. The sites achieved certification to the standard ISO50001:2018 in November 2023.

Heating, air handling units and lighting were identified as the significant energy users and transition to LED lighting and improvement to air handling unit controls have significantly reduced energy consumption over the last 12 months.

From baseline year FY21 there has been an energy saving of 23.4% (reductions of -14.4% electricity and -43.7% gas). From FY21 to FY23 there has been an increase in production volume (revenue based) of circa 20%.

Sustainability training is helping raise awareness on energy management. Analysis of energy data and patterns of usage is supporting employees in identifying opportunities to for improvement in operations.

Lincoln, Ruston Works – Small Gas Turbine Manufacturing

Ruston Works in Lincoln is a small gas turbine manufacturing, test and office facility based in a city centre location. There are 653 employees at this site, with an average of 14 engines manufactured per annum and circa 112 engines tested per annum.

The energy performance objective for the Ruston Works site is investment in infrastructure, including new offices, refurbishments, LED lighting and removal of gas for heating. Vacant areas of the site have been identified for closure. The energy management on site is being expanded to include monitoring of machines to ensure they are used efficiently.

The gas used for testing turbines at Ruston Works is the most significant contribution to the carbon footprint of the business. The objective is to reduce the number of test failures (with an intervention and combustion improvement programme), and to reduce the test duration (by adjusting test parameters and criteria) with a target of 5% reduction in usage year on year, normalised against volume. In BY23 there was a 2.5% reduction in gas used per megawatt tested from 2022. Over the past two years there has been a 52% reduction in CO₂e emissions (CO₂e) from gas turbine testing.

To further decarbonise the testing of turbine requires a move to alternative fuels (eMethanol, Hydrogen) by 2030.



Connectors factory in Ulverston

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