UNITED KINGDOM

ON THE ROAD TO RENEWABLES

The United Kingdom of Great Britain and Northern Ireland is a leading international power with the world's fifth-largest economy by nominal GDP and Europe's second largest economy. One of the world's first industrialized countries, nowadays the capital London is one of the three most important financial centers of the world. Currently, negotiations over the UK's exit from the European Union are ongoing.

The UK's total installed energy generation capacity is about 106 GW, mainly dominated by combined cycle gas and coal-fired thermal power. Renewable energy sources account for about 29.3% producing some 99,330 GWh per year of electricity. With most ideal natural conditions, wind is the largest contributor to renewable energy production with around 50 TWh annually. The government is set to increase the share of renewables further to meet international climate goals and has, for instance, been setting out various incentives to develop additional small hydropower in the UK.

Llys Y Fran, Wales

The UK is one of the world's leaders in marine energy and wave power research and development. Estimates assume a combined feasible potential of around 20% of the UK's current electricity needs, which corresponds to around 30–50 GW. There are numerous initiatives and feasibility studies supporting the deployment of this technology. Tidal lagoons could play an important role as part of the UK energy mix and renewable achievement, but discussions are on-going for this type of development.

ANDRITZ HYDRO IN THE UK

The first orders delivered to the UK date back to the beginning of the 1900s. Since then ANDRITZ has been involved in most of the large- and medium-sized hydropower stations in the UK. Major projects such as Dinorwig, Ffestiniog, Foyers, Glendoe, Lochaber, Cruachan, Kilmorack and Aigas feature in the ANDRITZ reference list. Service and rehabilitation as well as small hydro development are key focus areas in support of the country's ambitions for the development of clean and sustainable energy.

In 2010, ANDRITZ incorporated one of the market leaders in tidal current technology to enhance their marine energy activities. Now operating as ANDRITZ Hydro Hammerfest UK, we have driven forward the development of this technology and have successfully deployed not only the first test turbines, but also machines for the largest commercial tidal array worldwide to date.

MEYGEN, SCOTLAND

ANDRITZ supplied three tidal stream turbines to this project, the largest commercial tidal energy project worldwide to date. Following successful grid synchronization, energy production has exceeded expectations. The anticipated average generation of each turbine is some 4.1 GWh per year. Realization of this project is an important step towards the production of renewable energy from ocean resources and a major contribution to future power generation.

CIA AIG, SCOTLAND

The run-of-river power plant of Cia Aig was built with an intake weir and a 3.2 km-long buried pipeline. ANDRITZ' scope of supply comprised two vertical five-nozzle Pelton turbines, generators, hydraulic pressure units, and main inlet valves, as well as electrical equipment. In March and August 2016, respectively, the first and second units went into operation after two years of construction. They have been contributing sustainable energy to the national grid ever since.

LLYS Y FRAN, WALES

With order execution successfully finalized in the record time of less than eight months, Llys Y Fran was completed by the end of 2017. The ANDRITZ scope of supply comprised one horizontal Mini Compact Francis turbine, one hydraulic power unit, one synchronous generator and one inlet butterfly valve. The turbine was integrated into the local drinking water supply system in Pembrokeshire and is now operated using the raw untreated water from the supply reservoir, which also carries the name Llys Y Fran.

MeyGen Tidal Turbines before deployment, Scotland

TO KNOW

GENERAL FACTS

Population: **66 Mio.**
Access to electricity: **100%**
Installed hydro capacity: **4,775 MW**
Share of generation from hydropower: **1.6%**
Hydro generation per year: **5,928 GWh**
Technically feasible hydro generation potential: **5,311 GWh**

ANDRITZ HYDRO IN THE COUNTRY

Installed and/or rehabilitated capacity: **4,449 MW**
Installed and/or rehabilitated units: **141**
Locations: **Glasgow**

Source Facts:The World Bank, IHA, CIA Factbook, Hydropower & Dams World Atlas 2018

Dinorwig Pumped Storage Plant, Wales