

【欧州】【海事】

Renewable energy including offshore wind power generation:
Expansion of offshore wind farms in Europe continues with approval of state-aid for new French floating wind farms and operation start of Spain's first telescopic offshore wind turbines

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【概要 : Summary】

In order to meet its long-term CO2 emission reduction target of 2050 for reducing CO2 emissions by 80%–95% below the 1990 figures and in order to meet its commitments under the Paris Agreement, the EU needs to introduce more sustainable energy and power generation systems. Based on the European Commission's Energy Union Strategy to deliver secure, affordable and sustainable energy, the European Commission supports to produce energy from a wide variety of renewable energy sources including wind power. In fact, in the EU, wind power is one of the most important renewable energy sources, including off shore wind farms. By 2050 electricity generated from wind farms is expected to reach a rate of 36% of Europe's power mix. However, conventional offshore bottom fixed installations of wind turbines are usually not suitable for constructing wind farms in deep-water areas, while up to 80% of the offshore wind resources can be found in areas with deep waters of 60 metres and more. The technical feasibility of deep-water floating wind farms has been successfully demonstrated. However, from the economic perspective, commercially used floating wind turbines are still at the early phase of development and they still need public financial support including loans in order to lower the risk

for the market uptake of next generation low-carbon energy technologies. Therefore, the European Commission still approves the financial support for Floating Wind Farm projects, like a French plan to support four demonstration projects of floating wind farms in the French coast at the Atlantic Ocean and in the Mediterranean Sea. The European Commission has found the French projects for promoting electricity generation from renewable wind energy sources using the technology of floating wind turbines to be in line with EU State aid rules. Meanwhile, the EU-funded ELICAN project prototype of offshore wind turbines, which combines a self-buoyant gravity base foundation and a self-installing telescopic offshore wind turbine became fully operational.



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【記事 : Article】

The generation of energy by wind turbines is set to overtake coal, nuclear and gas as the EU's largest power source around the year 2027, according to IEA's World Energy Outlook 2018 predictions. However, the problem remains that conventional offshore bottom fixed installations of wind turbines are usually not suitable for constructing wind farms in deep-water areas, while up to 80% of the offshore wind resources can be found in areas with deep waters of 60 metres and more. Therefore, the floating wind farm concept is the best approach for wind farms in offshore deep-water areas, where the traditional bottom fixed installations techniques cannot be applied.

Nevertheless, the new technology of floating wind farms still needs financial support in order to accelerate the clean energy transition in Europe and to lower the risk for the market uptake of next generation low-carbon energy technologies like the floating wind farm concept. The world's first floating wind farm was installed in the Statoil Masdar's 30MW Hywind project off the coast of Peterhead, Scotland in 2017. In 2018, the European Commission had already supported the construction of a floating wind farm in Portugal.

On 25 February 2019, the European Commission approved a French plan to support four demonstration projects of floating wind farms in the French coast at the Atlantic Ocean and in the Mediterranean Sea. The European Commission has found the French projects for promoting electricity generation from renewable wind energy sources using the technology of floating wind turbines to be in line with EU state aid rules. The four French demonstration floating wind farms include the "Groix Belle Ile" project, which will be located in the Atlantic Ocean. The other three projects including "Golf du Lion", "Eolmed", and "Provence Grand Large" will be located in the Mediterranean Sea. Each of those floating wind farms will be composed of three to four turbines and each will have a total installed capacity of 24 megawatt. The objective of the public

support of these four demonstration floating wind farms by the French state is to test these different technological solutions, with the long-term goal to deploying it on a larger scale. The demonstration wind farms will receive both investment aid and operating aid.

The Commission assessed the measures under EU State aid rules, in particular the Commission's 2014 Guidelines on State Aid for Environmental Protection and Energy. The Commission found that the level of aid granted to the four projects is proportionate and will avoid overcompensation for the beneficiaries of the public support. The Commission also found that the French projects would promote the development of a new type of offshore wind energy and the potential growth of this novel renewable energy technology. Therefore, the Commission concluded that the aid granted to the four projects would promote the use of electricity generated from renewable sources but without unduly distorting competition. Since the four French demonstration projects for floating wind farms are not disturbing competition on a larger scale but promote the use of electricity generated from renewable sources, the European Commission approved the financial support offered by the French state. The four decisions adopted on 25 February 2019 are available in the State aid register under the case number SA.49672, SA.49673, SA.49674 and SA.52085.

Meanwhile, the EU-funded ELICAN project of offshore wind turbines, based on the EU initiative ELISA, which combines a self-buoyant gravity base foundation and a telescoping tower has become fully operational at the Canary Islands, Spain. Developed by Spanish researchers, the concept is a self-installing offshore wind turbine that can be pre-assembled and pre-commissioned onshore and then towed into position. The ELISA consortium planned to install a prototype of the foundation and tower off the Gran Canaria Island, one of Spain's Canary Islands. The Elican project is the next level of the ELISA project to reach the final demonstration state of the new technology of a self-installing offshore

wind turbine in open water at the Canary Islands. The novel technology is expected to reduce the turbine's carbon footprint and construction costs, relative to conventional construction of an offshore wind turbine. The pre-assembling of the entire system, including the foundation, tower and wind turbine, and its pre-commissioning under controlled conditions at the Arinaga port, and the towing to the operation site using conventional tugs is said to reduce the risks associated with assembly work at sea and to cut installation costs by 30% to 40% compared to existing conventional solutions.

The Elican Project has a total budget of EUR 17.10 Million and received almost EUR 11.2 million from the EU's Horizon 2020 programme. According to the Canary Association for Renewable Energy, the turbine was commissioned on 17 March 2019 at the Plocan test site and the 5MW Elisa prototype, Spain's first offshore wind turbine, has officially been put into operation.

References:

- <https://w3.windfair.net/eceuropa>, 02/26/2019
- https://europa.eu/european-union/abouteuropa/legal_notices_en
- http://europa.eu/rapid/press-release_IP-19-1412_en.htm, 25 February 2019
- <https://safety4sea.com/european-commission-greenlights-four-floating-demonstration-offshore-wind-farms-in-france/>
- <https://windeurope.org/newsroom/news/wind-is-key-to-europes-energy-security/>
- <https://www.energylivenews.com/2019/02/25/eu-approve-support-for-french-floating-offshore-wind-farms/>, 25 February 2019
- <https://www.offshore-stiftung.de/en/expansion-offshore-wind-energy-successfully-continued-2018-industry-sector-calls-rapid-increase>, 21 January 2019
- <https://www.offshorewind.biz/2019/03/18/spains-first-offshore-wind-turbine-goes-operation/>, March 18, 2019
- <https://www.offshorewind.biz/2019/02/25/eu-nods-to-four-french-floating-wind-farms/>
- <https://www.windpowermonthly.com/article/1523677/energy-costs-analysis-why-wind-broke-mainstream-2018>, 1 February 2019