

Name of project: D2T2 – Direct Drive Tidal Turbine

Award category: Innovation

Company: Nova Innovation Ltd

Location: Dublin, Ireland

Other country involved: UK

Duration: 2016-2020

Website: <https://www.novainnovation.com/d2t2>

Factsheet:

D2T2 - Europe's breakthrough technology in tidal energy

Tidal energy can push out fossil fuels

The sea's tides rise and fall at times that are predictable to the minute, years in advance. This means tidal currents are a highly dependable source of renewable energy. Tidal energy turbines are placed on the seabed where the tidal flow is strong. When the turbines turn, they produce electricity. However, the technology is relatively new and has been expensive compared to other renewable and fossil fuel sources of energy.

One Horizon 2020-funded project has improved tidal turbine technology, slashing the costs of operating the turbine. The D2T2 – Direct Drive Tidal Turbine – project has made the tidal device more efficient, reducing the total costs of producing tidal energy by 30% over its lifetime. This means it can produce energy at a cost similar to the cost of producing energy by burning diesel and other fossil fuels.

Moreover, in 2018, the project also paired the tidal device with energy storage batteries developed by Tesla. By combining tidal energy power with batteries that store energy, any excess energy can be stored for times when demand for energy is high, but supply is lower. This means it can become the backbone of Europe's energy systems, taking out the last big emitters like coal and nuclear power.

"There is a revolution in tidal energy technologies taking place right here in Europe. We are heading into the manufacturing phase including an order for 15 turbines in Canada. I envisage the roll-out of our technology to coastal European countries, South East Asia and Japan happening over the coming decade," says Simon Forrest, CEO of Nova Innovation and D2T2 project coordinator.

D2T2 installed the world's first offshore tidal power farm in Shetland, Scotland in 2016. It now has plans to expand the existing tidal farm in Scotland and test the technology in France, as well its expansion into international markets.

No environmental impact and high social acceptance

D2T2's technology does not have any visual impact and no risk of storm damage since it sits on the seabed. This also means it has no navigation impact, with boats being able to pass directly overhead. Moreover, the project, which has been carrying out environmental assessments since 2014, has found the tidal device has no impact on marine life. "Our turbines work in harmony with nature," says Forrest.

The project also cooperates with local interest groups like fishers and local communities. In the Shetland Islands, tidal energy has become part of the local economic ecosystem since it can drive economic growth in peripheral areas by giving a dependable source of energy and creating jobs.

Europe leads tidal energy across the globe

In 2020, 3 more devices will be added to the Shetland tidal farm, and 15 turbines are on order in Canada worth over €40 million. Nova is also discussing sales of its device to power providers in Japan and Indonesia. The project estimates that there is a large potential global market for the technology in coastal areas over the world. According to its market research, the total value of sales to potential clients could be up to €87 billion. The market could be even bigger since D2T2's technology could also be placed on the riverbeds of large continental rivers with strong currents.

Nova is currently a global leader in tidal technology. Moreover, the D2T2 turbine is built from parts supplied by 17 European countries. With international sales of the D2T2 turbine already in place, Europe is leading the expansion of tidal energy across the world.