TIGER

TIDAL STREAM
INDUSTRY
ENERGISER

EUROPEAN UNION

Interreg
EUROPEAN UNION
France (Channel Manche) England
European Regional Development Fund

Project Description and Supplier Opportunities

Paimpol-Bréhat

Minesto

www.minesto.com

TIGER TIDAL STREAM INDUSTRY ENERGISER

Interreg EUROPEAN UNION
France (Channel Manche) England
European Regional Development Fund

TIGER Introduction

- TIGER is Interreg's largest ever funded project which aims to be a game-changer for the European tidal stream energy sector.
- Funded through France (Channel) England Programme, the €45.4m (€29.9m ERDF) aims to drive growth through the installation of up to 8MW of new tidal capacity in and around the Channel region driving learning, innovation and the development of new products.
- Led by the ORE Catapult from its regional offices in Hayle, Cornwall the 18-partner strong consortium will deliver the project which runs until Q1 2023.

The TIGER Partners are:

TIGER TIDAL STREAM INDUSTRY ENERGISER

Interreg France (Channel Manche) England
EUROPEAN UNION
European Regional Development Fund

Interreg area & TIGER activity map

Site	Key partner	Location	Current status	Capacity to be installed	Technology to be installed	Timescale for deployment
Ramsey Sound	Cambrian Offshore	Pembrokeshire, UK	Fully developed tidal demo site with 5MW ROCs	Up to 1MW of new turbine capacity	*TBC*	2021
Paimpol-Bréhat	EDF and SEENEOH	Brittany, FR	Test site to be repurposed	100kW of capacity	Minesto *(x1 turbine)*	2021
Le Raz Blanchard	Normandie Hydroliennes Hydroquest	Normandy, FR	Existing site under development	Consenting and techno-economic studies only	Atlantis / Hydroquest *(up to 5MW deployment planned following consenting)*	Deployment outside of scope of TIGER
Morbihan	Morbihan Hydro Energies SASU and Sabella	Brittany, FR	New site to be consented	500kW in project	Sabella turbines *(2x D08 250kW)*	2022
PTEC *(TBC)*	QED Naval	Isle of Wight, UK	Consented, dormant	Up to 5MW	Subhub and turbines *(TBC)*	2022
				2.8 to 7.8 MW		

Further information can be obtained from the Project web site : https://interregtiger.com/

TIGER TIDAL STREAM INDUSTRY ENERGISER

Interreg France (Channel Manche) England
EUROPEAN UNION
European Regional Development Fund

Project Specifics

Minesto Micro Grid Installation at Paimpol-Bréhat:

- The Paimpol-Bréhat (PB) site is owned and operated by French Utility EDF, who will, as part of TIGER partner with French site Developer SEENEOH to help develop the site further.
- As part of TIGER, Swedish Tidal Stream technology developer, Minesto will work with EDF & SEENEOH to gain consent, install, operate and decommission a Deep Green Micro-Grid device at PB.
- Minesto hopes to gain consent for its device by mid 2021, with the installation of the turbine taking place in Spring 2022.

About Minesto:

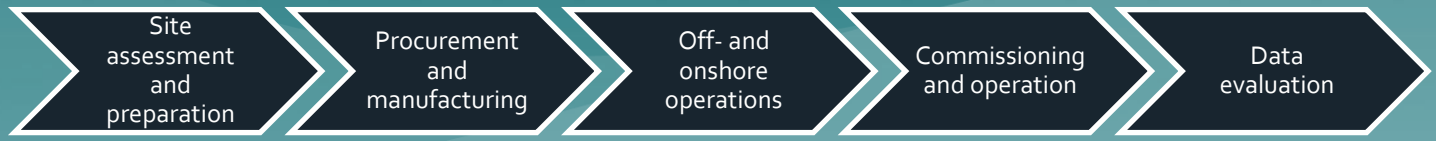
Founded in Gothenburg, Sweden in 2007, Minesto is a provider of world class game changing renewable energy technology. Minesto contributes to the global renewable energy mix by enabling large-scale (GW) electricity production from untapped tidal stream resources. Minesto offers secure and reliable power production from Tidal and Ocean currents at a highly competitive levelised cost of energy.

60 Employees
Operations in Sweden, UK, Taiwan, Faroe Islands and France
100Mn€ Invested / Awarded to the Deep Green Technology

TIGER TIDAL STREAM INDUSTRY ENERGISER

Interreg EUROPEAN UNION
France (Channel Manche) England
European Regional Development Fund

Project Timeline



Activity	Estimated Start	Estimated Completion
Site Assessment & Consenting	Winter 2019	Summer 2021
Manufacturing	Spring 2021	Spring 2022
Installation	Spring 2022	Summer 2022
Operation	Summer 2022	Autumn 2022
Recovery	Autumn 2022	Autumn 2022
Results Analysis	2022	2023

Site Description – Location and Logistics

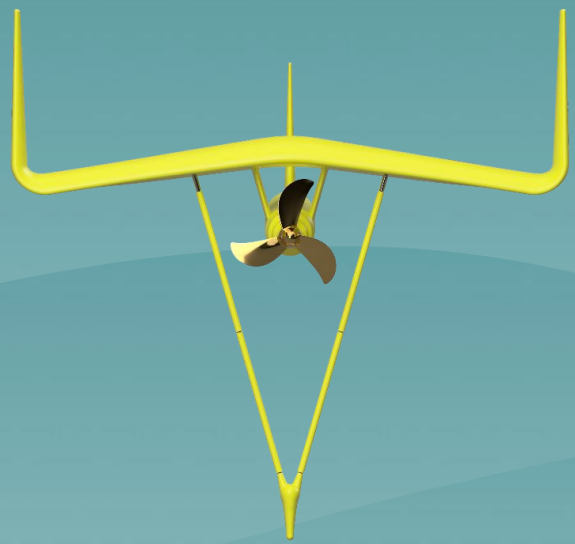
- Paimpol–Bréhat tidal demonstration site
- French Brittany, North East of the Ile de Brèhat
- Major ports in proximity (Cherbourg / Brest)
- 3.5ha Consented demo area
- 15 year consent from 2012
- Developed to launch tidal energy in French waters
- Infrastructure Assets in place.

TIGER TIDAL STREAM INDUSTRY ENERGISER

Interreg France (Channel Manche) England
EUROPEAN UNION
European Regional Development Fund

Technology Description

- Minesto's Deep Green, generates electricity from low-flow tidal streams and ocean currents by a unique and patented principle similar to a stunt kite flying in the wind.
- The wing uses the hydrodynamic lift force created by the underwater current to move the kite. With onboard control system and rudders, the kite is autonomously steered in a pre-determined figure of eight, pushing the turbine through the water. By doing so, the turbine experiences a water flow several times higher than the actual stream speed.
- The turbine diffuse power to the generator which outputs electricity via power cable in the tether. Seabed umbilical transfers the electricity to the onshore connection.



Technology Description Continued

- Turbine type: Deep Green Micro Grid
- Installed capacity: 100KW
- Devices installed at PB: x1

Grid connection

- The PB tidal site was the first grid connected tidal array site in the world.
- All sub-sea infrastructure to enable grid connection has been in place since mid-2016.
- Sub-Sea infrastructure is supported by an onshore sub-station to transfer power to the French national grid.
- Previous testing at the site has confirmed the effective operation of grid infrastructure. the inception of the site. arrangement (private plus ENEDIS), including PoC

Logistics: Construction

Mobilisation:

- Mobilisation plans at early stage.
- Minesto will be considering all port options for the construction stage.
- Access to site from local ports is also expected.
- Ports to be considered are: **Brest, Cherbourg, Paimpol, Lézardrieux, Ploubazlanec, Saint-Quay-Portrieux**

Installation:

- It is expected that Minesto will utilise relatively small vessels to install the whole DG system.

Logistics: Operations and Maintenance

- Minesto will operate the DG turbine at PB from Summer to Autumn 2022.
- The turbine and system will be recovered in the Autumn of 2022.
- Project is currently at early stage of developing O&M strategy for the site.
- Requirements for the supply of O&M goods and services will be communicated to market as project progresses.

Project Consent

The project is currently seeking consent approval.

- The previous and current technologies installed at PB have been granted consent to operate at the site.
- Minesto will utilise a new consenting model approach prior to installing Deep Green
- New approach will be guided by EDF/SEENEOH and is to approved by French authorities.
- Consent timeline is expected to be completed by Q3 2021
- All necessary monitoring with regards to granted consent will be conducted as required.

Supply Chain Procurement Opportunities

- As per any project operated by Minesto, there will be a requirement to engage existing supply-chains to enable project success.
- Minesto will be required to engage the supply-chain in line with applicable EU funding procurement regulations when purchasing goods and services during the TIGER project.
- It is expected that all major purchases will be initiated from Q2 2021 ahead of the Turbine Manufacturing process and will continue until the recovery of the DG device in the Autumn of 2022.
- Potential suppliers will be informed of contracts published for tender at the earliest opportunity.
- Minesto will seek to purchase goods and services expected and associated with offshore technology development, inc. Turbine Manufacture, Fabrication, Onshore Mobilisation, Offshore services and supply.
- Contact details for questions related to procurement opportunities will be provided on a contract by contract basis.

Contact Details

Project Contact:

Mr Osian Roberts
Business Development Manager
Email address: osian.roberts@minesto.com
Website: www.minesto.com