SEA CHANGE

Revolutionising the maritime sector to cut carbon emissions at Portsmouth International Port

IOTICS

Portsmouth INTERNATIONAL Port

The SEA CHANGE project at Portsmouth International Port solidifies the port's reputation as a living laboratory of green technology with industry-leading sustainability credentials. The project realises the full potential of two new LNG-electric hybrid ships from Brittany Ferries, which will begin sailing from Portsmouth starting in spring 2025 and will be shore-power ready.

The Data Access Challenge

Portsmouth's shore power journey began in 2021 with a project to understand the financial, logistical and environmental considerations of using hydrogen as a sustainable maritime fuel. This project required access to accurate, interoperable data from across a complex ecosystem of organisations and data-producing assets and systems.

With many layers of complexity to the ecosystem, a centralised agreement on data governance, sovereignty and access was not an achievable approach. The only option was to decentralise data access for all partners, enabling each organisation to choose which data they wanted to share with whom.

The Solution – an agile data ecosystem for SEA CHANGE

Security, agility and expansion are all essential requirements of the kind of data ecosystem required at Portsmouth International Port for their government-funded SEA CHANGE project.

IOTICS created an evolving and agile data ecosystem for Portsmouth International Port and their partners which allows the diverse ecosystem of organisations to test and innovate sustainable shore power solutions for the future of maritime fuel consumption. The SEA CHANGE project presents opportunities for entirely new ways in which the port and visiting vessels engage with one another. By understanding the vessel's energy needs in the context of the environmental, ecological and power availability conditions at the port, the impact of vessel ingress, egress and refuelling can be managed in harmony with the local environment.

Data analysis from teams at the University of Portsmouth originally highlighted concerns over the viability of hydrogen generated on site. This analysis enabled the port to make the decision to evaluate electricity for shore power with the current SEA CHANGE project and the university analytics teams were to baseline the port's emissions using this data before the project started. This analysis will be essential in enabling the port ecosystem to identify trends and predict conditions to mitigate risk and impact on the local environment as the project progresses.

The original data ecosystem at the port included air quality sensor and visualisation providers, publicly available information on the local environment, the University of Portsmouth, and of course Portsmouth International Port itself. The ecosystem has expanded for the SEA CHANGE project and now includes Brittany Ferries, Swanbarton (the shore-side battery provider) and a shore power provider.

How It Works

Each organisation within the SEA CHANGE data ecosystem is able to share and access data securely and selectively with IOTICS. IOTICS virtualises data, assets and systems while allowing access, governance and sharing to be federated and decentralised. All parties contribute and consume data on their own terms, maintaining their own data governance and security.

Portsmouth International Port and its partners are able to make better-informed decisions about the efficacy and impact of shore power thanks to powerful insights derived from real-time data from across their ecosystem, while using emerging insights to inform broader tactical objectives and future innovation.

Goals and Outcomes

The port has a clear goal of **net zero by 2035**, **zero emissions by 2050**, yet the ecosystem is open to innovative, adaptive means to achieve it.

Providing shore power will reduce harmful emissions and improve air quality around the port. It is estimated that the system will **save over 20,000 tonnes of CO2e per annum from 2027** - the equivalent to the annual carbon footprint of around 2,500 UK households.

Agile decision making has **saved 35%** of project budget making so far.

The University of Portsmouth, Portsmouth City Council and Portsmouth International Port have **won several awards** for their individual and joint efforts in sustainability, with collaboration powered by the IOTICS data ecosystem.

'We are able to make data available dynamically from all sorts of sources in and around the port because our living lab includes an ecosystem of digital twins which share data securely.'

Elly Toyer, Environmental and Sustainability Coordinator, Portsmouth International Port

Contact

To find out more about how IOTICS enables secure data access and sharing across complex ecosystems, or for a technical demo of the SEA CHANGE project, contact Sophie Peachey: sophie.peachey@iotics.com

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