

## **UK's First Floating Organic Flow Battery For Port Energy Storage Plan Developed**

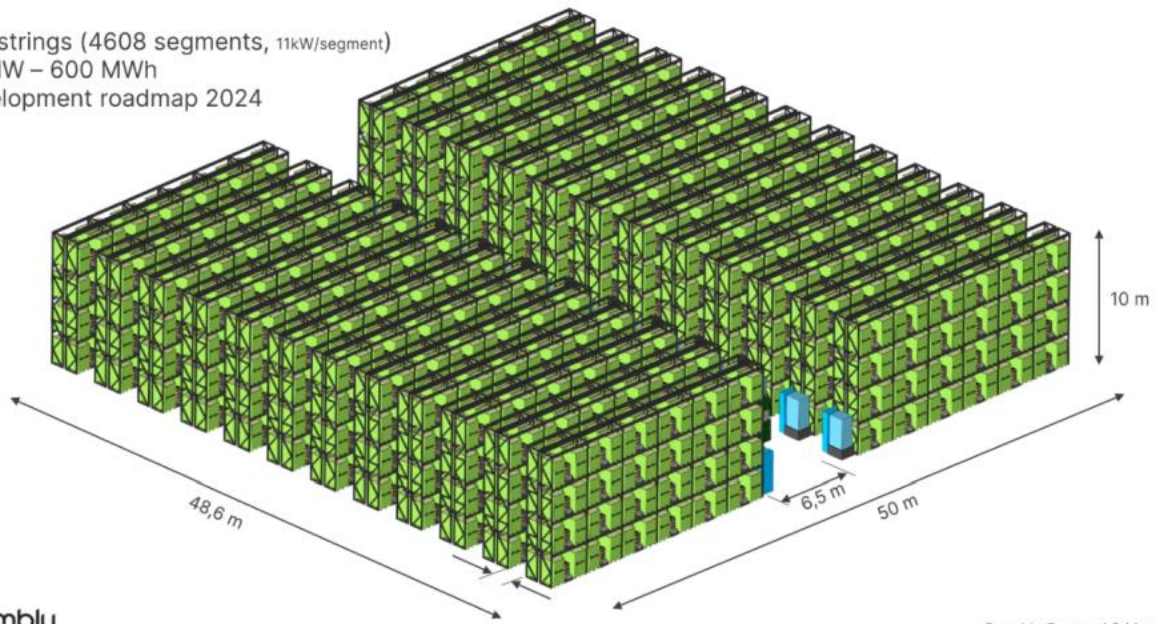
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BlueStor, a project created by MSE International and funded by BEIS under its Longer Duration Energy Storage (LODES) competition, has produced detailed plans for developing the UK's first floating organic flow battery for decarbonised port energy storage and shore power for two cruise ships. Organic flow battery technology avoids many of the environmental disadvantages of conventional battery technologies, and is ideally suited to maritime applications.

The current phase of the BlueStor project has been a feasibility study of this novel port energy storage system; the results of which have given the project team confidence to now apply for Phase 2 funding which will build and operate a pre-commercial prototype organic flow battery, on a floating barge, that will demonstrate supply of electricity to two visiting cruise ships when at berth in Portsmouth International Port. Phase 2 of BlueStor will also demonstrate the capability to procure, at times of low demand, the energy to be supplied to these vessels.

Phase 1 of the BlueStor project, which concludes this month, has shown that organic flow batteries are ideally suited to large scale bulk energy storage applications, especially in locations where environmental sensitivity is high; for example ports and coastal areas.

- 384 strings (4608 segments, 11kW/segment)
- 50 MW – 600 MWh
- Development roadmap 2024



The feasibility study acknowledged that although the energy density of each cell is relatively low, a large scale 50 MW, 600 MWh installation would be more compact overall than an equivalent lithium ion installation. The low fire and explosion risk of organic flow batteries allows much tighter packing of the batteries.

Flow batteries use a stack of electro-chemical cells to convert electricity into chemical energy which is stored in charged electrolytes in external tanks. They are ideally suited to meet the requirement for longer duration energy storage because the storage capacity can be increased, at a relatively low cost, independently from the power rating of the stack.

MSE International is the lead partner in BlueStor; energy and battery specialists, Swanbarton Ltd is supporting the battery engineering and construction as well as associated controls and interfaces; Houlder Ltd, marine and offshore engineering and clean technology specialists, is designing the battery platform and port/vessel interfaces. Pioneers in organic flow batteries, CMBlu are supplying the electro-chemistry for the flow battery.

BlueStor is contracted by the Department of Business, Energy and Industrial Strategy (BEIS) under its Longer Duration Energy Storage Programme (LODES).