Port louis island microgrids

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Four pilot projects to reduce greenhouse gasemissions in ports in Africa and the Caribbean are ready for implementation, following their selection under the IMO CARESGlobal Technology Challenge.

According to the International Maritime Organization (IMO), the selected technology proposals cover renewable energy production in ports and port call data sharing for “Just-in-Time” shipping. They reflect a strong potential for scalability and replicability across different regions and operational contexts. They will be implemented in Mauritius, St. Kitts and Nevis, Namibia, and Trinidad and Tobago, as part of the IMO-implemented and EU-funded Global Maritime Technology Centre Network (GMN) Phase II Project.

By working closely with local stakeholders, the proposals are tailored to address specific challenges in each region while contributing to global efforts to reduce greenhouse gas (GHG) emissions. The implementation phase will offer valuable insights into how these solutions can be expanded to other ports and countries.

Clean Marine Shipping (CMS) developed a technical proposal for GHG reduction in maritime operations at the port of Port Louis with Circular Bio-derived Fuels and Hydrogen Technologies (BioH2Energy). Integrating CMS BioH2Energy technology at Port Louis, Mauritius, the technology demonstration will convert organic waste into energy.

The project proposes to build a 2.4 MW system converting two tonnes of organic waste to supply 100 KW per hour. The project aims to decrease the current electricity grid consumption from thermal sources (807 gCO2e/KWh) at the Port of Port Louis to a more sustainable option of -0.045 gCO2e/KWh. Additionally, it intends to reduce 482 t CO2e/year by using organic waste as fuel for the BioH2Energy system instead of landfilling it.

The SYG TECH proposal aims to decarbonize port operations using renewable energy-powered microgrids. The technology encompasses a Vertical Axis Wind Turbine incorporating a novel and effective “storm protection” feature.

SYG TECH developed a technical proposal to build a renewable-powered microgrid integrating its wind turbine at the Basseterre Deep Water port, St. Kitts and Nevis, where renewable wind energy will cut approximately 46% of the port’s GHG emissions. The successful installation and operation should result in an annual saving of 141 tonnes of CO2eq. The feasibility study suggested that a proper mixture of wind, solar, and storage would make the port microgrid 100% carbon neutral.

Given that St. Kitts and Nevis are in a hurricane-prone area, the wind turbine will incorporate a tilt-down feature. The SYG TECH turbine is a smart device that controls its wings by monitoring wind speed. When the

wind speed reaches the designated cut-off wind velocity level, it is expected to close its wings, bringing the turbine into the “storm protection” formation.

BM Bergmann Marine GmbH and Marine Fields Holding Ltd developed a proposal to implement a solution based on the port call data sharing platform PERSEUS in a Software-as-a-Service (SaaS) concept.

The project proposes to customise the PERSEUS data sharing platform to allow all actors in the port and the port State authorities to gain direct access to port call data, which is the prerequisite for implementing “Just-In-Time” operations and automated reporting. The PERSEUS system will enable the port to reduce Total Turnaround Time, improve port facility utilization, and reduce associated GHG emissions.

The technology is selected by Port of Walvis Bay and Port of Lüderitz, Namibia and Port of Point Lisas, Trinidad and Tobago. The implementation of technology aims to achieve an overall reduction of 10% GHG emission within one year.

The initiative aimed to identify innovative, technology-neutral solutions that accelerate decarbonization in shipping and ports in Africa and the Caribbean. Following an extensive review process that included input from government representatives, academia, and industry associations, four technology proposals were selected from a pool of 21 entries. Entries spanned the technology spectrum, ranging from wind turbines and kites; carbon capture, artificial intelligence and data sharing systems; to hull coatings and fuel emulsifiers.

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