IAPH/WPSP Sustainability Awards 2021

Candidate project: Onshore Power Supply (OPS) in the Port of Hamburg

Application by the Hamburg Port Authority AöR (HPA)

The city of Hamburg is pursuing a sustainable improvement of air quality. One major contributor to reaching this goal is the port. The emission of air pollutants and noise by shipping vessels in close vicinity to the city center can be reduced by OPS facilities. Container vessels as well as cruise ships at berth will be supplied with CO_2-neutral electricity from the public power grid. During the development of this project's scope we were met with the following challenges:

- Identifying the ship berths with the greatest environmental impact for OPS
- Seamless integration of OPS facilities into ongoing terminal operations
- Maintaining the port's competitiveness:
  Gaining shipping companies' trust and confidence into the technical solution while also offering a financially and environmentally attractive service

The three container terminals closest to the city center as well as all cruise terminals will be equipped with OPS stations, totaling 11 OPS-equipped berths. In order to achieve this task, HPA formed a joint project with the local power grid provider (Stromnetz Hamburg GmbH) and its municipal electricity provider (Hamburg Energie GmbH). This interdisciplinary partnership was tasked with improving the quality of life and health for Hamburg's citizens, not interfering with ongoing terminal operations and gaining shipping companies' acceptance for a service that had just recently been standardized and was not widely accepted. Together we developed a business case so that to allow a pricing per kilowatt hour (kWh) close to the shipping companies' on-board cost for diesel-generated power. CAPEX is partially funded by the city of Hamburg in cooperation with the Federal Ministry for Economic Affairs and Energy. While being a front runner for OPS in Europe a close cooperation with other European ports facilitates exchange of knowledge and ensures comparable processes for the vessel owners.

By the year 2025 all OPS sites are expected to be in operation and make a significant contribution to achieve our objective to become a carbon neutral port by 2040 and allowing vessel owners to reduce their carbon footprint.
Our estimations based on roughly 400 OPS calls per year will annually reduce emissions of the following air pollutants:

- nitrogen oxide (NO_x): 383 t
- sulphur oxide (SO_x): 11 t
- fine particulate matter (PM 2.5): 2 t
- carbon dioxide (CO_2): 30,000 t.

Based on latest port calls estimates (Elbsimulation 2021). 24% of these calls are expected to be OPS-ready.
Further political or regulatory measures intended to increase OPS-acceptance have not been considered.

Please feel free to watch our project presentation on YouTube:
https://www.youtube.com/watch?v=XlZhX6vjVxU