



Wind energy turbines situated in the Port of Hamburg

GREEN ENERGY MIX FOR PORTS AND TERMINALS

Customer benefits

In light of rising energy prices, amendments to legislation and in an endeavor to promote a green image, decision makers at terminals and ports are increasingly being asked to address the following issues: how do we develop an energy mix for a terminal or port that is economically and ecologically feasible? What measures need to be implemented in order to supply green energy to a terminal or port in a future-oriented and resource-friendly manner that also conforms to corporate standards?

We take a threefold approach to analyzing your port or terminal in line with these requirements so as to provide you with the best possible information on which to base your decisions:

1st phase: Behavioral (performance) modification

Equipment that has already been installed at a terminal or that is already in operation at a port is not replaced. During this phase, the existing stock of capital plant and equipment is used in an energy-efficient manner. This includes, for example, avoiding excessive downtimes or superfluous routes through optimal yard planning.

2nd phase: Technical adjustment

This second phase involves an intensified assessment of potential energy saving measures through technical adjustments. This can include, for example, converting to hybrid power or using LED lighting in the terminal.

3rd phase: Electricity generation

Various options for generating power at the terminal or port are debated. The relevant questions will revolve around whether a wind turbine can be installed, for example.

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IMPRESSUM



Illuminated Terminal



Wind turbines in summer landscape at sunset

Fraunhofer CML Decision Support Grüne Energie



Measurement of the electricity requirements of a terminal / port based on actual consumption data and projected figures

Requirement profile as determined by 1st phase (behavioral / performance modification), 2nd phase (technical adjustments) and 3rd phase (electricity generation)

Integrating the requirement profile (port / terminal) into the requirement profile of the future energy mix to be introduced

Decision making and recommendation of the most suitable green energy mix in the port / terminal

Respective requirements for a green energy mix in ports / on terminals



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Basis for decision making

Installing a plant for semi-autonomous power generation or converting and upgrading existing lighting and transshipment facilities involves a significant level of investment. Selecting the ideal system is a complex decision-making process. The desired – optimal – result can only be achieved by taking all relevant aspects into account. The key factor here is to adopt a clearly structured decision-making process and to carry out a careful review of all available alternatives.

Role of the Fraunhofer CML

The Fraunhofer Center for Maritime Logistics and Services CML conducts contract research on behalf of private and public sector clients. Within the area of Green Energy, this includes analyzing the potential for introducing an energy mix at the terminal or the port in line with required specifications. By weighing the pros and cons and precisely assessing the requirements profile, the CML develops the optimal solution for the respective terminal or port. Currently, the CML is conducting research into the reduction of CO₂ emissions at terminals and ports as part of the European Commission's Seventh Framework Program. As part of the "GREEN EFFORTS" project, the CML also uses simulation processes to demonstrate how individual terminals can reduce their energy consumption. Furthermore, the CML provides consultancy services designed to provide support during the complex selection process. Clients benefit from CML's comprehensive knowledge of the market and its independent standpoint.

Fraunhofer CML Decision Support: Green Energy

The first step in selecting an energy mix that complies with all specifications is to assess the client's current and future energy requirements. Initially, the Fraunhofer CML Decision Support Green Energy identifies the potential for behavioral and performance modification (energy conservation), the possibility of technical adjustments (energy conservation, energy recovery) and ultimately the possible installation of available plants and facilities (including wind turbines, photovoltaic systems; e.g. a conversion to LED or hybrid technology). Suitable plants and systems are selected individually according to the requirements of each terminal or port. The common requirement profile, uniquely tailored to each client, facilitates the decision-making process.

Requirements

A key success factor is a close collaboration between CML and the client. This ensures that the decision-making method and criteria meet the individual demands of the client. Following the analysis on the potential green energy mix, the CML can also be requested for additional assignments and commissions.