Ports Energy and Carbon Savings

Output:

Deliverable 2.4.4.
Smart LED Pontoon

Update report

With contributions of all Ports and Knowledge Institutes within PECS

Report version
Tuesday, 26 July 2022

TABLE OF CONTENTS

INTRODUCTION

Heart of the PECS-project is the demonstration of installed systems in ports that save energy or generate renewable energy, thereby reducing CO_2-emissions.
Pilot systems within PECS in arbitrary order are:

- D.2.4.1 Small wind turbines in Hellevoetsluis
- D.2.4.2 Solar systems in Hellevoetsluis: Floating solar panels and ` PhotoVoltaic-Thermal (PVT) systems
- D.2.4.3 Medium sized wind turbine in Oostend
- D.2.4.4 LED pontoon in Oostende
- D.2.4.5 L(ocal)E(energy)M(arket) ODIJmond
- D.2.4.6 Steam turbine at Indachlor (Dunkirk)
- D.2.4.7 Linkspan Portsmouth harbour
- D.2.4.8 BPS energy pontoon

To check, prove and demonstrate that a pilot system once installed operates according to expectations (or better), the systems need to be monitored.

1. ASSESSMENT OF ENERGY PERFORMANCE AND CARBON SAVINGS

Pontoons are used very frequently in ports and marinas. They are usually constructed by using wood (deck), plastic (floating tubes) for the light duty pontoons and steel for the heavy duty ones. They are used to create massive decks to help with the core economic activities performed in a port such as loading, unloading, maintenance bunkering etc.

a. LED-lighting

To ensure a safe operation to the users during night, a proper lighting is needed which requires electricity. However, these pontoons may be needed in remote areas in the port, where the access to the distribution grid is not available. To cut on electricity demands, fluorescent lights can be replaced with light emitting diodes (LED) which have very high efficiency and also provide sufficient light flux for the needs of the pontoon.

At the current state, only the lights of the pontoon are implemented so the main focus of this report will be about a comparison between the most used light solutions for these applications.

The pontoons in port of Ostend are equipped with 12 lighting units. Each unit consists of TL58 fluorescent light with nominal power of 58 W and it is able to deliver 5200 lumen (226700 lm in total). The fluorescent lights were replaced by two LED lamps in parallel to provide redundancy, producing in total 269520 lm. The costs for replacement were € 1000.

During the monitoring period, no failures in the pontoon's LED lights were observed.

Figure 6.1 Smart LED-pontoon in the harbour of Oostende

During the monitoring period 1st July 2020 till 11 March 2021, the energy savings were calculated at 200 kWh, which corresponds to 300 kWh/year (40 €/year).