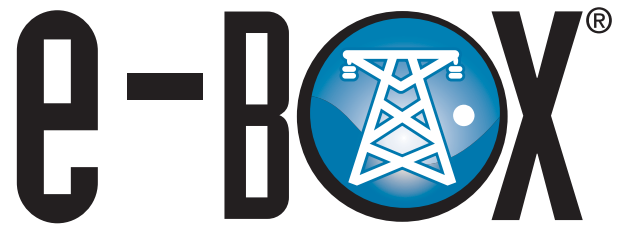


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energy systems

The Port of Felixstowe was an early adopter of Ebox in the UK and has been enjoying the benefit since February 2008.

Case Study



'Blue Sky Thinking'

reducing your footprint...



Case Study: Port of Felixstowe Warehouse

Port of Felixstowe, The Dock
Felixstowe, IP11 3SY

8th February 2009

Shipping savings into a port

Port of Felixstowe: e-box energy systems installed on the 8th February 2008.

The purpose: To reduce energy consumption of illumination/light sources in areas as specified by Port of Felixstowe.

This document specifies the energy saving made by the e-box installation on the 8th February 2008 the e-box assembly being applied to the appointed warehouse distribution board.

The survey of parameter readings are made by the power analyser 'Carlo Gavazzi', model WM14 installed inside the equipment. The analyser makes a continuous reading of the electrical consumption.

Photographs of the system:





Business Case

Benefits from installing the e-Box

| Investment Required | |
|---|------------|
| Capital Outlay | £12,154.00 |
| Annual Saving Forecast | £11,860.00 |
| Internal Rate of Return on the investment (ROI) | 98% |
| Time to Recoup (in months) | 12 |
| Monthly positive cash flow after recouping investment | £990.00 |

| Financing Structure | |
|---------------------|---------|
| Structure | N/A |
| Cash Requirement | N/A |
| P & L implication | £990.00 |

| Electricity Bill Saving | | |
|-------------------------|-----|------------|
| Kilowatt hours | 25% | 146,577.00 |
| Cash Value | | £11,726.00 |

| Additional Savings | |
|---------------------------------------|---------|
| Bulb replacement and Disposal savings | £154.32 |

| Carbon Trading and Environmental Issues | |
|---|-----------|
| CO2 SAVING PER YEAR (Kg) | 73,288.00 |
| Petrol Equivalent in metric tons | 32.2 |

| Annual Running Costs Changes | |
|-----------------------------------|--------------|
| Present Day Running Costs | £47,573.26 |
| Forecast Running Costs with e-Box | £35,692.81 |
| Percentage Saving | 25.0% |



Calculation of the financial saving obtained

We certify that:

On the 8th of February 2008, we installed N.2 cabinets model CI_50_50_50_IP54 at The Felixstowe Docks, Warehouse N. 82

Description of the activity:

The cabinets have been installed to manage two distribution boards: DBA and DBC. The system is supplied with a WM14 net analyzer which have made the measurements with the sytem working in by-pass first then in Saving mode for comparison.

Lamps type Sodium High Pressure 400W

The lamps installed in the building have been considered already at half of their life.

Instant test survey parameters

| | | |
|--------------------------------------|------------|-------------------|
| 'e-box' saving level set to | DBA | 3L2 - 3L2 – 4L2 |
| Medium absorbed power in saving mode | DBA | 16,2 kW |
| Medium absorbed power in by-pass | DBA | 21,7 kW |
| Saving % calculation | DBA | 25,34 ± 2% |
| | | |
| 'e-box' saving level set to | DBC | 3L2 - 3L2 – 4L2 |
| Medium absorbed power in saving mode | DBC | 16,3 kW |
| Medium absorbed power in by-pass | DBC | 21,6 kW |
| Saving % calculation | DBC | 24,53 ± 2% |

The e-box technology, apart from reducing drastically the energy consumption of the light sources, gives benefits for:

- Reduction of the maintenance costs by 30/40%;
- Reduction of the CO2 emission in the atmosphere, helping the preservation of the environment.

By this project 73,288.00 Kg of CO2 emissions will be annually saved.

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System description

Points application

ELECTRICAL DIST BOURD **DBA**
ELECTRICAL DIST BOURD **DBC**

Description of system

C50 - C50 - C50 - Cabinet IP54

| | | | |
|--|--------------------------|-------|-----|
| Number three system C50 | Load Power | 34.50 | kVA |
| Case Metallic | Degree System IP54 | | |
| Supply Voltage | 230 V 50 Hz Single Phase | | |
| Output Voltage | Selectable 12 levels | | |
| Supply Voltage Waveform | Sinusoidal | | |
| Output Voltage Waveform | Sinusoidal | | |
| Harmonic Distortion | no | | |
| Power Factor | Cos ϕ > 0,5 | | |
| Load Variance | 100% | | |
| Manual By pass | Standard | | |
| Automatic Forced By Pass | Standard | | |
| Warm Up | 16 Levels (Selectable) | | |
| Under Supply Voltage | 5 Levels (Selectable) | | |
| Under Supply Voltage areas | 3 Levels (Selectable) | | |
| Under Supply Voltage Exclusion | Standard | | |
| Led of indication be of operation | | | |
| Automatic thermic Protection | | | |
| Galvanic Insulation from the Net | | | |
| Testing of the Supply Power Parameters | | | |
| Line Protection | Fuse | | |
| Cooling System | Forced | | |
| Work Area Temperature | -15 °C +40 °C | | |
| Humidity | 0 - 97 % | | |



| C50 | C50 | C50 |
|---------------------|-----|-----|
| Cabinet IP54 | | |

| | |
|----------------|--------------|
| Case | Metallic |
| Dimension | |
| Basis | 800 x 400 mm |
| Height | 1200 mm |
| Color | RAL.7035 |
| Socket | |
| Basis | 800 x 400 mm |
| Height | 100 mm |
| Color | RAL.7022 |
| Overall height | 1300 mm |
| Weight | 130 kg |

Remote control

Extension C50 for Remote Control