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Energy Management in the Port

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Port Integration Webinar

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Energy Management in the Port

A project report from Tallinn, Estonia

Digital Twin of a Port: Technical control room, Sensor integration

- Heating, aircon, light control, facility management
- Energy management
- IT network surveillance
- Fire detection, sensor alarms,
- Intrusion control, security alarms

Why should we pursue Energy Management in the port ?

Our contribution to climate change,
Cost optimization,
Create a new business

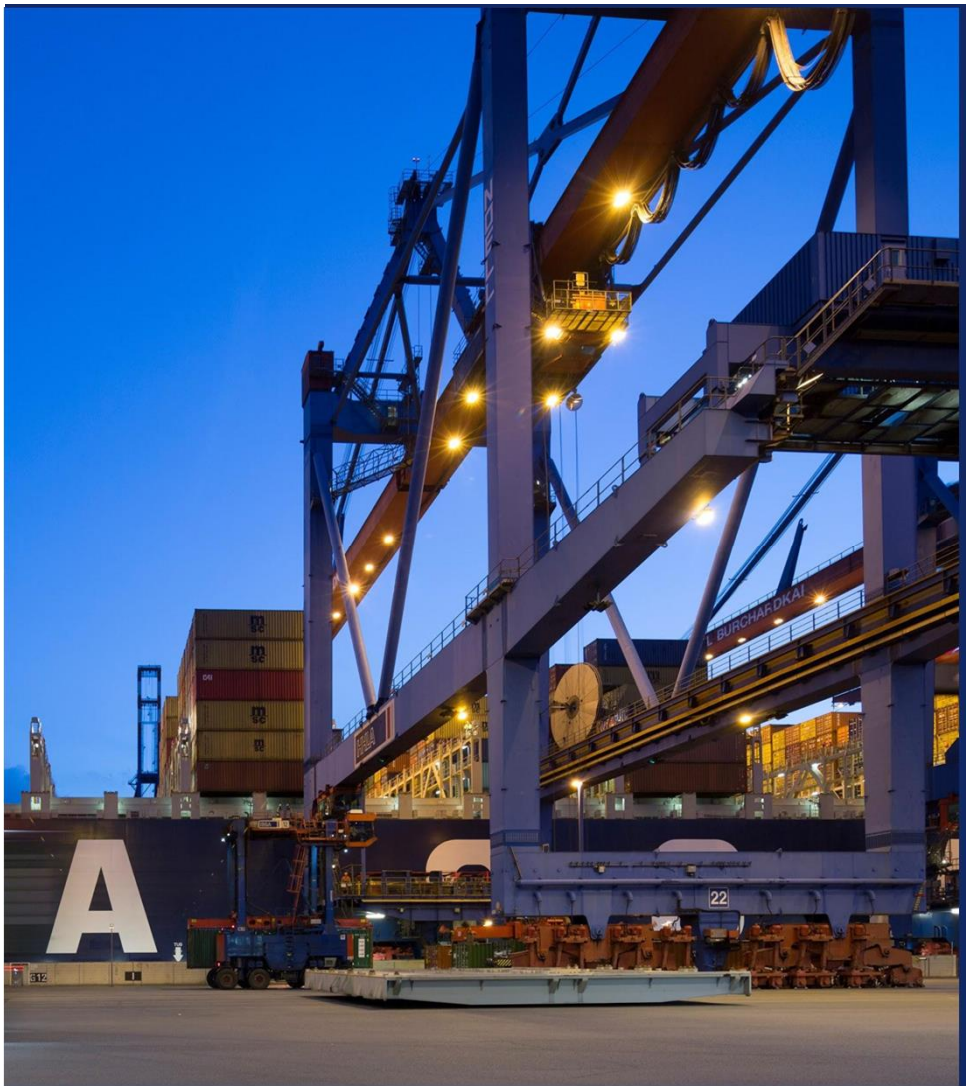
- Sustainability
- Energy Transition
- Electrification vs. diesel technology
- Measure and control energy consumption
- Generation of energy
- Integration of photovoltaics
- Integration of hydrogene technology
- Integration of offshore windfarms
- Feed energy into the public grid

- Energy certification ISO 50001

Energy Management Certification ISO 50001:2018

ISO 50001:2018 transforms the way organizations manage energy, offering a systematic approach with sustaining results.

The standard has value both as a best practice model for strategic management of energy and as a global benchmark for climate and clean energy action.



What means ISO 50001 certification?

Energy management is based on the Plan Do Check Act (PDCA) continual improvement framework and incorporates energy management into existing organizational practices to raise your potential strategically

The Energy Management project at HHLA TK Estonia

- Background
- Local conditions
- Targets
- Roadmap

Local initial conditions at TK

- 3 STS cranes (+2)
- 6 RTG (+4 electrified)
- 10 warehouses with bulk cargo (aircon)
- 59 Light poles, warehouse lighting
- Electric + gas heating, non-controlled

The climate goals of HHLA

HHLA defined their targets to encounter the climate change

- To reduce the actual amount of CO2 emissions by at least 50% until 2030
- To be climate-neutral until 2040
- There is no time to loose!

Identified targets for TKós first phase to set up an EnMS

- Implement a monitoring and control system (Iconics)
- Install first meters and controllers (~ 50)
- Start measuring consumption and switching light poles
- Change light poles to LED
- Expected energy savings 10-15% in the affected areas



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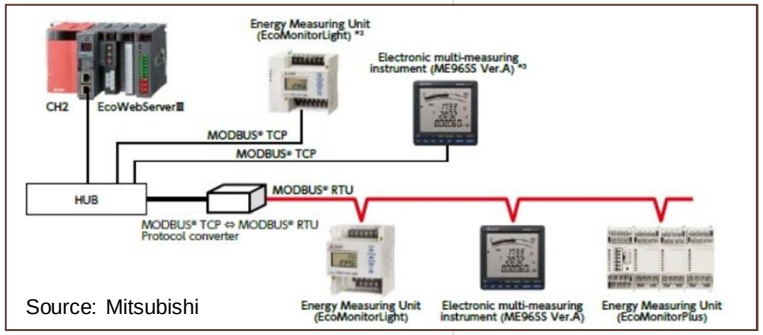
Implementing

an EnMS



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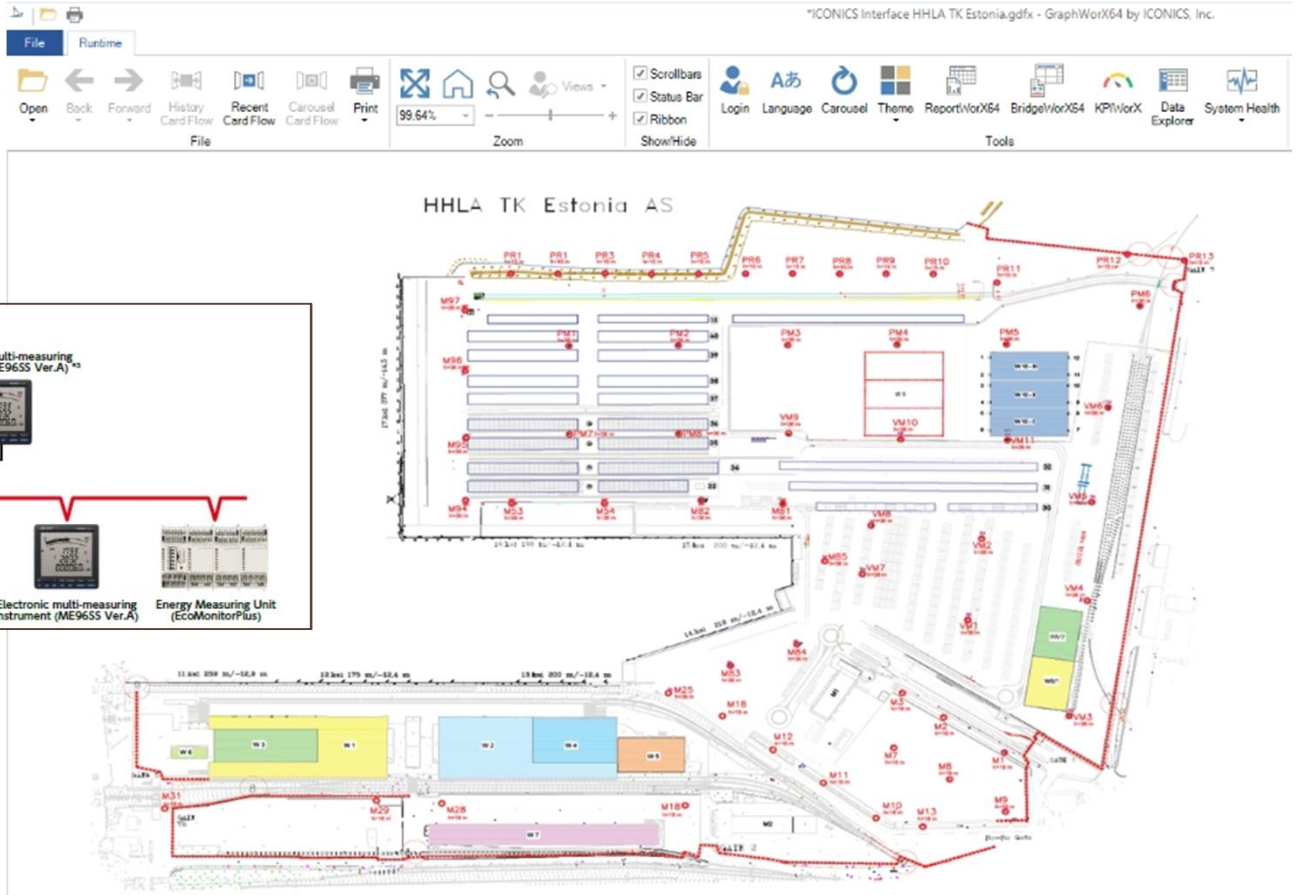
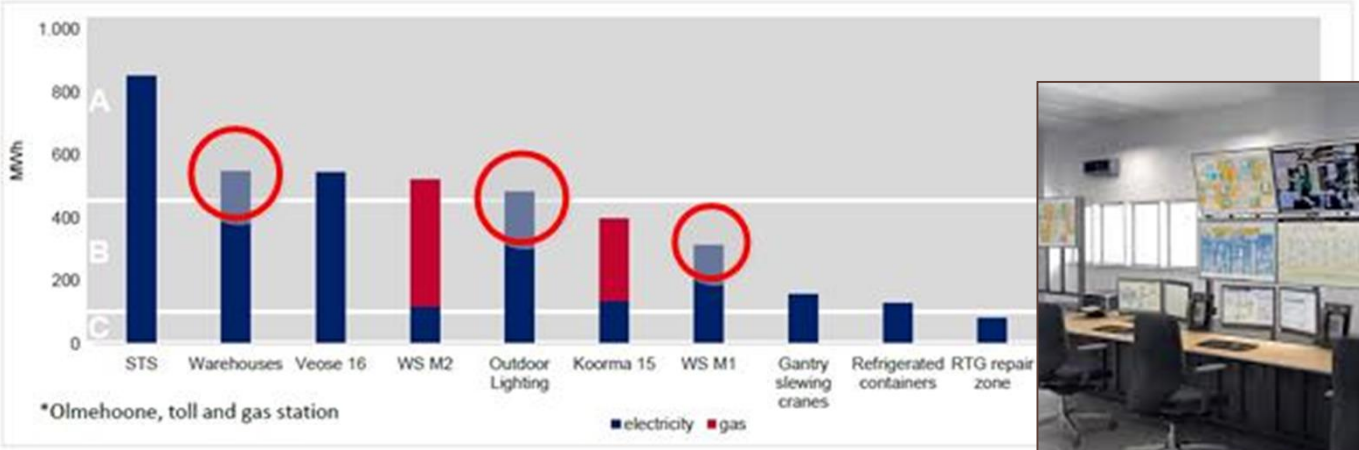


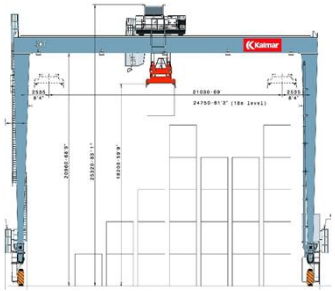
Expected savings in the first phase

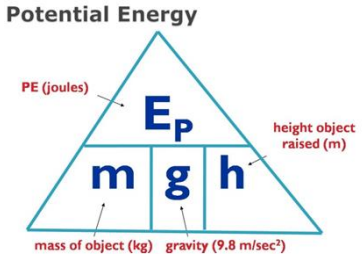


- Savings in the affected area 10-15%, IRR < 2 years
- Project price ~ 70.000,- ú , expected savings ~ 35-40 Tú p.a.

Identified targets for TKós second phase to establish an EnMs

- Continue installing meters and controllers
- Reactivate STS crane energy recovery
- Include RTGs after electrification with energy recovery
- Include heating and aircon systems under monitoring and control
- Potential energy savings > 50% for crane energy recovery





Potential Energy = m * g * h
m = 25.000 kg
h = 18 m
g = 9,81 N

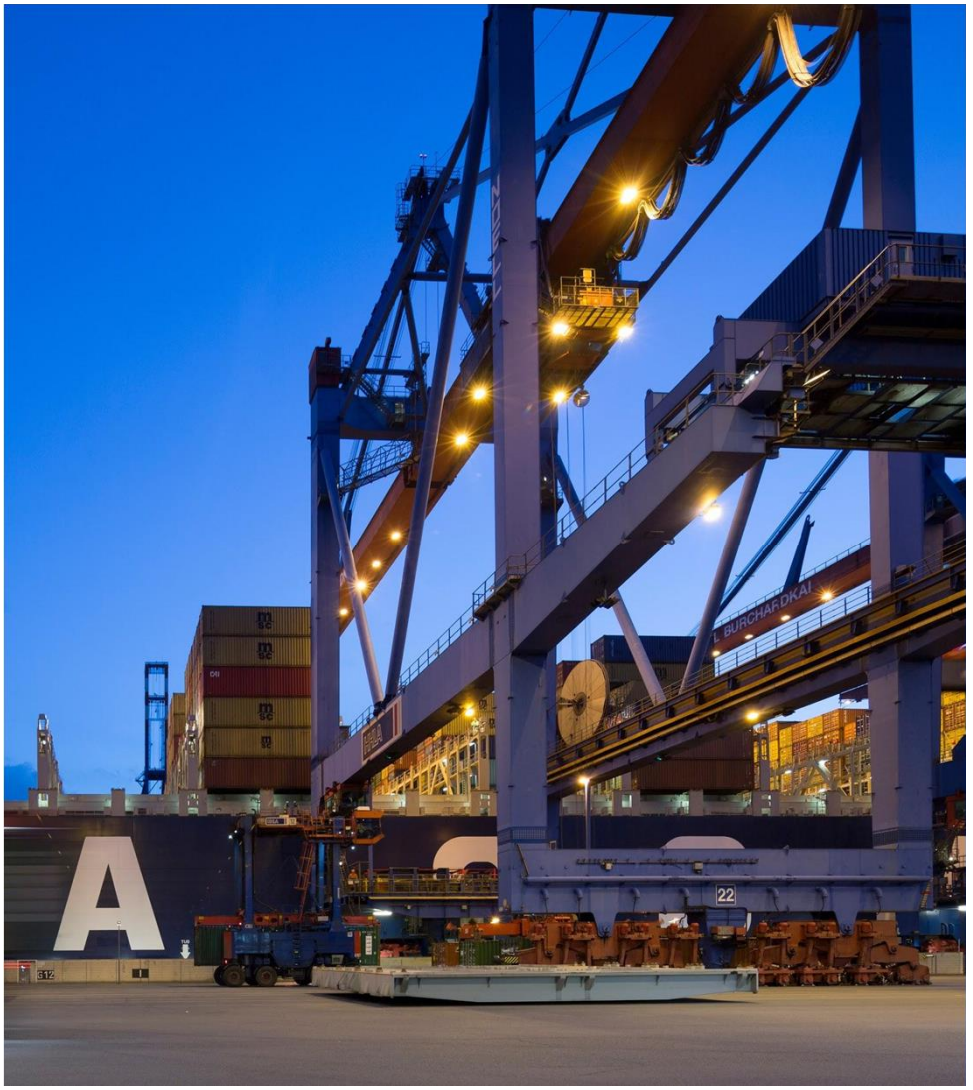
E(p) = 1,27 KWh

Identified targets for TKó s third phase to establish an EnMS

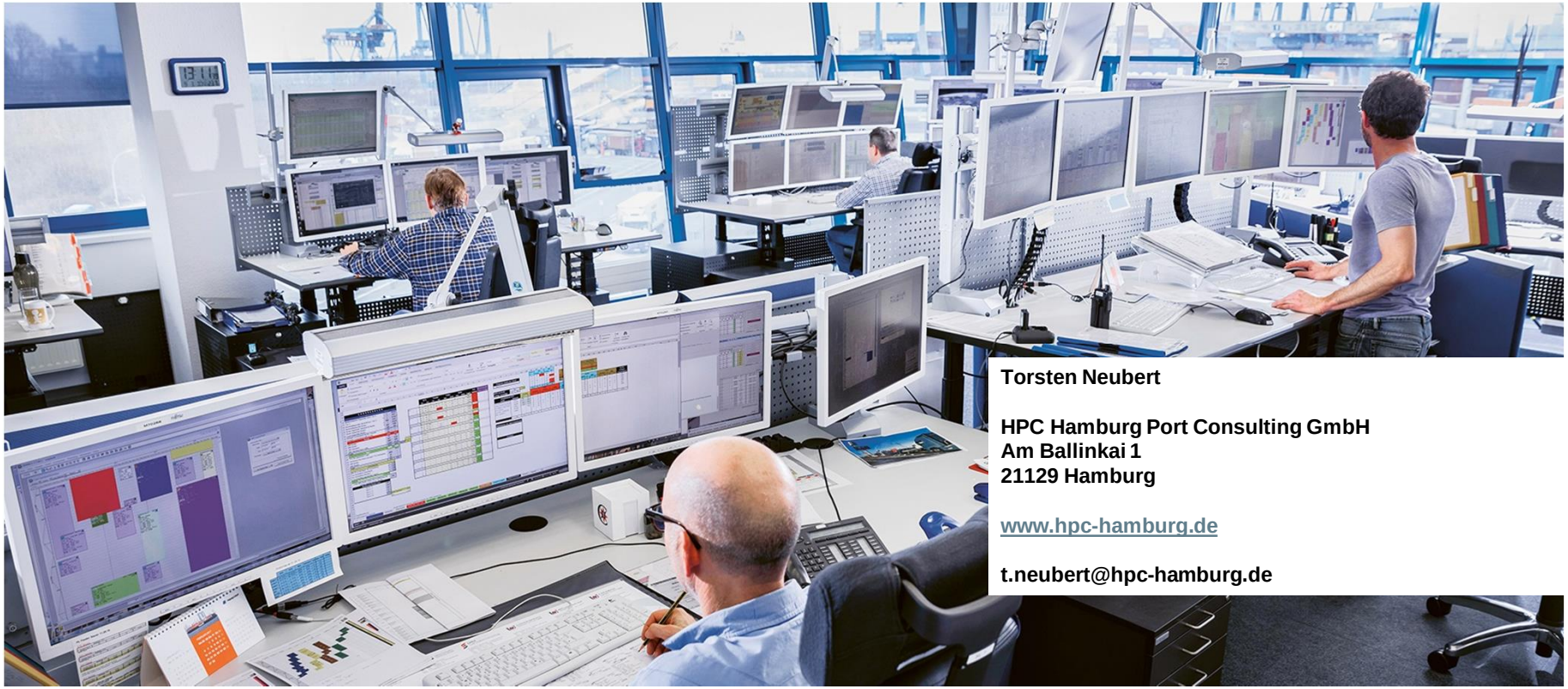
- Include power generators (photovoltaics, wind power)
- Change to electric tractors and forklifts (battery loading)
- Use hydrogen fuel cell engines and power generators
- **Energy management will be a business in the future**

Summary and key takeaways:

- Energy management is a substantial key to reach the climate goals
- In our changing world, energy management will create new business models, also for ports
- It's a long way to go, don't stay behind, prepare yourself in time ...



We are happy to assist you!



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