



COREALIS Piraeus Demo/Training Webinar

Energy Assessment Framework

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Green Cookbook: Energy Assessment Framework



Scope

- RES integration
- Storage integration
- CO₂-reduction
- Cost effective



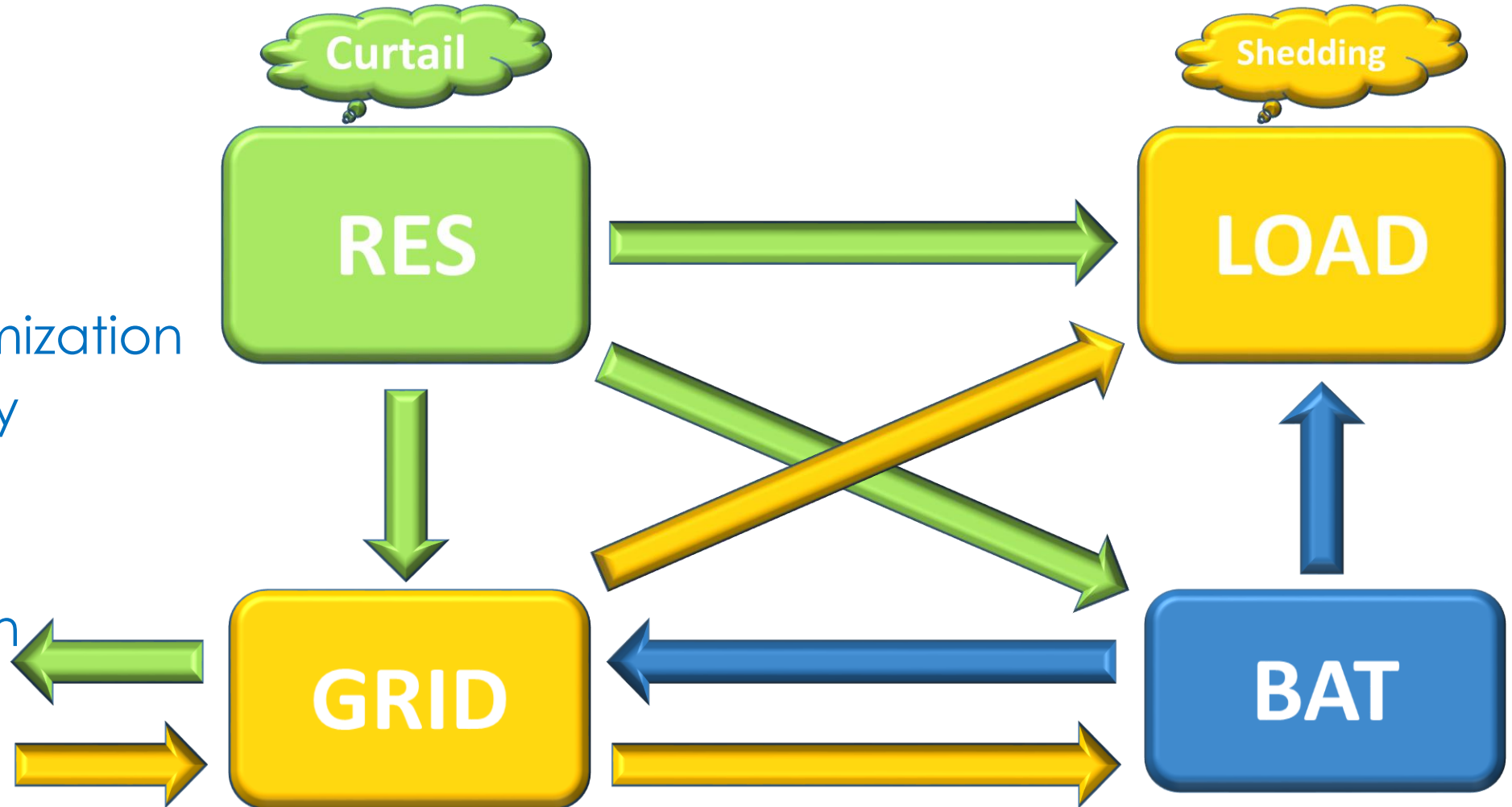
Simulation environment

Model

- Powerflows
- Constraints

Objective optimization

- Self sufficiency
- Peak shaving
- Cost
- CO₂-reduction





Current PCT load & RES coverage



6,7 MW_{pk}
40 GWh



10 MW PV
7*3 MW WT
=> 60 GWh RES





Current PCT load coverage

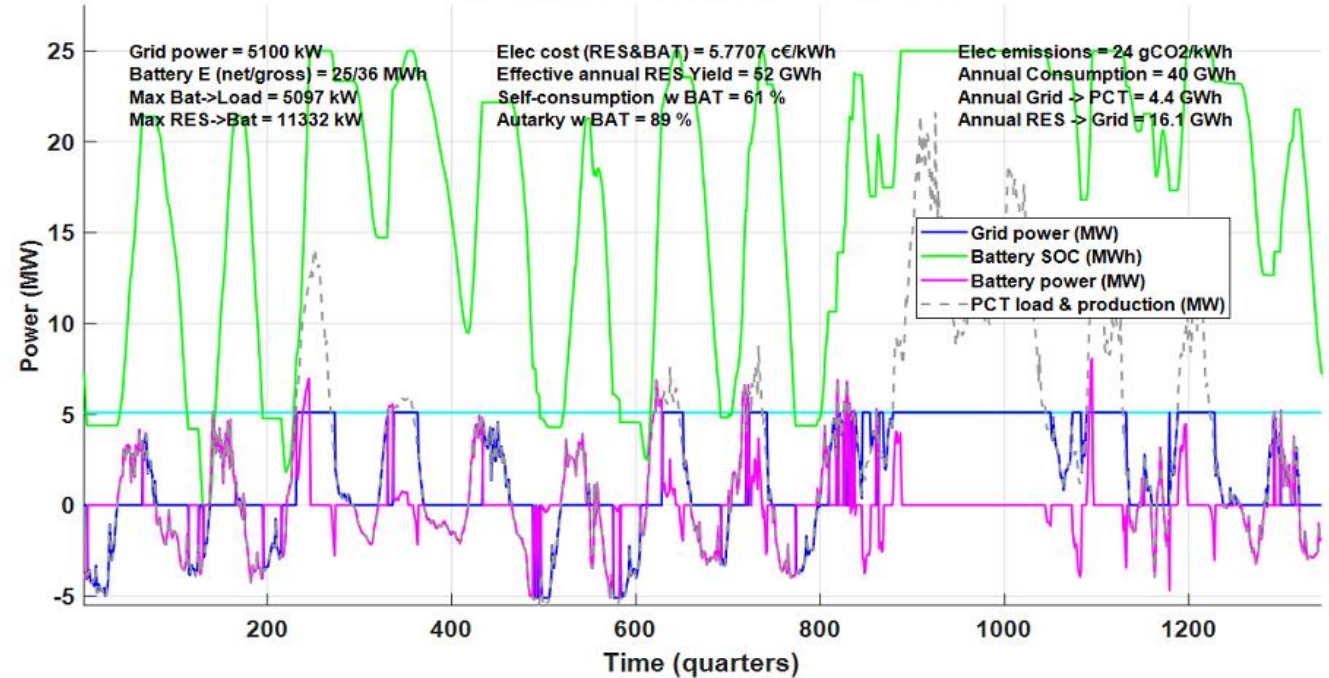


25 MWh E-storage

12 MW Power

5,1 MW grid

SOC, Battery and Grid power - week 21-23



90 % self-sufficiency / 60 % SC

4 GWh Im / 16 GWh Ex

< 60 €/MWh





Current PCT load coverage



60 ktonnes CO₂
per year



~ 320 rail cars of coal

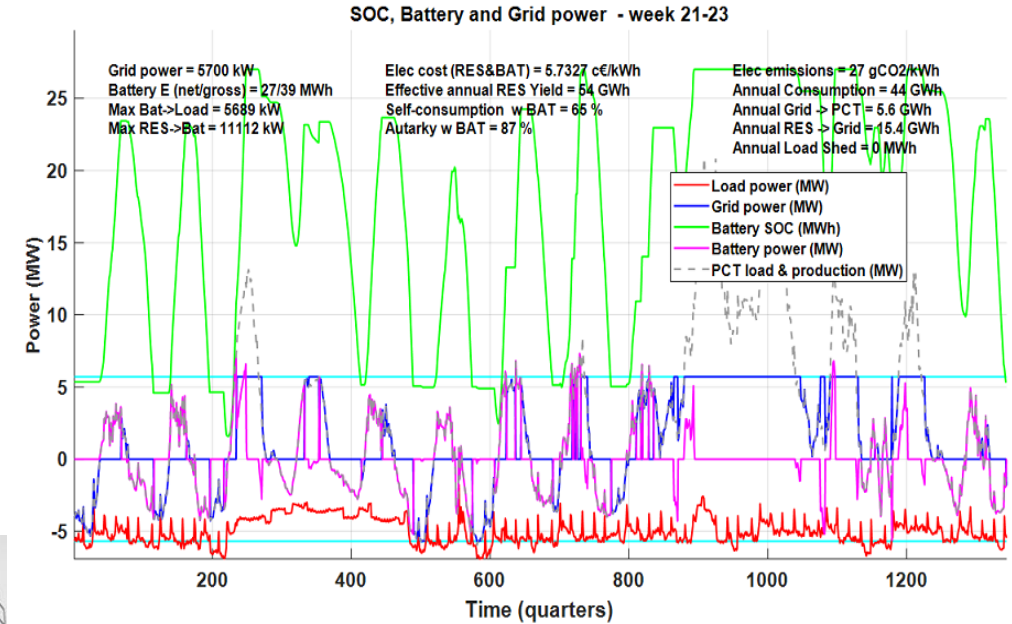




Electric Yard Vehicles



- 140 DV
- Stop&Go
- Low speeds



- 3,5 GWh EV
- 50 % less curtail
- 25 % load-match
- 25 % Import
- 5,7 MW grid



87 % self-sufficiency / 65 % SC
 6 GWh Im / 15 GWh Ex
 < 60 €/MWh



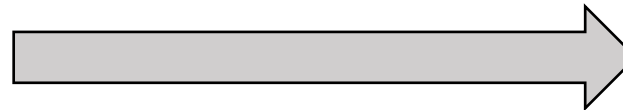
Electric Yard Vehicles



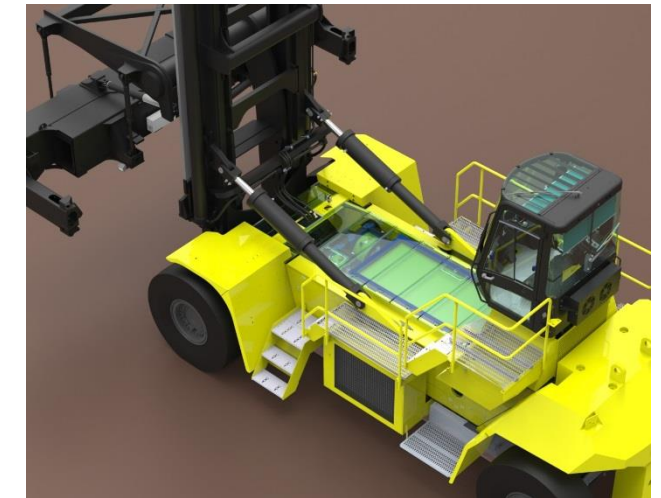
7(+2) ktonnes CO₂
per year



2,5 million liter
diesel/year



ROI: 4 years

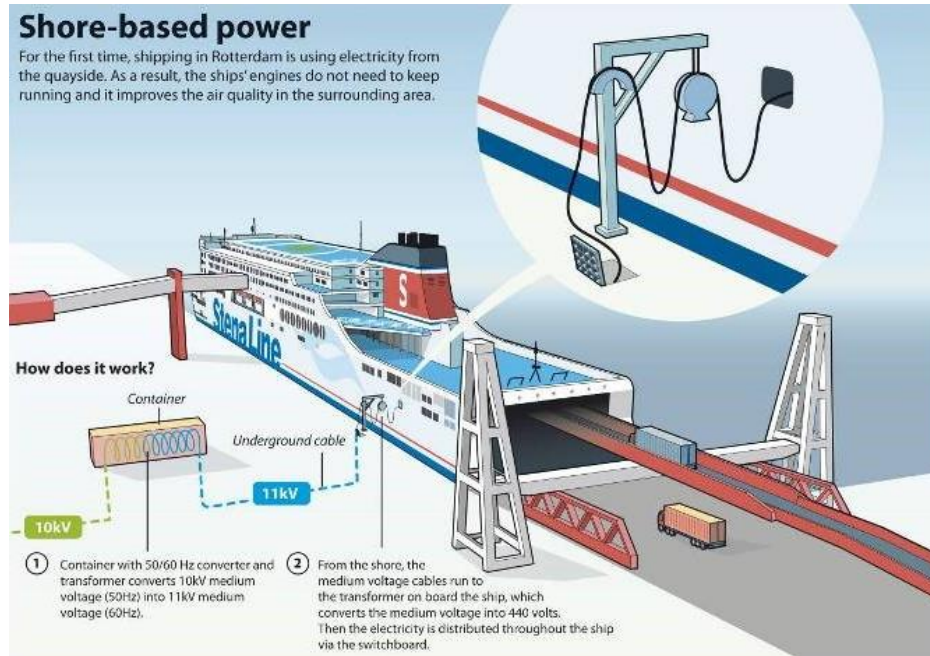




Onshore Power Supply

Shore-based power

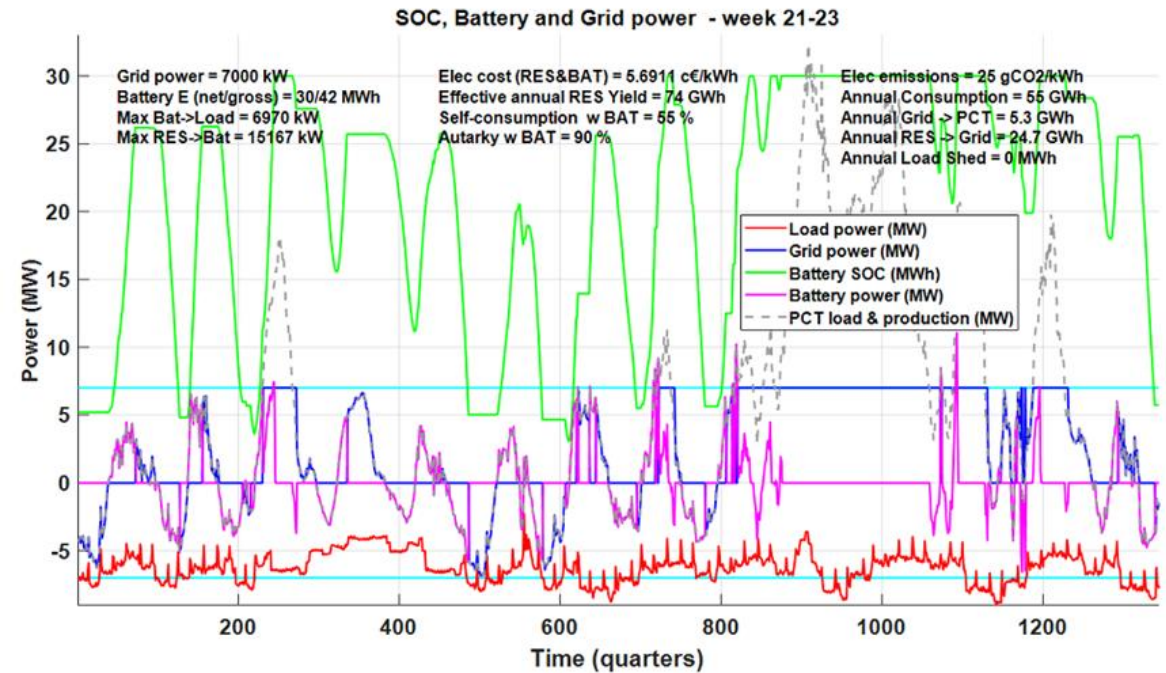
For the first time, shipping in Rotterdam is using electricity from the quayside. As a result, the ships' engines do not need to keep running and it improves the air quality in the surrounding area.



How does it work?

- 1 Container with 50/60 Hz converter and transformer converts 10kV medium voltage (50Hz) into 11kV medium voltage (60Hz).
- 2 From the shore, the medium voltage cables run to the transformer on board the ship, which converts the medium voltage into 440 volts. Then the electricity is distributed throughout the ship via the switchboard.

90 % self-sufficiency / 55 % SC 5 GWh Im / 25 GWh Ex



11 GWh OPS

- 5 extra WT & 7 MW grid
- 90 GWh RES => 18 % Curtail





Summary



1 500 ktonnes CO₂
over 15 years

- Cranes & Reefers
- EV
- OPS
- 20 GWh net export
- ~ 8300 coal cars





-  www.corealis.eu
-  [corealis_eu](https://twitter.com/corealis_eu)
-  [COREALIS EU Project](https://www.youtube.com/COREALIS_EU_Project)
-  [Corealis_eu](https://www.linkedin.com/company/corealis_eu)
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THANK YOU FOR YOUR ATTENTION



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