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The Transformation Path to Sustainability
“The case of Heraklion Port”



Introduction



MUNICIPALITY OF HERAKLION



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GSTC Assessment : Examples of Good Practices



OPS

OPS: the process of providing shoreside electrical power to a ship at berth while it's main and auxiliary engines are turned off.



How can OPS help shipping?

- **Contributing to air quality improvement, limiting gas emissions dramatically.**
- **Reducing noise pollution.**
- **Providing better onboard comfort while in port.**
- **Green profiling for ship owners and customers.**
- **Reducing lifecycle cost by reducing fuel consumption and maintenance cost.**

Main Themes of OPS

- **The potential emissions savings depend on the fuel and electricity generation technology mix of the power source.**
- **Shore power becomes economically attractive when bunker fuel costs are high relative to local, land-based, electricity prices.**

Heraklion Port Characteristics - Traffic



- **Multifunctional Port**
- **Connecting Crete with Piraeus & other islands.**
- **Port proximity to high dense urban areas.**
- **230 Cruise Calls / year.**
- **2 Ro-Pax / day to Piraeus, 1.2mn ferry passengers.**
- **Also Cargos & small a container Feeder.**

Vessel Emissions at Heraklion Port

	Fuel (tn/year)	CO2 (tn/year)	SOX (tn/year)	NOX (tn/yaer)	PM (tn/year)
Ferries	2370	7467	126	122	7.47
Cruise	2846	8967	151	147	8.97
Cargo	2693	5996	101	98	6.00
Total	7909	22430	378	367	22.44

General Electrical Arrangement



Power & Energy Demands



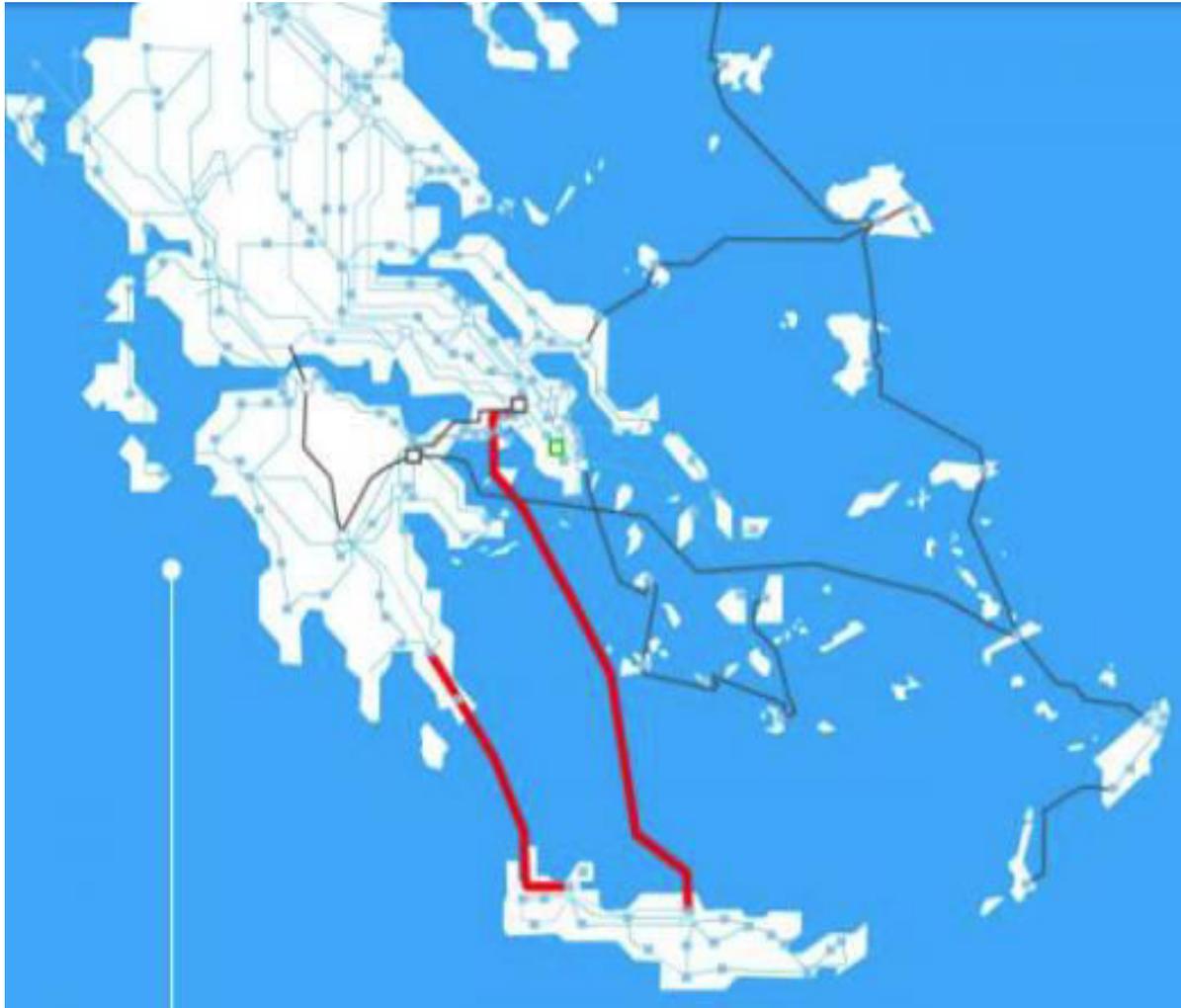
- Can cover loads up to 15MW from the local substation.
- Energy Demand :

	GWh / year
Cruise ships	9.9
Ro - Pax	12.65
Total	22.55

OPS Investment Costs

OPS Capital Cost :	20 mn €	
On Board Installation Cost :	0.5 mn € (Ferry Ships)	1mn € (Cruise Ships)

Energy mixture on the island of Crete



- Cable connection a prerequisite.
- **Energy Mixture in Crete :**

Type	2020 (%)	2024 (%)	2028 (%)
Renewable	23	34	58
Thermal Plants	77	12	3
From Mainland Greece	-	54	39

Comparison between OPS & Ship emissions

	Ship emissions 2020 CO2 (tn / year)	Using OPS 2024 CO2 (tn/year)	Using OPS 2028 CO2 (tn/year)
Ferries	7467	2940	1108
Cruise	8967	2322	875
Total	16434	5262	1983
Reduction (%)		67.98	87.93

Wave Energy





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Yes , We Can !!!



Thank You !!