PORT ENERGY OPERATIONS AND CLEAN POWER INVESTMENT ANALYSIS
ENERGY SUPPLY TO PORTS AND SHIPPING

October 2015

José Luis Almazán
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SHORE CONNECTION TECHNOLOGY
Several policies and strategies launched by the European Commission regarding maritime transport and energy efficiency are committing the Member States to achieve certain targets *(Europe 2020: A European Strategy for Smart, Sustainable and inclusive Growth)*.
BACKGROUND

EUROPE 2020
A European strategy for smart, sustainable and inclusive growth

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Trans-European Transport Network (TEN-T)
BACKGROUND

TARGETS:

- Government consumption restraint
- Energy consumption reduction
- Reduction of greenhouse gas emissions
- Promotion the contribution of renewable energy sources to electricity production
- Minimize energy dependency and increase security of energy supply
- Exemplary role of Public Sector
A deep analysis of **Sustainability Reports published by Spanish Port Authorities** shows a *limited control in energy consumption*, evidencing a potential for improving energy performance and, as a consequence, air quality, cost effectiveness and ports competitiveness.
State Ports has the commitment of promoting the use of clean technologies and good practices to reduce the environmental impact of ports activities. They encouraged the development of the "Guide for Energy Management in Ports" providing recommendations and best practices to improve the energy performance of the Spanish Port Authorities.
OBJECTIVES PURSUED

- **Reduction of energy costs**, monitoring the energy demand in all the facilities
- **Improvement of economic-administrative management**, optimizing the energy contract terms and conditions, or implementing and energy management system
- Energy efficiency of **equipment’s and utilities**
- Use of **alternative energy resources**
Pollution in ports

- Emissions from ships, land transport, logistics and industrial machinery

- EU-limit values for air pollutants frequently exceeded especially in port cities

- Ships:
  - fuel up to 3500 times dirtier than road fuels
  - Less regulated than land based sources
ENERGY AND POLLUTION IN PORTS

- Sulfur Oxides (SOx)
- Nitrogen Oxides (NOx)
- Particulate Matter (PM)
- Black Carbon (BC)
ENERGY SUPPLY IN SHIPPING

LNG AS AN ALTERNATIVE

1. Removable Container to Ship (RCS)
2. Truck to Ship (TTS)
3. Ship to Ship (STS)
4. Terminal to Ship via Pipeline (TPS)

In port
Open Seas: Sailing or Moored/anchored

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Alternatives for LNG supply to vessels

1. RCS
2. TTS
3. STS transfer
4. TPS

Alternatives for LNG supply to vessels include:

1. RCS
2. TTS
3. STS transfer
4. TPS

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Electrical shore connection of ships at berth
Electrification of cranes: E-RTG
LED Lighting technology
ENERGY AND POLLUTION REDUCTION

Sustainable Tyres

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Various technologies are available to quickly and drastically reduce air pollution in ports.

Electrification of equipments is a major trend to provide direct air quality improvement and fuel savings.
Shore connection systems have been used since the 1980s to supply commercial vessels with electricity. Ferries were the first vessels to be equipped with the systems, due to the fact that they always dock in the same position, facilitating connection to a shore-side energy supply.

Today, other types of commercial ships — cruise, container, and Ro-Ro — are connecting to the electrical grid in ports around the world.
Complete onboard system including HV Shore Connection panel and cable drum.
SHORE CONECTION TECHNOLOGY

This technology provides a number of benefits, including:

- Eliminating ship engine emissions in the port area
- Eliminating noise and vibrations
- Improving working conditions in ports
- Facilitating maintenance and repairs on auxiliary engines while not in operation
- Reducing each pollutant by about 90% and GHG emissions by about 50% depending on the electricity mix.
- Exemption from MARPOL VI requirements
- Generating savings, as onshore electricity may be less costly than engine generator use.
The power supply must be suitable for a variety of vessels at berth

Source: Schneider Electric
Thank you for your attention

Prof. José Luis Almazán Gárate
Port Engineering Professor at the Polytechnic University of Madrid (UPM)
Head of Port & Maritime Engineering Research Group (UPM)
www.gipuertos.es
almazan@ono.es

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