Reducing emissions from a cruise port – creating an LNG Cruise Port Hub

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BIOGRAPHY

Jordi Vila is biologist and Master in Engineering and Environmental Management, with over 25 years professionally engaged in the environment sector; he has held positions of environmental management and corporate social responsibility in different organizations.

He was Director of Sustainability and CSR in a leading real estate and hotel sector in Spain, dedicated to the development and operation of residential resorts with hotel and sports infrastructure. Member of the Steering Committee and reporting to the Director General, he has been responsible for environmental planning, sustainable design and energy efficient exploitation of resorts and hotels.

He has deep knowledge of port management and port environmental management. He was Director of the Environmental Department of the Port Authority of Barcelona, from 1995 to 2004, and resumed from 2012 to the nowadays. Their functions range from the field of sustainability to control air quality, port water quality, and the control of many others activities carried out in the harbor. Port has represented numerous conferences, seminars and job fairs . During this period he represented the Port Authority of Barcelona in many conferences and events. He has taught at the University of Barcelona and the Polytechnic University of Catalonia offering courses on port management and environmental sustainability. He has been the Spanish State representative in the Environmental Protection Committee of the International Maritime Organization. He has participated in working groups of PIANC, Association Villes et Ports and ESPO, among others. He was one of the founding members of the European ports network, Ecoports, as representative of the Port of Barcelona.

He has been a strategic freelance consultant on environmental issues, whose projects include technical assistance to an organization in charge of managing a logistics park in environmental policy based on energy efficiency of logistics warehouses and implementation of improvements in fleet efficiency transport. He also has been responsible for the Environmental Area of an international consultant in infrastructures and logistics, with some strategic environmental assessments of infrastructure projects in South America.

He has also experience in local government. He served for 6 years as Head of Environmental Services in a town of more than 50,000 inhabitants.

1. INTRODUCTION

Cities are beginning to face up to the problem of air pollution and focus their policies on reducing emissions of polluting gases and particulate matter. In this new context, ports should also minimize emissions of gaseous pollutants and particles matter, particularly emissions from ships which are the most important in terms of quantity.

Currently, air quality has become the main concern of ports as evidenced by the ESPO questionnaire that regularly is responded by European ports.

2. BARCELONA CRUISE PORT

In 2016, cruises made more than 750 calls in Barcelona. These stopovers accounted for more than 2.6 million cruisers.

A total of 121 cruise ships (on more than 750 calls) visited Barcelona. 50 of those were small size (up to 1,000 people without crew), 61 vessels were medium size (between 1,000 and 4,000 people of capacity without crew), and 10 were mega-cruises (more than 4,000 people without crew).

90% of the cruise ships which visit the Port of Barcelona are diesel-electric, making them more efficient than most vessels using direct-drive diesel engines. Most of these cruise ships are also new, built after 2011, guaranteeing they produce between 15% and 20% fewer emissions than ships built before the year 2000, the average age of the global cruise.

3. EMISSIONS OF THE PORT ACTIVITY IN BARCELONA

Each year, cruise ships emit about 700 Tons of NOx and about 60 Tons of PM10; therefore they are responsible for 12% of the amount of emissions of port activity in Barcelona.

The average emissions per hour and passenger during their call in Barcelona are:

33.65 g NOx / hour and passenger
29.80 g SOx / hour and passenger
3.1 g PM10 / hour and passenger

4. CONTRIBUTION TO AIR QUALITY OF THE CITY

Cruise ships have a low incidence of air pollution in the city: cruise emissions account for 1.2% of the air pollution of Barcelona by NOx and 0.23% of PM10 levels.

5. THE COMMITMENT OF THE PORT OF BARCELONA

The port of Barcelona works hard to respond to the increasing pressure to reduce emissions from port activity through its Port of Barcelona Emission Improvement Plan, approved in July 2016.

The port of Barcelona works to reduce the emissions of cruise ships in port by developing actions in three points:

- Promote that new ships adopt natural gas as a fuel for propulsion and electricity generation on board, by developing infrastructures for the supply of LNG to ships, carrying out pilot projects for the mobility of ships with natural gas and developing regulations for the bunkering activities of LNG.
- Promote the electrification of certain docks so that the ships can connect during the stay in port so as not to use the auxiliary engines. This strategy is tough because the power demand of the auxiliary engines of the cruise ships is so high that the costs of the connection of electricity from the city network are very expensive.
- Reduce port fees from cruise ships that show excellent environmental performance, above what is required by the regulations.