Atlantic Stakeholders Platform Conference

Porto, 20th January, 2015

Puerto de Vigo

Autoridad Portuaria de Vigo

BEST PRACTICES IN THE SUSTAINABLE DEVELOPMENT OF THE PORTS

Environmental Actions

Port of Vigo: Green Port

Certifications

Puerto de Vigo
Autoridad Portuaria de Vigo

The Port Authority of Vigo has implemented and certified the following systems of management support, keeping in this way a solid commitment to the sustainability.

Lloyd's Register LRQA

CERTIFICADO DE APROBACIÓN

Certificamos que el Sistema de Gestión Medioambiental de:

AUTORIDAD PORTUARIA DE VIGO
Plaza de la Estrella, 1
36201 Vigo, Pontevedra
España

ha sido aprobado por Lloyd's Register Quality Assurance, de acuerdo con la siguiente Norma del Sistema de Gestión Medioambiental:

UNE EN ISO 14001:2004

El Sistema de Gestión Medioambiental es aplicable a:

La gestión directa de los servicios portuarios: el servicio de ordenación, coordinación y control de tráfico portuario, tanto marítimo como terrestre; los servicios de señalización y balizamiento marítimos; los servicios de vigilancia, seguridad y policía en las zonas comunes; el servicio de alumbrado en las zonas comunes; el servicio de limpieza en las zonas de tierra y agua; los servicios de prevención y control de la emergencia, y la gestión de la ejecución de las obras en el ámbito portuario. La gestión de uso del dominio público portuario: concesiones y autorizaciones. La gestión directa de los servicios portuarios básicos: practicaje, técnico-nauticos, servicio al pasaje, servicios de manipulación y transporte de mercancías y servicio MARPOL.

Este certificado es válido sólo cuando va acompañado del anexo al certificado con el mismo número, en el que se detallan las delegaciones a las que se aplica esta aprobación.

Aprobación
Certificado No: SGI 6019847/22

Aprobación Original: 03 de Abril 2014
Certificado en Vigor: 04 de Julio 2014
Caducidad del Certificado: 03 de Julio 2017

Emitido por: LRQA España, S.L.

ENAC
CERTIFICACIÓN
Nº 8/C-MA037

C/ Princesa, 29 – 1º - 28008 Madrid, España

EMAS

CERTIFICADO DE INSCRICIÓN NO REXISTRO
CERTIFICADO DE INSCRIPCIÓN EN EL REGISTRO

AUTORIDAD PORTUARIA DE VIGO

PLAZA DE LA ESTRELLA, 1 36201 VIGO

ES-GA-000303

XESTIÓN DO DOMINIO PÚBLICO PORTUARIO*
GESTIÓN DEL DOMINIO PÚBLICO PORTUARIO*

Santiago de Compostela, a 2 de diciembre de 2010.

Data de rexistro: 06/10/2010
Fecha de registro: 06/10/2010

O secretario Xeral
El secretario General

Lloyd's Register LRQA

CERTIFICADO DE APROBACIÓN

Certificamos que el Sistema de Gestión de Calidad de:

AUTORIDAD PORTUARIA DE VIGO
Departamento de Explotación Pesquera y Medio Amiente
Edificio Virgen del Carmen – Puerto Pesquero de Vigo, 1
36202 Vigo, Pontevedra
España

ha sido aprobado por Lloyd's Register Quality Assurance de acuerdo con la siguiente Norma de Sistema de Gestión de Calidad:

UNE EN ISO 9001:2008

El Sistema de Gestión de Calidad es aplicable a:

Los servicios de autorización de atraque de buques pesqueros y la vigilancia y coordinación de las operaciones de descarga, estiba, subasta, venta y carga en camiones de pescado fresco, desarrolladas en las instalaciones de la lonja de altura, grandes peces y bajura y lonja de mariscos del Puerto Pesquero de Vigo.

Aprobación
Certificado No: SGI 6019847/21

Aprobación Original: 03 de Abril 2014
Certificado en Vigor: 04 de Julio 2014
Caducidad del Certificado: 03 de Julio 2017

Emitido por: LRQA España, S.L.

ENAC
CERTIFICACIÓN
Nº 17/C-SC049

C/ Princesa, 29 – 1º - 28008 Madrid, España

Lloyd's Register LRQA

CERTIFICATE OF APPROVAL

This is to certify that the Occupational Health & Safety Management System of:

AUTORIDAD PORTUARIA DE VIGO
Plaza de la Estrella, 1
36201 Vigo, Pontevedra
Spain

has been approved by Lloyd's Register Quality Assurance to the following Occupational Health & Safety Management System standard:

OHSAS 18001:2007

The Occupational Health & Safety Management System is applicable to:

The direct management of harbour services: harbour planning, harbour traffic control and coordination, both maritime and terrestrial; maritime beacon systems and signalling services, surveillance services, police and security in the shared facilities; lighting services for the communal areas; the cleaning services for both the water and land areas; the contingency and emergency control services, as well as the management to carry out construction works at a harbours scope.The administration of use of the port service area: concessions and authorizations. The direct management of basic harbour services: pilotage, technical-nautical, services to the passage, services of manipulation and transport of goods and MARPOL services.

Approval
Certificate No: SGI 6019847/23

Original Approval: 03 April 2014
Current Certificate: 04 July 2014
Certificate Expiry: 03 July 2017

Issued by: LRQA España, S.L.

ENAC
CERTIFICACIÓN
Nº 17/C-SC050

C/ Princesa, 29 – 1º - 28008 Madrid, España

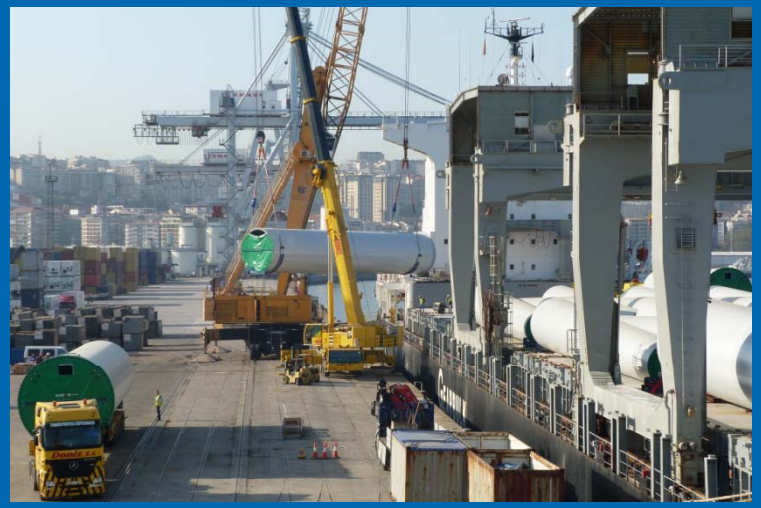
Environmental Statement and Sustainability Report

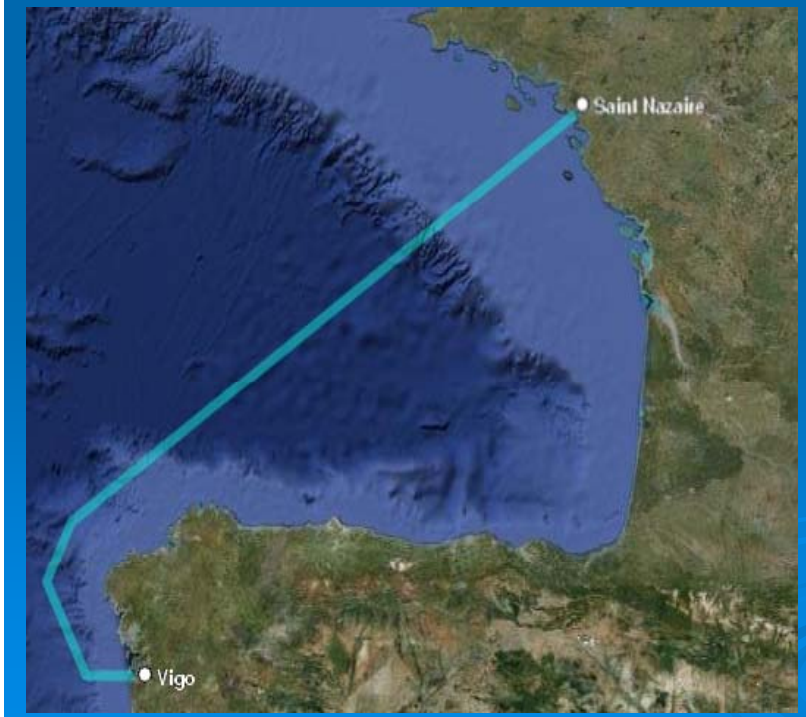
The Port Authority of Vigo has registered in the **WPCI "World Ports Climate Initiative"** the most representative association of Ports worldwide regarding the climate change and the reduction of the release of green house effect gases.

Clean Traffic

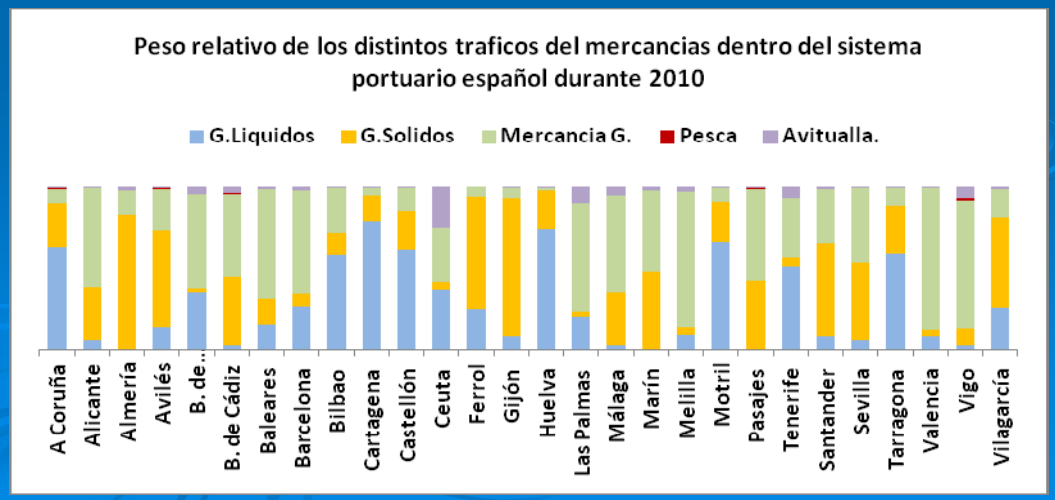
Puerto de Vigo
Autoridad Portuaria de Vigo

The importance of the Port of Vigo lies, more than in the gross amount of cargo transported, in its quality and economic value, most of which corresponds to general goods (90%), but also bulk (8% solid and 2% liquid), which shows the commitment of the Port Authority to promote the "clean traffic" (vehicles, granite, containers) that have a lesser impact to the environment compared to bulk cargo.





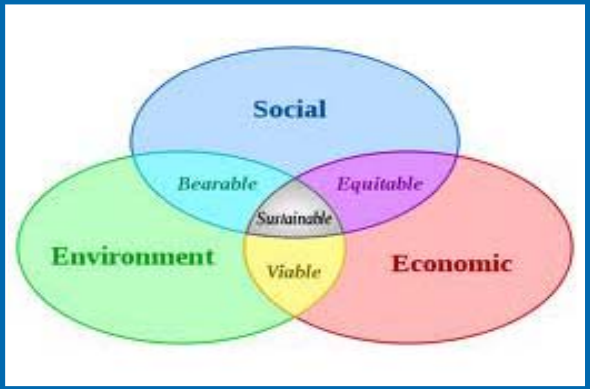
The port has developed the strategy of promoting the sea transport of short distance or "Short Sea Shipping".



What is a Green Port?

Puerto de Vigo
Autoridad Portuaria de Vigo

Green Port: is that which developes its activity considering not only to the economical scope but also the environmental and social scopes, or in other words, in a sustainable way:



Developes its activity causing the minimum possible impact, contributing with improving measures and control measures for the quality of the air, water, noise and waste.

At the same time, a Green Port is that which is able to provide power supply to the ships onshore(OPS), is provided with facilities for renewable energies and measures for the efficiency of the use of energy.

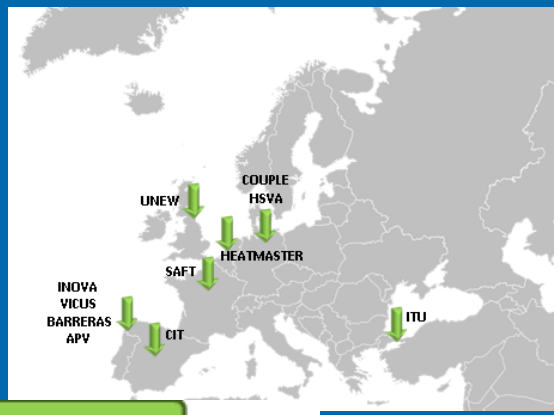
Improvements in the quality of the air

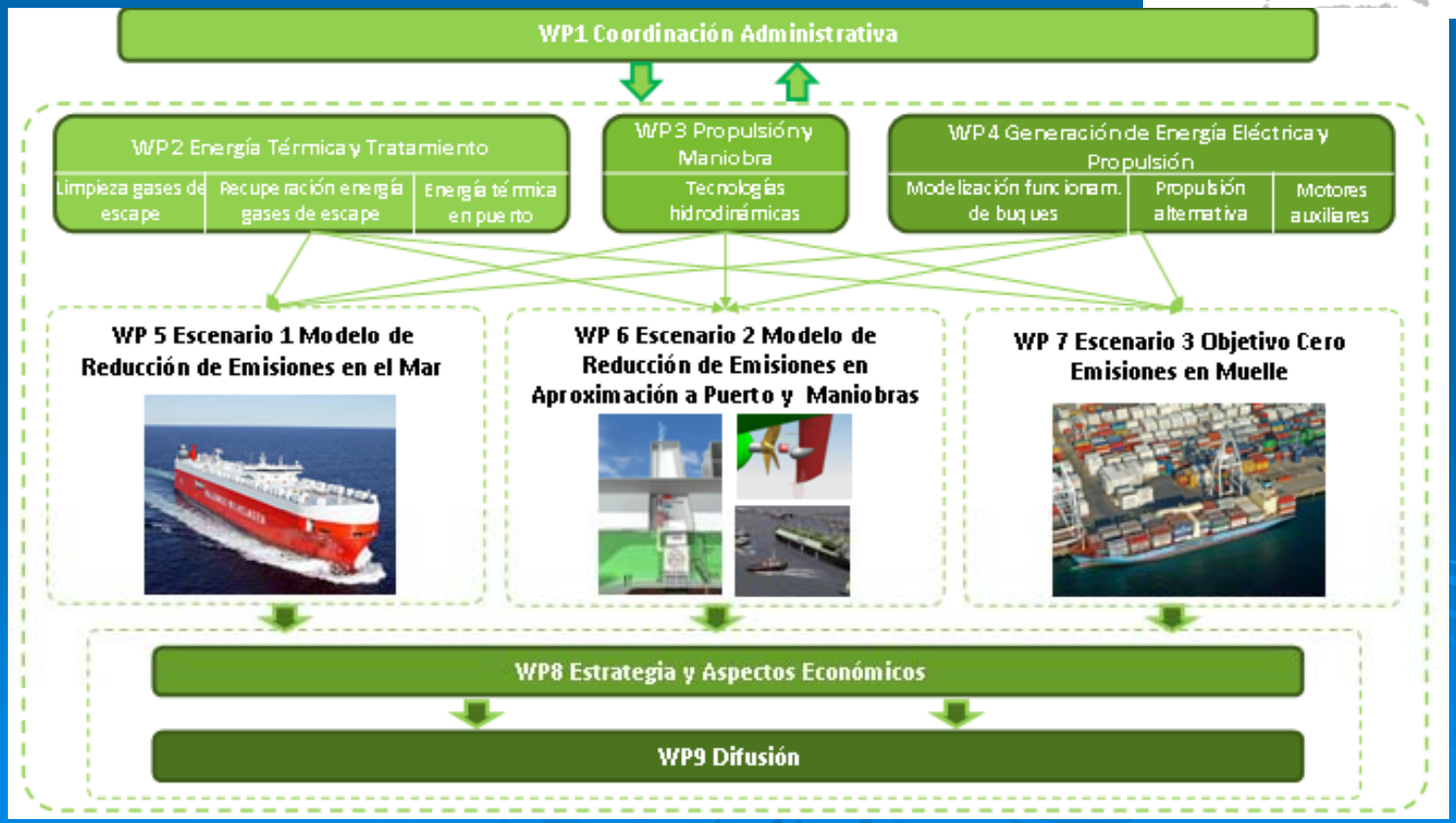
Puerto de Vigo
Autoridad Portuaria de Vigo

Project TEFLES

TEFLES
TECHNOLOGIES AND SCENARIOS FOR LOW EMISSIONS SHIPPING

Goal: to develop technologies and models to reduce de emissions caused by ships in three scenarios: sea, Port approach point and maneuvering and Port stay.





Improvements in the quality of the air

Puerto de Vigo
Autoridad Portuaria de Vigo

Project TEFLES

TEFLES
TECHNOLOGIES AND SCENARIOS FOR LOW EMISSIONS SHIPPING

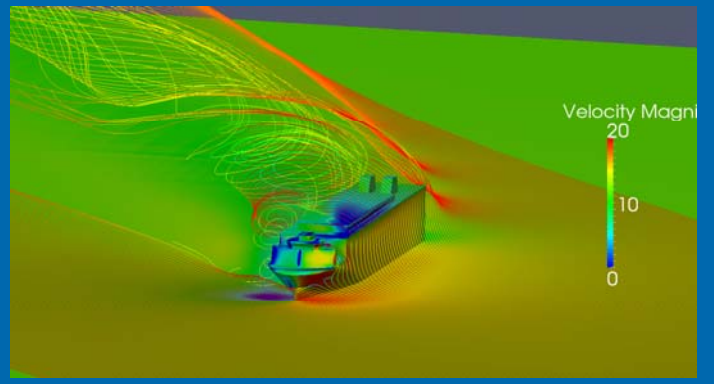
SHIP MAIN DATA	SHIP NAME
	SHIP TYPE
	OWNER
	CONSIGNEE
	Loa [m]
	Lpp [m]
	BEAM [m]
	MOST COMMON DRAFT [m]
	USUAL TRIM [m]
	DESIGN DRAFT [m]
	BULBOUS BOW (YES/NO)
	RUDDER TYPE
	RUDDER MAIN DIMENSIONS[CHORD/HEIGHT/THICKNESS) [m]
	DEAD WEIGHT [t]
	GT (nominal)
	DISPLACEMENT AT DESIGN DRAFT [t]
	DISPLACEMENT AT USUAL DRAFT [t]
	ICE CLASS (yes/no), which one (1AS, 1A, 1B, 1C)
PROPULSION	MAIN ENGINE
	NUMBER
	POWER [KW]
	rpm
	ENGINE TYPE (4t/2t)
	PROPELLER NUMBER
	PROPELLER TYPE
	PROPELLER RPM
MAIN CONSUMERS	FWD TUNNEL THRUSTERS NUMBER
	TYPE
	POWER [kW]
	AFT TUNNEL THRUSTERS NUMBER
	TYPE
	POWER [kW]
	OTHER MAIN CONSUMERS (SW/FW pumps)
	TOTAL POWER [kW]
	OTHER MAIN CONSUMERS (AACC)
	TOTAL POWER [kW]
	OTHER MAIN CONSUMERS
	TOTAL POWER [kW]
AUXILIARY PLANT	TYPE
	VOLTAGE [V]
	FREQUENCY [Hz]
	NUMBER
	GENSETS RATING [kW]
	SHAFT GENERATOR (yes, no)
	IS SHAFT GENERATOR USED FOR TTs? (yes, no)

As part of the study, the ships are visited and the enquiries are filled in, as they will be used to the model designing.

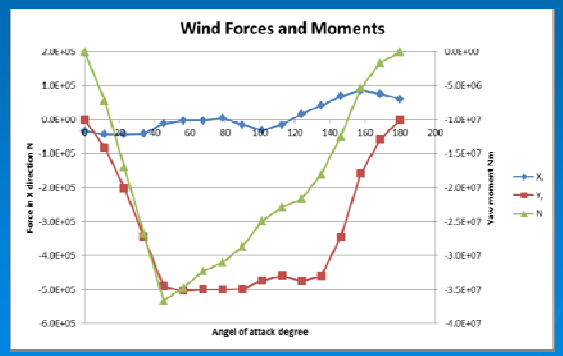
OPERATIONAL PROFILE	MAX SPEED [kn]
	SERVICE SPEED FOR THE ROUTE [kn]
	AVERAGE MAIN ENGINE POWER AT SEA [kW]
	NUMBER OF MAIN ENGINES ENGAGED
	PITCH SETTING FOR THAT SPEED [%]
	ROUTE DISTANCE [miles]
	TRIPS PER YEAR
	SAILING IN ECA/SECA AREA (yes/no)
	DAILY FUEL CONSUMPTION [t]
	l/mile
	AVERAGE AUXILIARY ENGINES POWER WHEN MANOEUVRING [kW]
	NUMBER OF AUXILIARY ENGINES ENGAGED IN MANOEUVRING
	AVERAGE POWER AT MANOEUVRING [kW]
	AVERAGE TT POWER [kW]
	AVERAGE SPEED AT MANOEUVRING [kn]
	MANOUEVRING TIME [h]
	TIME TT ARE ON [min]
	SHIP TUG REQUIRED (yes/no)
	TIME AT PORT [h]
	PORT OF ARRIVAL
	AVERAGE AUXILIARY ENGINES POWER AT PORT [kW]
	NUMBER OF AUXILIARY ENGINES ENGAGED AT PORT
	INTERVAL AMONG DRY DOCKS [years]
	LAST MAIN ENGINE OVERHAUL OR INTERVAL AMONG OVERHAULS
	FUEL TYPE
	CHANGING MGO AT PORT (yes/no)
EFFICIENCY MEASURES ON BOARD	SCR, FREQ. CONVERTERS ON PUMPS, SLOW STEAMING, WEATHER ROUTING, AFTER TREATMENT, HEAT RECOVERY, COLD IRONING, BATTERIES,ETC
	EMISSIONS MEASUREMENTS (yes/no)

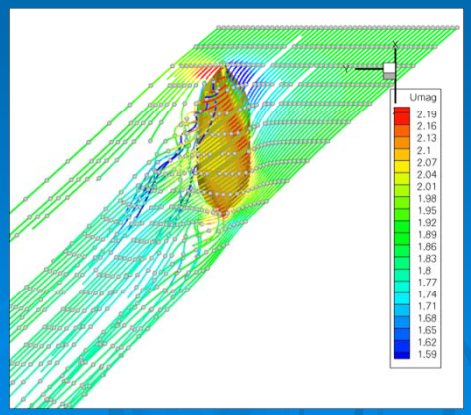
Manoeuvring model and technologies

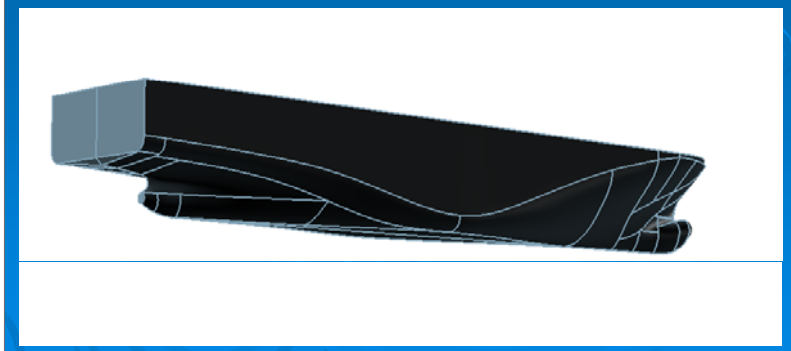
Structure of the Manoeuvring model



- Engine model
  - WAVE
- Ship resistance and propulsion
  - CFD viscous code (HSVA)
- Aerodynamic resistance
  - CFD viscous code/Blendermann catalogue (HSVA)







Technologies

AFTER TREATMENT AND THERMAL. All techs related to main engine, main consumers and exhaust gases techs

After treatment. Dry scrubbing+ Compact SCR

Heat recovery

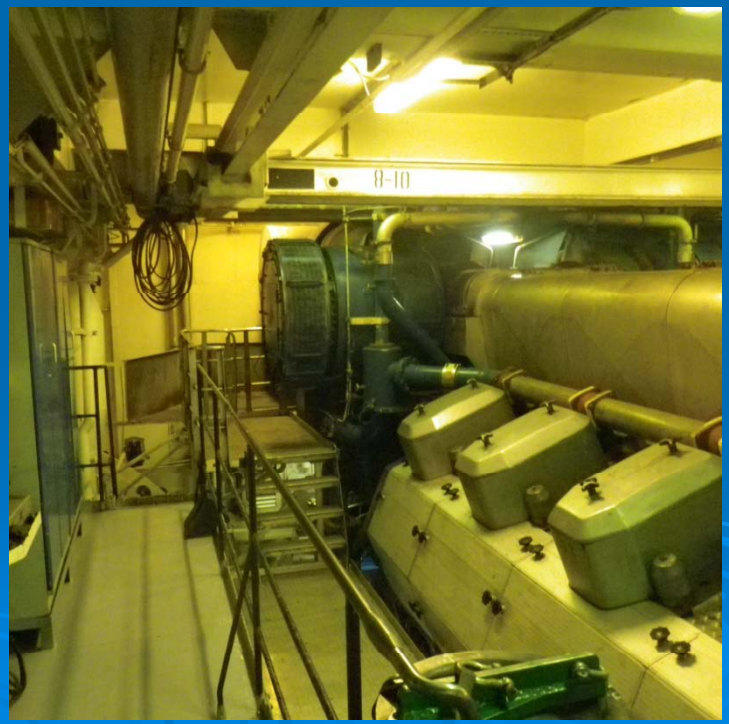
Engine tuning

Combinator mode

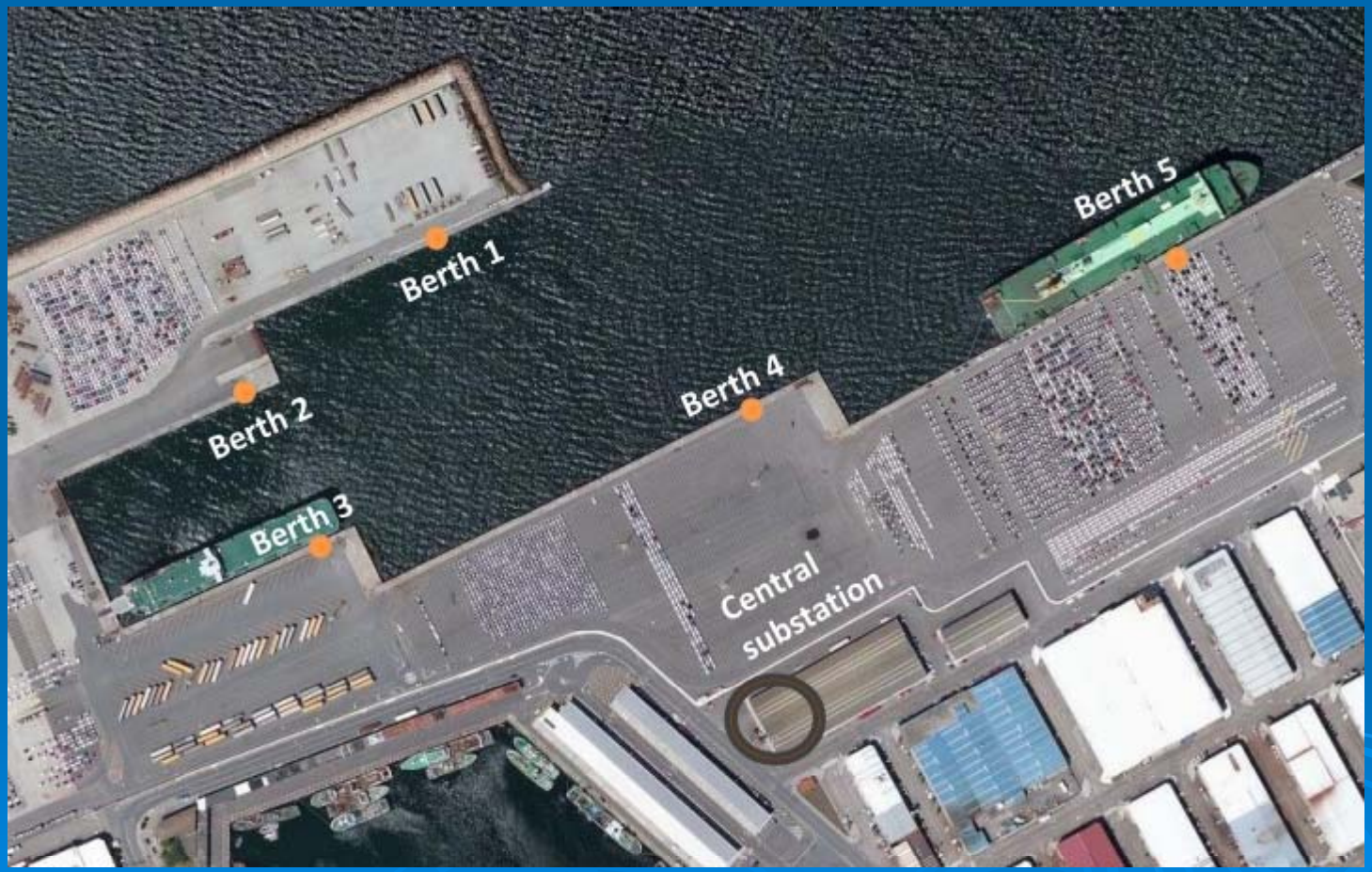
Speed reduction

Refrigeration system

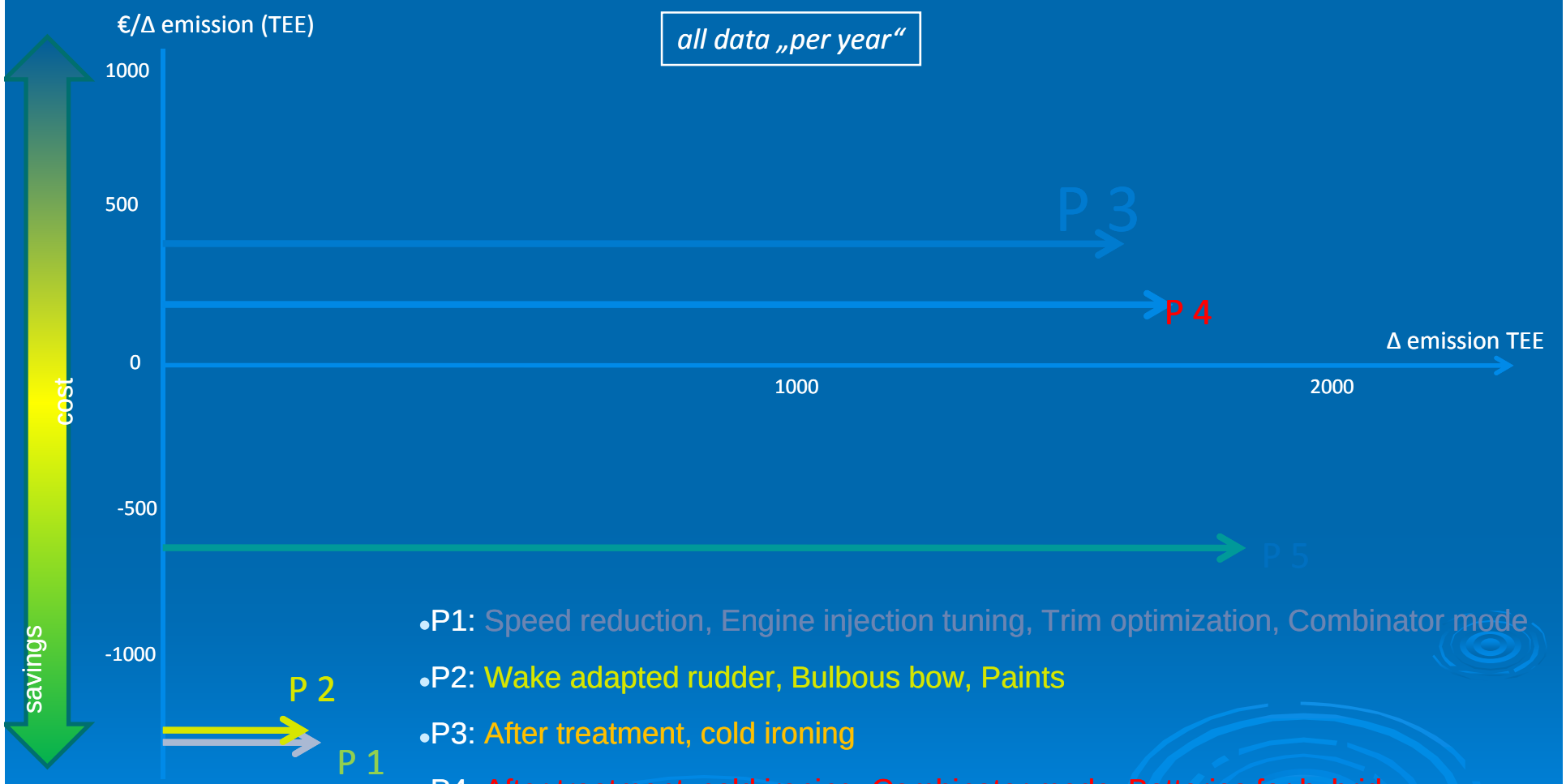
Other consumers



Technologies studied



Results

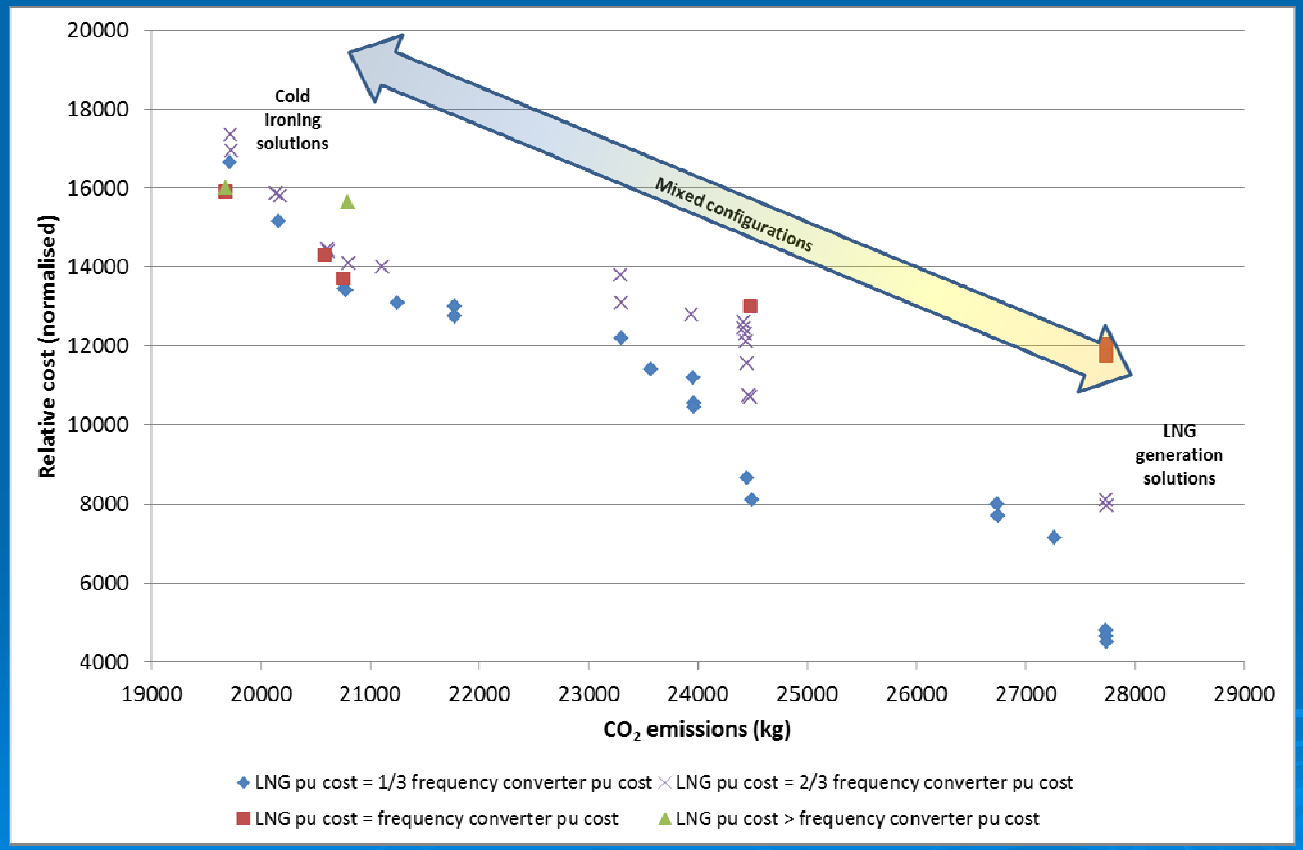


- P1: Speed reduction, Engine injection tuning, Trim optimization, Combinator mode
- P2: Wake adapted rudder, Bulbous bow, Paints
- P3: After treatment, cold ironing
- P4: After treatment, cold ironing, Combinator mode, Batteries for hybrid propulsion, Refrigeration
- P5: LNG fuel switch

Technologies studied

NB
RF

Cold ironing



Improvements in the quality of the air

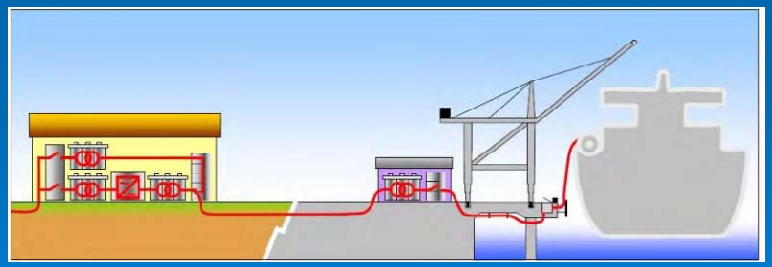
Puerto de Vigo
Autoridad Portuaria de Vigo

Project GPEC

GPEC
Green Port Energy Center

Goal: to develop a solution able to simultaneously achieves an important improvement regarding the efficiency of the energy and effectively reduces the emissions (NOx, SOx, CO2, PM y VOC) of the ships in the port, in such way that its implementation is both possible and viable, and most of all, in medium sized Ports and also medium-large. Three types of solutions are a priori considered:

1) Use of GNL Engines. Retrofitting.
It consist in modifications and adaptations made to the ships so that they are able to replace the motorization to use less polluting fuels such as Natural Gas.



2) On Shore Power Supply (OPS).
Power supply system for the ships in a set of points Located in the edge of the quay.

3) Off-Grid Shore Power (OGSP).
Independent energy generation system that allows to supply energy in the location where there is demand of it, in other words, In the specific area of the Port where the ship is to dock.

Future Plans

Puerto de Vigo
Autoridad Portuaria de Vigo

- To develop strategies that assist in the implementation of the usage of the Natural Liquid Gas in the Port.
- To expand the supply system to small and medium ships, the supply systems to cargo ships and maritime terminals.
- Complement the renewable energies in the Port with new systems: wind power, tidal power, etc.
- SMART-PORT

Thank you for your attention

Atlantic Stakeholders Platform Conference

Porto, 20th January, 2015

http://tefles.eu/

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Port of Vigo

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