



eco-REFITec



Project Technical Overview

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- **Project Acronym:** ECO-REFITEC
- **Project Name:** Eco innovative refitting technologies and processes for shipbuilding industry promoted by European Repair Shipyards.
- **Project Reference:** 266268
- **Call ID:** FP7-SST-2010-5.1.1
- **Start Date:** 2011-01-01
- **End Date:** 2013-12-31
- **Duration:** 36 months
- **Project Manager:** Francisco del Castillo, Fundación Centro Tecnológico Soermar, Madrid
- **Contract Type:** Small or medium-scale focused research project
- **Dedicated site web:** www.eco-refitec.eu

- **ECO-REFITEC is a collaborative R&D project funded under the European Commission's Seventh Framework Programme**
- **Intention is to improve the competitiveness of the European Repair shipyards and SME's involved in the refit, repair, and conversion of existing ships.**

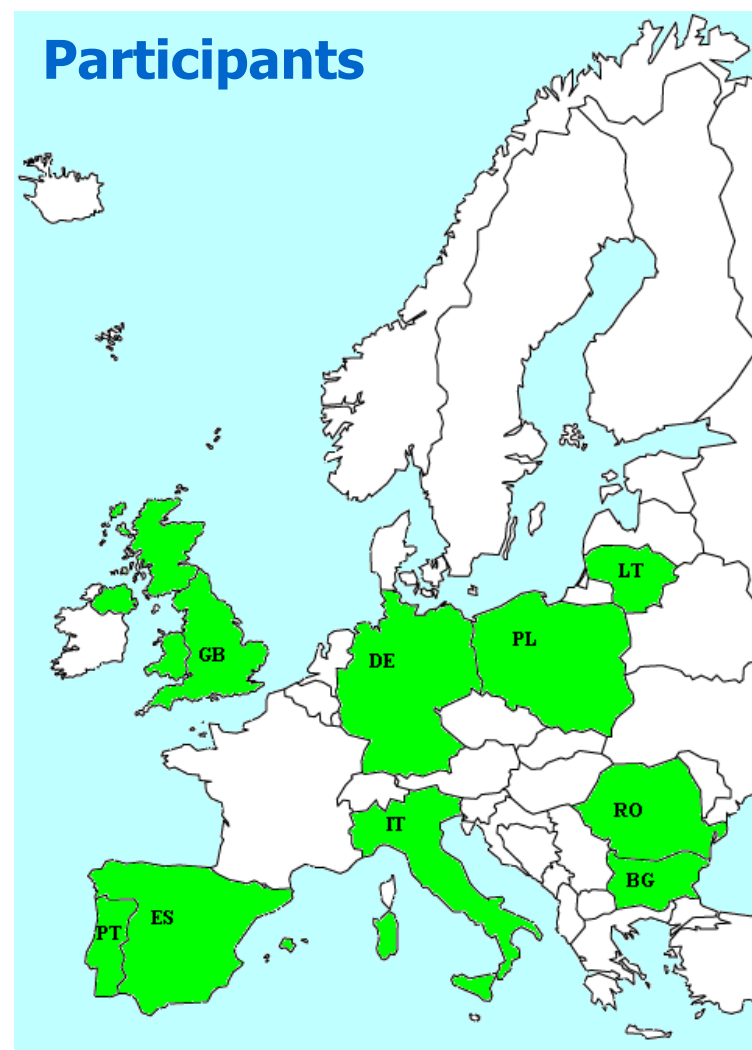
- Ship and off-shore construction repair and conversion activities in Europe conducted by more than 400 companies – smaller and bigger specialized repair shipyards.
- Major challenges due to recent IMO and EU legislation to prevent pollution from ships and shipyards.
- Retrofitting options and environmental upgrades of existing vessels are expected to form an increasingly significant component of additional work within shipyards
- To meet the needs of the shipping industry the ship-repair sector must be prepared to carry out a new range of environmental related enhancement work.
- Technological knowledge (eco-innovation processes) is already available in Europe (not only in the waterborne sector) - this can be used to make repair shipyards more competitive.

- Evaluate the introduction of environmentally friendly materials and processes in the repair and conversion and retrofit of ships.
- Support implementation of current and impending regulatory emission reduction measures in existing vessels
- Identify eco-innovation process opportunities demonstrated by **case studies** with life cycle analysis.
- Develop a life cycle view: including assessment of cost, safety, and environmental impact
- Emission assessment through IT tools utilized for emission estimation on the planning stage of particular ship repair, retrofit, and conversion

- Increase European competitiveness what regards to new emerging green technologies.
- To create new joint business opportunities for the ship-life maintenance and repair through improved cooperation and exchange of information
- Particular attention will be given to the role of SMEs in the innovation process: a specific objective is to develop a specialized package tools for enabling the involvement of SMEs in eco-innovation.
- Strengthen global competitiveness of European Ship Repair & Conversions Shipyards
- To raise the level of employment through creation of new skills - especially in the area of green technologies - and improvements in working conditions.

- Exploring/identifying/developing eco-retrofitting technologies and solutions for existing fleet to comply with some current and future IMO standards.
- Developing IT supported tools for retrofit impact evaluation on ship's life cycle economy; energy; environmental performance, and safety.
- Prototyping and validation of the innovative tools like LCA for ships and shipyards.
- Developing modelling tools to look at through-life asset management of systems on board through the life cycle of the ship.
- Identification of skills and technologies required to sustain the eco-innovative tools developed.
- Integrating environmental strategies and practices into the ship repair industry management systems.

Participants.		Country
SOERMAR	Fundación Centro Tecnológico SOERMAR	ES
CTO	Centrum Techniki Okretowej S.A. Ship Design and Research Centre S.A.	PL
CAES - UOC	Center for Advanced Engineering Sciences, Ovidius University of Constanza	RO
AES	Atlantec Enterprise Solutions GmbH	DE
SU	Strathclyde University	UK
VSTU	Varna Scientific and Technical Unions	BG
KU	Klaipeda University	LT
SSA	Ship & Shiprepaires Association	UK
ISQ	Instituto de Soldadura e Qualidade.	PT
ASTANDER	Astilleros de Santander	ES
ENP	Estaleiros Navais de Peniche	PT
CON SAR	Consorzio Armatori per la Ricerca S.r.l.	IT
SNC -SD	Constanta Shipyard	RO



- WP1. Shipyards opportunities and challenges regarding “greening” existing fleet
- WP2. Development of eco-innovation retrofitting practices and data base.
- WP3. Design tools for evaluation and management of eco-innovation retrofit processes and life-cycle analysis.
- WP4. Shipyard management of eco-innovative retrofitting process. Validation and implementation of eco retrofitting processes in small & medium size shipyards.
- WP5. Life cycle cost impact of “retrofitting” of existing vessels. Validation and implementation.
- WP6. Dissemination and exploitation of the project results.

■ WP 1

- Assessment of future repair and retrofitting tasks
- Analysis of current and pending European directives

■ WP 2

- Preparations and Data Collection for Value Analysis of eco-innovative processes, materials, and modules

■ WP 3

- Collection of relevant LCA parameters applicable to ship life cycle and shipyards processes
- Analysis of shipyard de-facto processes, and planning methods
- Collecting of requirements for improved planning and assessment tools

Meeting new requirements of environmental protection, resulting from tightening of the law, is a great challenge for the shipyards, because two kind of aspects are valid for the shipyard when the decision is to be taken:

- environmental considerations,
- business considerations.

The best solution for shipyards will be to find a balance between these two considerations and ECO-REFITEC is aiming to provide useful tools to help reach this goal.