

Istanbul  
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# Project MariEMS

(Maritime Energy Management System)

**Captain Zakirul Bhuiyan**  
On behalf of MariEMS partners



# Project Background

- Maritime Trade accounts for approximately 90% of trade in the world today
- In 2007 the global shipping industry estimated to have emitted 1,100 million tonnes of CO<sub>2</sub>, 3.5% of global emissions, and in 2012 this reached 972 million tonnes some 2.5% of world total. (Third IMO GHG Study 2014 – Final Report) The Industry has taken steps to reduce its Air Pollution and Carbon footprint
- IMO introduced several new regulations such as the Ship Energy Efficiency Management Plan (SEEMP), Energy Efficiency Design Index (EEDI), & Energy Efficiency Operational Index (EEOI), while the MARPOL new regulations has imposed strict emissions caps in emission control areas
- IMO developed the Training the Trainer (TTT) course for Energy Efficient Ship Operation – MariEMS courses are for the Cadets training and for updating the seafarers helping them to acquire a professional qualification for the new role emerging in ship energy management
- Training in these fields also needs to change to meet these new demands on seafarers

# Project Objectives

- Design the first international standardised job specification for the Maritime Energy Management Team/position, in line with the IMO TTT programme.
- Design and develop the first international training specifications and training programme for the Maritime Energy Management including learning materials based on IMO TTT.
- Design and develop a tailor made e-learning delivery platform for the new Maritime Energy Management training the trainees programme.
- To present the MariEMS job specification, training specification, training programme, and online delivery platform to International Regulators and awarding, accrediting and licensing bodies to secure international recognition and begin the process of setting the international standard for this new job and educational area.
- Design a training programme and delivery method that will result in seafarers and cadets becoming qualified to work as a member of the Ship/Port Energy Management team which will result in more energy efficient vessels and maritime industry as a whole thus helping the EU meet its 2020 energy emissions targets.

# Project Overview

- MariEMS is an industry-academia collaboration project funded by EU under the Erasmus+ programme. Grant total of EUR 293,972.00.
- Started in October 2015; Duration – 30 months
- The purpose of this Partnership is the development of an energy management job as well as a training specification, and the development and implementation of an online learning and assessment system for the new training programme so that current cadets, as well as existing seafarers, can up-skill themselves to the new regulatory requirements and good practice.
- MariEMS is taking the first steps to help support IMO and the EU achieving their stated emission targets through better management of energy on board vessels

# Project Partners

## 1. Southampton Solent University (SSU) – UK

[www.solent.ac.uk](http://www.solent.ac.uk)



As part of Southampton Solent University's Maritime and Technology Faculty, Warsash Maritime Academy (WMA) has provided first class education, training, consultancy and research services to the international shipping, commercial yacht, offshore oil and gas, and renewables industries for nearly 70 years. The university's maritime academy is the world's leading maritime education and training provider, delivering undergraduate, postgraduate and professional courses for the maritime industry.

## 2. Centre For Factories of the Future Ltd (C4FF) – UK

[www.c4ff.co.uk](http://www.c4ff.co.uk)



C4FF's maritime education division has had many years of experience in developing programmes based on the international standards for the education and training of merchant navy officers, whilst also operating in other areas of business expertise, including automation, hybrid vehicle design and artificial intelligence. C4FF is also a founder of the Marifuture platform: <http://www.marifuture.org/>

# Project Partners

## 3. Team srl [www.team.it](http://www.team.it)



Team Srl is a 40 years old small enterprise working as a consultancy company in the field of European projects, R&D, business and local development. Most of our clients are SMEs and they value the human contact and personalization of service that we use in our consultancy activity. The knowledge of the European Union and of the opportunities it offers in terms of relationships, exchanges, joint projects has often represented the starting point for our working relationships, but it also represents the cultural background for the definition of contents, methodologies, relationships of our daily work.

## 4. Bahcesehir University [www.bahcesehir.edu.tr](http://www.bahcesehir.edu.tr)



Bahcesehir University was established in 1998, as a foundation university by Bahcesehir Ugur Educational Institutions. Bahcesehir University pursues an ambitious plan to become one of the leading universities in the South-Eastern Europe and the MENA region with its strong academic staff, research and educational infrastructure at international level, education-abroad opportunities and modern infrastructure.

Bahcesehir University provides educational opportunities at a large scale ranging from certificate programs, undergraduate to postgraduate degree programs including both master's and doctoral degree programs within nine main faculties.

The University has also four Graduate Schools along with one Vocational School.

There is a cooperative education program at Bahcesehir University that is supported by business world. Moreover, university has career center and life-long learning centers for professionals.

# Project Partners

## 5. Polytechnic University of Catalonia

[www.upc.edu](http://www.upc.edu)



The Universitat Politècnica de Catalunya is a public institution dedicated to higher education and research, specialized in the fields of engineering, architecture and science. UPC puts its scientific and technological infrastructure at the service of research groups and centres, researchers and students, professionals, companies and institutions.

With a focus on intellectual rigor, critical thinking, a transversal approach to knowledge, educational innovation and entrepreneurship, UPC produces competent professionals with the skills they need to tackle present and future challenges.

## 6. Satakunta University of Applied Sciences

[www.samk.fi](http://www.samk.fi)



Satakunnan ammattikorkeakoulu (SAMK), in English Satakunta University of Applied Sciences, is one of the major institutions of higher education in Finland. Through the public non-profit status and responsibility for regional development set by The Ministry of Education, SAMK is conducting public interest collaboration between higher education institutions, research and development (RD) centers and business sector.

The Faculty of Logistics and Maritime Technology in SAMK has a reputation in technology and maritime studies and related research. It has started the development of a database of STCW questions and has special knowledge and experiences of producing questions in the network environment. As the biggest university of its region and one of the very few universities holding maritime education in the whole country, SAMK have comprehensive relations with Finnish maritime authorities, shipping companies and European universities in related fields and curricula.

# Project Partners

## 7. Spinaker (SPIN) - SI

[www.spinaker.si](http://www.spinaker.si)

SPIN is the largest maritime education company in Slovenia. They develop and deliver their own training programmes (including content) for all of their courses.



## 8. Makroshipping

[www.makroshipping.com](http://www.makroshipping.com)

Makro Shipping has been established in 1999 with headquarters in Istanbul, Turkey. The company is member of Turkish Chamber of Shipping. Both partners of the firm are assembly members in Turkish Chamber of Shipping with one of them also on the board of the Chamber of Shipping of Turkey.

Both partners are also board of trustee members at the Turkish Maritime Education Foundation; with also one of them being a board member at the Piri Reis Maritime University of Turkey.

On the other hand, beneficiary principal of the firm is a very well known shipowner who has been active in maritime industry since 1980 in Turkey whom owned and managed following vessels with one 155,000 DWT with a 30,000 DWT bulk carriers..





# Project Partners

## 9. Port of Rauma

[www.portofrauma.com](http://www.portofrauma.com)



The most important operations of the Port of Rauma Ltd include the construction and maintenance of the port infrastructure, renting of land and water areas, management of port traffic, authority duties as well as port safety and security arrangements. The duties of the Port of Rauma also include provision of the required transport routes to attract business investments to the economic area of Rauma.

In 2014, the Port of Rauma, the total traffic was a total of 5.52 million ton. It is noteworthy that in 2014 transported to the Port of Rauma through a record-breaking 278,000 container units (TEU), which represents a 7.4 percent increase compared to 2013. Container port traffic volume was highest ever, exceeding the previous record for the port in 2013 to about 19,000 container units.

# Project Outputs

- O1 - Maritime Energy Management Team Member/Leader Job Specification
- O2 - Training the Trainees Programme Specification
- O3 - Training the Trainees Programme Design
- O4 - Online Delivery Platform Specification
- O5 - Online Training the Trainees Manual
- O6 - Development of Online Delivery Platform
- O7 - Publications/Journal articles
- O8 - Accreditation of the MariEMS Course by an internationally recognised professional body
- O9 - Proposal document for IMLA/IAMU and IMO review and consideration

# MariEMS - Timetable of Activities

PROJECT TIMETABLE

Project activity*	MONTHS	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24	M25	M26	M27	M28	M29	M30	Post Funding Period		
		10/15		1/16		3/16		6/16		9/16		12/16		3/17		6/17		9/17		12/17		3/18												
M1 - UK (C4FF)		█																																
M2 - UK (SSU)								█																										
M3 - FL (SAMK)												█																						
M4 - SI																		█																
M5 - ES																									█									
M6 - Makro																																		
O1 - Job Specification		█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	
O2 - Training Programme Specification		█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	
O3 - Development of Training Programme		█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	
O4 - Online Delivery Platform Specification		█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	
O5 - Online Trainin Manual		█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	
O6 - Development of Online Delivery Platform		█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	
O7 - Publications/ Journal articles																																		
O8 - Accreditation document for professional body			█							█					█																			→
O9 - Proposal document for IMLA and IMO																																		→
E1 - Specification for Maritime Energy Managers																																		→
E2 - Training programme specification and Content																																		→
E3 - MariEMS Online Platform																																		→
E4 - MariEMS Programme and Online System																																		→
E5 - Final Conference																																		→
A1 - Internal Quarterly Repoting			█					█				█																						→
A2 - Interim Reprt																																		→
A3 - Project Website																																		→
A4 - Dissemination, Exploitation & Sustainability Plan																																		→

Please insert rows as needed

█ Black Indicates completed outputs/activities

# Exploitation and Dissemination

- A website was launched: [www.mariems.com](http://www.mariems.com)
- The project was promoted during the European Maritime Day (EMD) events on 16-20<sup>th</sup> May 2016
- Project presentation to International Shipping Conference at Turku June'16
- Project presentation to “Barcelona International Boatshow” on 12-16th October 2016
- IMarEST 2017. MariEMS’s UK Seminar and Lecture. The venue is Warwick University, 29th March 2017
- Presentation at EMSA on 09 March 2017
- A paper ‘Maritime Energy Management System (MariEMS) online delivery platform’ will be presented at IAMU 2017, Oct 11-14, Varna, Bulgaria
- Presented at Propeller's Club in Genoa
- Partners are planning to contact respective national administrations for presentations about the MariEMS project at IMO's HTW5/MEPC April 2018



MariEMS  
in  
'European  
Maritime  
Day'  
events on  
16-20th  
May 2016



Photos 1-4: Photo of the Maritime Affairs Commissioner, Komenu Vella with sample photos from key events of the EMD.

MariEMS  
in  
'European  
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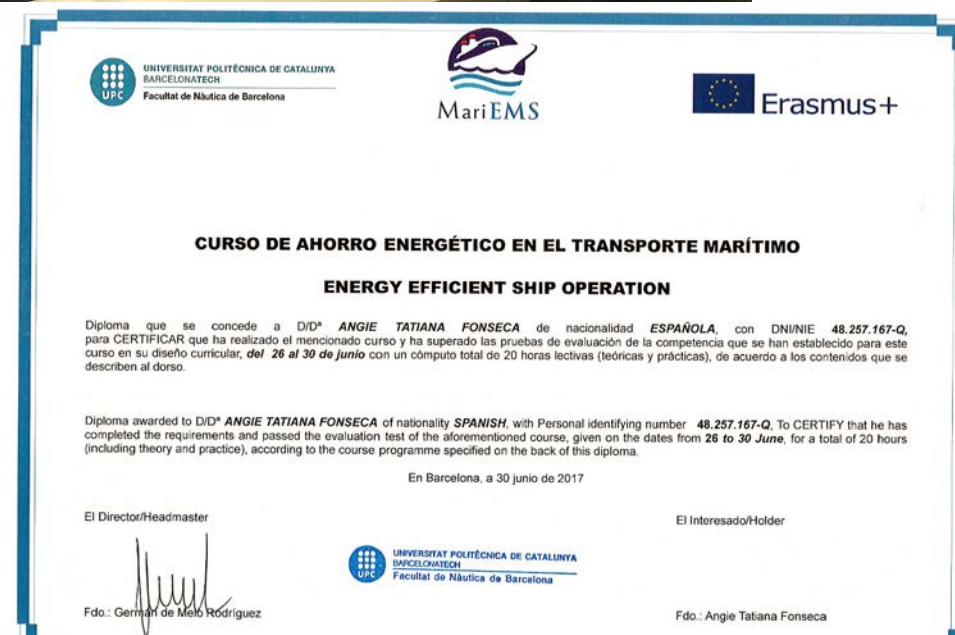


**Photo 5: Professor Ziarati and Mr Sauli Ahvenjarvi, Representative of City of Rauma and Satakunta University at the MariEMS stand at EMD exhibition hall**

MariEMS in  
“Barcelona  
International  
Boatshow”  
events on 12-  
16th October  
2016



MariEMS  
course in  
“Energy  
Efficient Ship  
Operation” in  
the Faculty of  
Nautical  
Studies of  
Barcelona on  
26-30th June  
2017







Erasmus+



MariEMS

The first partners meeting took place on the 12th and 13th November 2015 at C4FF in Kenilworth UK. Photos 1 and 2 showing the partners meeting to kick start the MariEMS Project





Erasmus+

**Second partners meeting took place on the 21st and 22nd April 2016 at the project leader's premises of SSU Conference Centre in Southampton, UK**





Erasmus+



MariEMS



**Third partners  
meeting was held  
at Port of Rauma  
on 8-9 September  
2016**



**Fourth partners meeting  
was held at Kobarid,  
Slovenia  
8-9 Feb 2016**



# Fifth partners meeting was held at Barcelona, Spain 14-15th September 2017





Erasmus+

# Multiplier Event at Port of Rauma on 09th Sept 2016





Erasmus+

# Multiplier Event at Faculty of Nautical studies of Barcelona-Polytechnic University of Catalonia on 15th Sept 2017



## Presentation at Propeller's Club in Genoa on 08 March 2018





# Progress So far....

- ✓ Job Specification of the future Energy Management Team Leader/Member – Final Draft
- ✓ Trainee Programme for Cadets – 30+30 Hrs Nominal – Final Draft
- ✓ Up-dating Training Programme for Seafarers – 3/5 Days – Final Draft
- ✓ Draft MariEMS Chapters – Final draft of 14 Chapters based on IMO TTT course
- ✓ Summaries and Quizzes for all chapters being finalised
- ✓ Draft Competence-based MariEMs Course including all Learning Outcomes and Assessment Criteria
- ✓ Full compliance with EU ECVET/ECTS requirements.

# How to access the Summaries of Chapters and Training Manual....

## ✓ The Summaries of Chapters

✓ URL: <http://mariems.com/moodle/>

✓ To access the Summaries of the chapters, you must have a user account.

✓ Once user account is created, login log onto the platform.

✓ Click onto the Courses menu option available on the left side navigation pane.

✓ Choose the course and then click on the chapter to name to access the summaries.

## ✓ E-learning materials

✓ URL: <http://mariems.com/moodle/course/view.php?id=2>

# How to access the Quizzes for all chapters ....

- ✓ The Quizzes for all chapters
  - ✓ URL: <http://mariems.com/moodle/>
  - ✓ At the end of each chapter, there is link to online assessment. Click on the “Quiz” option and the first question will appear on your screen.
- ✓ E-assessment
  - ✓ URL: <http://mariems.com/moodle/mod/quiz/view.php?id=3>

# Future Plan – MariEMS Plus

## ➤ **Proposal will set new targets and objectives**

e.g. how to monitor the use of energy, how to assess the effectiveness of proposed arrangements

## ➤ **Review current operations used to make ships energy efficient**

e.g. Wartsila's Eniram system and other arrangements in place such as classification and standards organisation (ABB, Rolls-Royce).

## ➤ **Review ship energy monitoring and management**

WRT ship types, ship propulsion systems, ship navigation equipment, energy production units, electrical and mechanical parts and circuitry, safety issues, national certification, accreditation and validation of learning materials, pedagogical aspects of learning (online application)



**THANK YOU**  
Any Questions ?