

## The IMPROVE Project

IMPROVE, <http://www.improve-project.eu>, is a three-year research project supported by the European Commission under the FP 6 Growth Programme.

The main objective of the IMPROVE project is to design 3 different types of next generation vessels by integrating various aspects of ship structural design into one formal framework and applying it. The three innovative products are:

1. LNG Carrier, 220 000 m<sup>3</sup>: design by STX Europa (France)
2. Large RoPax ship, 3000 lanes + 300 cars, 1600 passengers): design by ULJANIK Shipyard (Croatia)
3. Chemical tanker, 40000 DWT: design by SZCZECIN shipyard (SSN, Poland)

In brief the IMPROVE project proposes to deliver an integrated decision support system for a methodological assessment of ship designs to provide a rational basis for making decisions pertaining to the design, production and operation of the three new ship generations. Such support can be used to make more informed decisions, which in turn will contribute to reducing the life-cycle costs and improving the performance of those ship generations.

As the proposed methodology is based on multi-criteria structural optimization, the consortium contains not only designers, but also shipyards and ship-owners / operators (one per product). The research activity has been divided in three main phases:

1. Definition of stakeholders' requirements and specification of optimization targets and objectives.
2. All technical developments related to the selected structural optimization tool. Several modules such as fatigue assessment, vibration, ultimate strength, load assessment, production and maintenance cost, optimization robustness will be delivered and integrated into the existing tools (LBR5, OCTOPUS, and CONSTRUCT).
3. Application of the developed optimization platforms in the design of three target products.

## The IMPROVE Workshop

You are invited to participate in the final workshop of the IMPROVE FP6 research project. This leaflet contains information about the conference agenda and venue as well as registration details.

### Workshop Title:

***Design of Improved and Competitive Ships using an Integrated Decision Support System for Ship Production and operation.***

### Date:

**17<sup>th</sup>, 18<sup>th</sup> and 19<sup>th</sup> of September 2009**

### Location:

**Centre for Advanced Academic Studies (CAAS)  
<http://www.caas.unizg.hr/>  
Don Frane Bulica 4  
Dubrovnik, CROATIA**

## Day 1- Thursday 17<sup>th</sup> September 09

The first day of the workshop will be held on Thursday the 17<sup>th</sup> of September 2009 and will present the early design stage modules, integration and tools and will also include an invited lecture presentation. Below is the detailed agenda for the day:

### Introductory Session

08:30 to 09:00	Arrival of partners
09:00 to 09:15	Welcome, introduction of workshop contents ( Dean I. Grubisic, UZ, V. Zanic, UZ)
09:15 to 10:00	Overview of <b>IMPROVE project</b> (P. Rigo, ANAST)
10:00 to 10:45	Invited lecture 1: Next Generation Ship Structural Design (O.F. Hughes, Virginia Tech.)
10:45 to 11:15	Coffee break

### Tools for Early Design Stage Block 1 - Modules

11:15 to 12:15	WP 3- Modules for the structural response and load calculation (UZ+ all WP3 partners)
12:15 to 12:45	Panel discussion
12:45 to 14:00	Lunch

### Tools for Early Design Stage Block 2 - Modules

14:00 to 15:00	WP4- Production & operational modules (CMT/NAME + all WP4 partners)
15:00 to 15:30	Panel discussion
15:30 to 16:00	Coffee break

### Tools for Early Design Stage Block 3 Integration and Tools

16:00 to 16:15	Integration platform of IMPROVE project (ULJANIK-USCS, BAL)
16:15 to 16:45	Tools presentation: LBR5 software (ANAST)
16:45 to 17:15	Tools presentation: OCTOPUS/MAESTRO software (UZ)
17:15 to 17:45	Tools presentation: CONSTRUCT software (TKK)
19:15 to 20:00	Cocktail in Maritime Museum of Dubrovnik
20:30	Dinner

## Day 2- Friday 18<sup>th</sup> September 09

The second day of the workshop will be held on Friday the 18<sup>th</sup> of September 2009 and will present the three products developed in IMPROVE (LNG, ROPAX, and Chemical Tanker) and will also include an invited lecture presentation. Below is the detailed agenda for the day:

### Introductory Session

08:30 to 09:00	Arrival of partners
09:00 to 09:15	Welcome, introduction of workshop contents (V. Zanic, UZ)
09:15 to 10:00	Invited lecture 2: Ship Design for Performance (Kai Levander, SeaKey Naval Architecture Ltd.)
10:00 to 10:20	Coffee break

### Product presentation: LNG carrier

10:20 to 10:40	LNG carrier- Ship owner requirements, markets + technical trends - (EXMAR)
10:40 to 11:00	LNG carrier- General ship design (performance, stability, power - (STX Europe)
11:00 to 11:20	LNG carrier- Structural design aspects (STX Europe, ANAST)
11:20 to 11:40	LNG carrier- achievements through IMPROVE project, conclusion (EXMAR, STX Europa, ANAST, BV)
11:40 to 12:00	Coffee break

### Product presentation: ROPAX ship

12:00 to 12:20	ROPAX carrier- Ship owner requirements, markets + technical trends - (GRIMALDI)
12:20 to 12:40	ROPAX- Basic design, performance, stability (ULJANIK)
12:40 to 13:00	ROPAX- Structural design aspects (ULJANIK, UZ)
13:00 to 13:20	ROPAX- achievements through IMPROVE project, conclusion (GRIMALDI, ULJANIK, UZ, BV)
13:30 to 14:50	Lunch

### Product presentation: Chemical tanker

14:50 to 15:10	Chemical tanker - Ship owner requirements, markets + technical trends - (TPZ)
15:10 to 15:30	Chemical tanker - Basic design, performance, stability (SSN)
15:30 to 15:50	Chemical tanker - Structural design aspects (SSN, TKK)
15:50 to 16:10	Chemical tanker - achievements through IMPROVE project, conclusion (TPZ, SSN, TKK)
16:10 to 16:30	Coffee break
16:30 to 17:00	Closing a workshop, final conclusions (V.Zanic, Ph. Rigo)
19:30	Dinner

## Day 3- Saturday 19<sup>th</sup> September 09

The third day of the workshop is a social event that will be held on Saturday the 19<sup>th</sup> of September 2009. The event will include a Boat tour around Koločep / Sipan islands in Dubrovnik archipelago and Lunch on the boat. Below is the detailed agenda for the day:

### Boat Tour Social Event

09:30 to 10:00	Arrival of partners
10:00 onwards	Boat tour around Koločep / Sipan islands in Dubrovnik archipelago + Lunch on the boat



### Registration Details

The conference is organized by University of Zagreb, Faculty of Mechanical Engineering and Naval Architecture.

The cost for participating in the conference is €250 per delegate (€300 after June, 30<sup>th</sup>) including all lunches and dinners for two days. Delegates who wish to attend the social event organised on Saturday September, 19<sup>th</sup> can do so at an additional cost of €50.

To register for the event please go to the link below and download the registration form.

More information about the IMPROVE workshop can be found at the workshop website

<http://www.improve-project.eu/final.html>

Alternatively you can contact the workshop organizers:

**Prof. Vedran Zanic** (Chairman)  
**Dr. Jerolim Andric** (Secretary)  
**UNIVERSITY OF ZAGREB, Faculty of Mech. Eng. and Naval Architecture**  
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## IMPROVE Consortium Members

The project consortium consists of 17 complementary partners from 9 member and 1 candidate member states; 3 ship owners/operators, 4 universities, 3 shipyards, 2 ship design companies, 2 engineering companies, 2 software companies, a classification society and an International Association of Universities.

	ANAST, University of Liege	Belgium
	STX Europa	France
	Uljanik shipyard (ULJANIK)	Croatia
	Szczecin New Shipyard (SSN)	Poland
	Grimaldi	Italy
	Exmar	Belgium
	Tankerska Plovidba Zadar (TPZ)	Croatia
	Bureau Veritas (BV)	France
	Design Naval & Transport (DN&T)	Belgium
	Ship Design Group (SDG)	Romania
	MEC	Estonia
	Helsinki University of Technology (TKK)	Finland
	University of Zagreb (UZ)	Croatia
	NAME, Universities of Glasgow & Strathclyde	UK
	Centre of Maritime Technologies (CMT)	Germany
	BALance Technology Consulting GmbH (BAL)	Germany
	WEGEMT	UK

More information about the IMPROVE project can be found at the project website

<http://www.improve-project.eu>

Alternatively you can contact:

**Prof. Philippe Rigo** (Project co-ordinator)  
**ANAST, University of Liege, Belgium.**  
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## Design of Improved and Competitive Ships using an Integrated Decision Support System for Ship Production and Operation



## Invitation for IMPROVE Final Workshop

**Dubrovnik, CROATIA**

**17<sup>th</sup> – 19<sup>th</sup> of September 2009**

**(Preliminary Programme)**

**IMPROVE** is a 3-year research project which started on the 1st October 2006. The project is supported by the **European Commission** under the Growth Programme of the **6th Framework Programme**.  
**Contract No. FP6 – 031382**

