



Empowering Sustainability Winners

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Marorka



OUTLINE

1

Sustainability & Energy Management

2

Energy Management as a Concept

3

Energy Management in Practice

4

Energy Management Success Story

SUSTAINABILITY MEGATREND

Will profoundly affect the shipping industry

- We believe **sustainability** is an emerging business **megatrend**
- A fundamental shift in the competitive landscape that creates inescapable threats and game-changing **opportunities**
- Will profoundly affect companies – their **competitiveness** and even their survival
- **Energy Management is a key feature** in the evolution of sustainability

THE WRITING IS ON THE WALL

EU environment ministers agree to cut emissions by 20% by 2020

One of the biggest challenges we all face is measuring the sustainability of a product (Walmart)

The risk of inaction is the greatest risk facing business*

US government ordered to cut emissions by 28% by 2020

The European Union is pushing for shipping to cut emissions to 20 percent below 2005 levels over the next decade

Sustainability-related spending could reach \$60 billion in the US by 2014 (Verdantix research)

Sustainable Nordic energy systems by 2050

GE plans another \$10 billion spend on green-tech initiative

Sustainability started as a moral obligation but has now become a key differentiator for consumers*

It's now not whether you're going to do anything on sustainability, it's about how much you're going to do*

93% of CEOs believe that sustainability issues will be critical to the future success of their business*

We need more from business than just profit*

The difficulty of execution is the top barrier to implementation of sustainability*

SUSTAINABILITY MODEL

Energy Management is Path to Sustainability



SUSTAINABILITY

Energy Management and Energy Efficiency

The objective of Energy Management is to **optimize the use of energy**, that is, to **maximize profits** and **minimize environmental effect** by more effective use of energy

Energy Efficiency is what **we give** divided by what **we get** or in shipping **energy input** divided by **transportation task**

ENERGY MANAGEMENT – THE CHALLENGES

Developing methodology

- **Baselines are missing**
 - Lack of knowledge of current energy use
 - Difficult to understand what measures are most cost-efficient to implement
- **Overview is missing**
 - Implementing technologies in **non-systematic way** will delay good results and waste resources
- **Time is crucial**
 - Fleet implementation takes time
 - Integration in corporate management system takes time

ENERGY MANAGEMENT – THE CHALLENGES

The Operational Environment Is Changing

- **Energy prices** are increasing
 - Bunker prices will increase over coming years and competition will enhance
- **Regulations** on Energy Management
 - IMO mandatory regulations SEEMP, EEDI from 2013
 - Other initiatives will come in close future
- **Awareness** of the general public
 - Low carbon footprint and carbon management will be demanded from consumers

ENERGY MANAGEMENT – THE OPPORTUNITIES

- **Profit**

- Energy efficiency may be improved a lot and by improving efficiency companies can meet increased fuel price

- **Going Green**

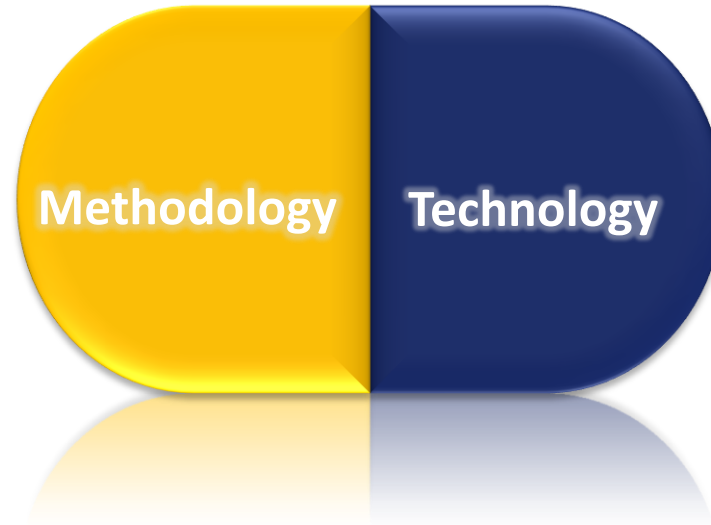
- By implementing energy management companies can inform stakeholders and public of all improvements

- **Safe for the future**

- Improve reporting and efficiency to meet future mandatory regulations

ENERGY MANAGEMENT IS

...combination of Methodology and Technology



**Marorka Combating Emissions
and Fuel Consumption
Through Modern Science**

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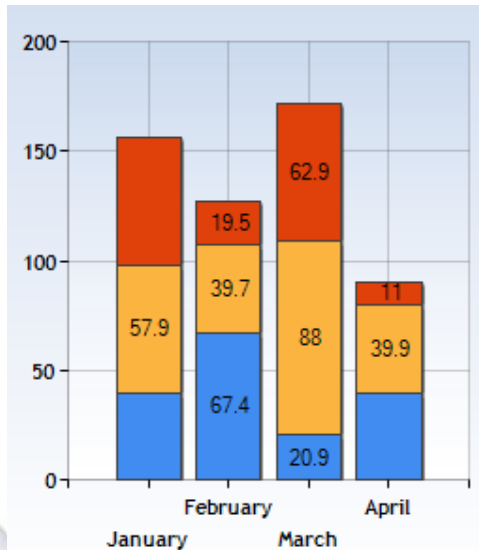
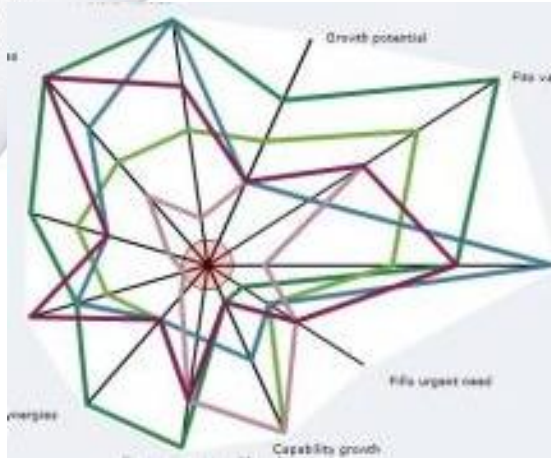
ENERGY MANAGEMENT

The systematic approach



FINDING THE BASELINE

Where are we?



- **Corporate Level**

- Find out where we are in comparison to other in the field
- Find out the company base line compared to others

- **Ship level**

- Find out the energy efficiency of the fleet and individual ships

SETTING THE GOALS

Where are we going?



Corporate vision

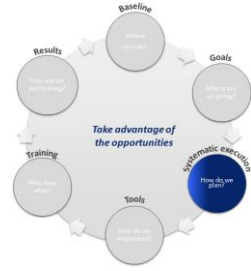
- Put up the vision for fixed period of time which includes the efficiency goals and position

Define

- Innovation pathway
- Execution pathway

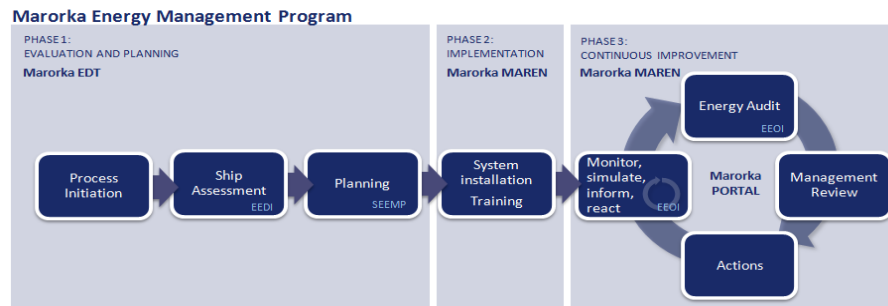
PLANNING & EXECUTING

How do we plan?



The Methodology (*Energy Management Program, MEMP*)

- Review the big picture of vessels and their operation.
- Base key performance indicators (KPI's) are calculated.
- Plan for implementation of onboard system created.
- Establish Ship Energy Efficiency Management Plan (SEEMP) and road map for fleet implementation of EMP.
- Measure and report on EEOI and publish EEDI.



IMPLEMENTING WITH TOOLS

How do we implement?



The Technology

- Execution plan describes energy management for on ship and on shore
- On Ship
 - ✓ Install / modify Decision Support solution for Officers
- On Shore
 - ✓ Install / modify information solution for Management team for decision support
- Integrate into the corporate procedures through ISO 14001 and 50001
 - ✓ Focus on 3-7 key performance indicators

TRAINING

How are we performing?



The Training and Education

- On board training of crew for them to understand the vision of the company and the energy management as a concept
 - ✓ Learn on new system
 - ✓ Learn new procedures
- On Shore training of the management team to be trained in new systems and new procedures
 - ✓ Training in using the new key performance indicators, make new goals for improvements and in daily follow up of the performance

REPORTING ON RESULTS AND SUCCESS

How do we report?



Continues improvements

- Periodically the performance improvement are checked on bases of:
 - ✓ Normalized data
 - ✓ Benchmarks and indexes
 - ✓ Key performance indicators
- Reports on improvements incorporated into energy management system ISO 50001 or corporate energy management system.

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**Working group on
environmental friendly shipping**

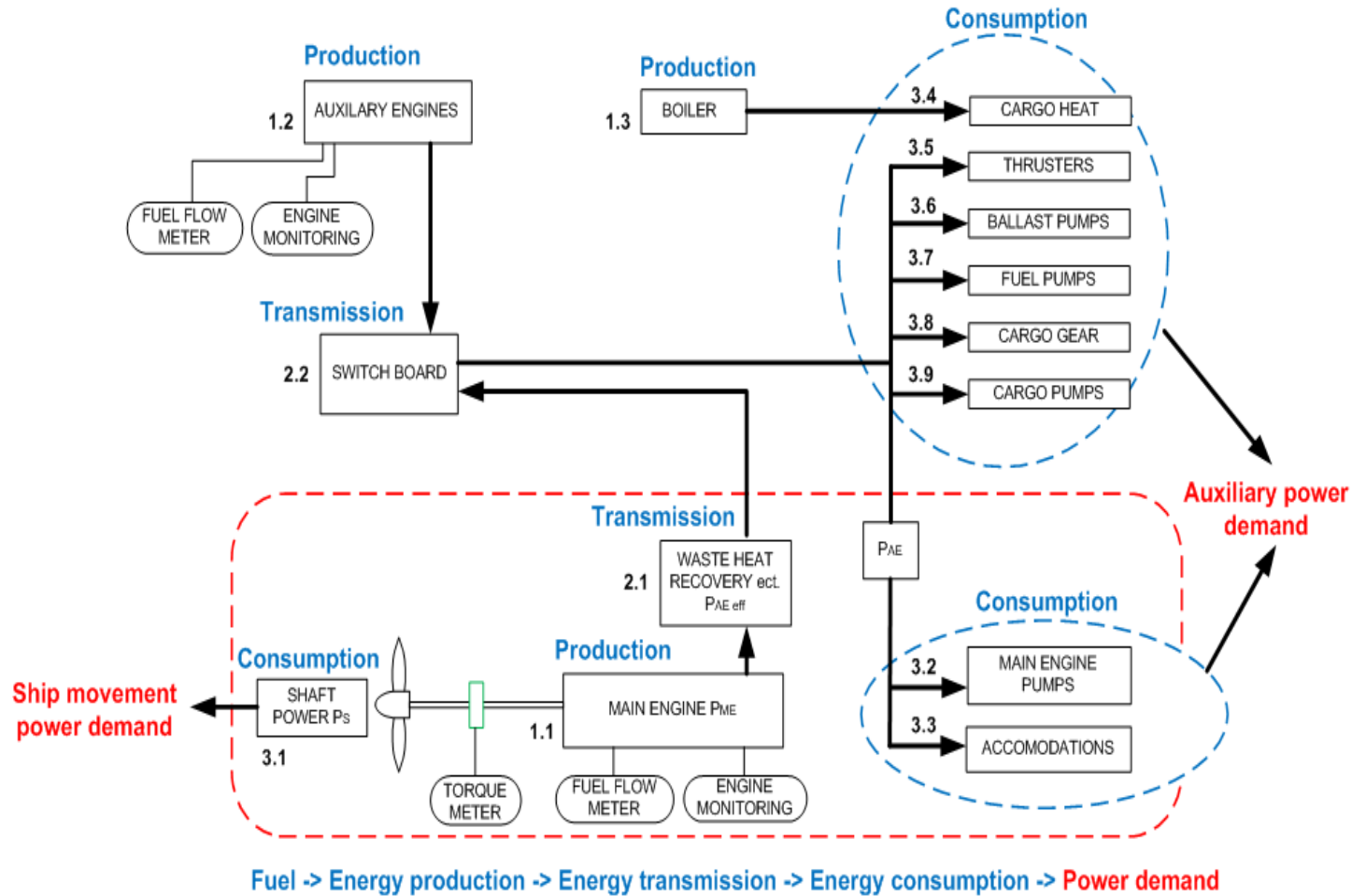
“establish a common platform and ability among a group of ship owning companies which enables future cooperation regarding evaluation, distribution, execution, monitoring and evaluation of energy saving measures on board ships”.

**“COMING TOGETHER IS A BEGINNING, STAYING
TOGETHER IS PROGRESS, AND WORKING
TOGETHER IS SUCCESS.”**

-HENRY FORD-

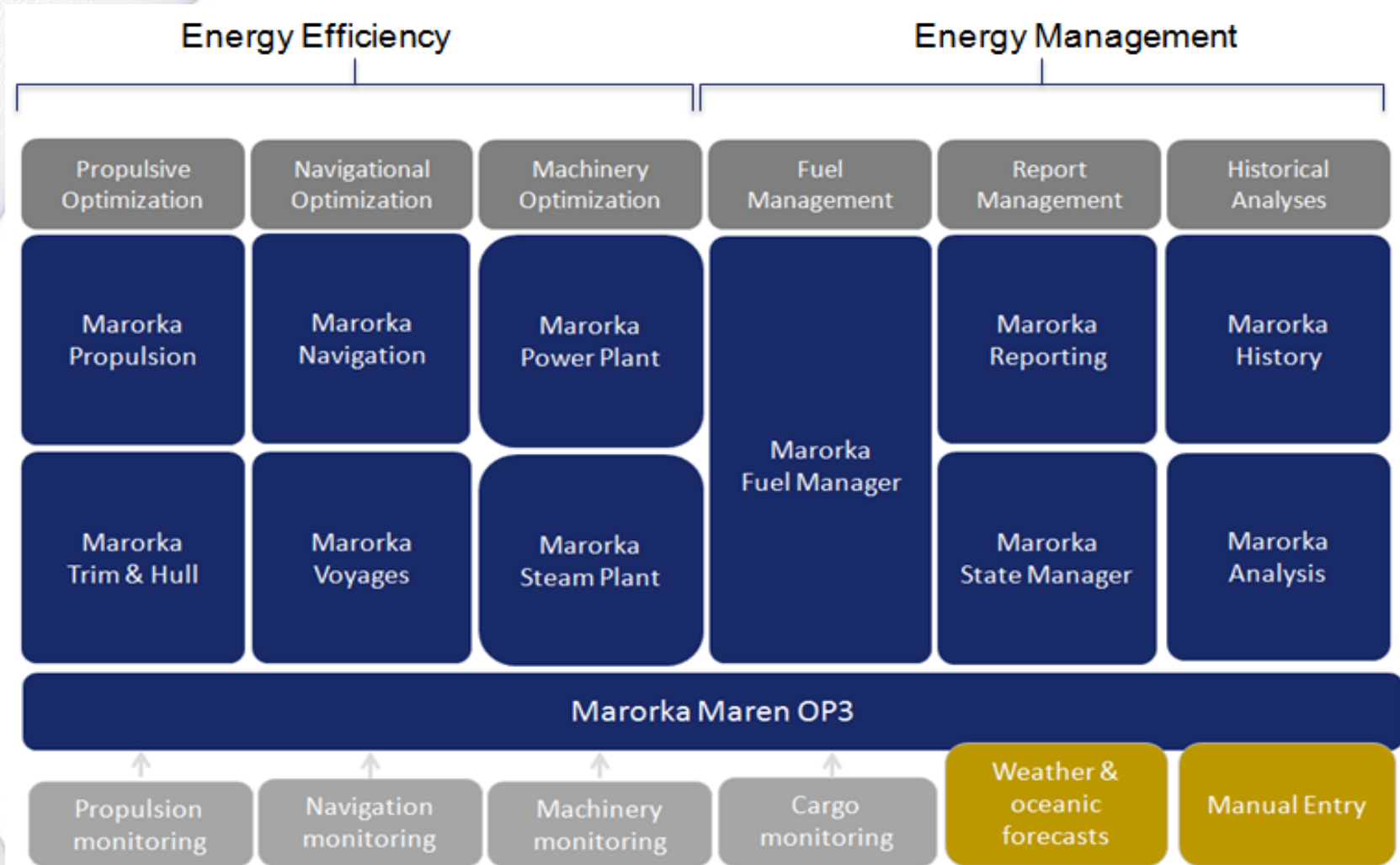
ENERGY MANAGEMENT IN PRACTICE

Project Structure



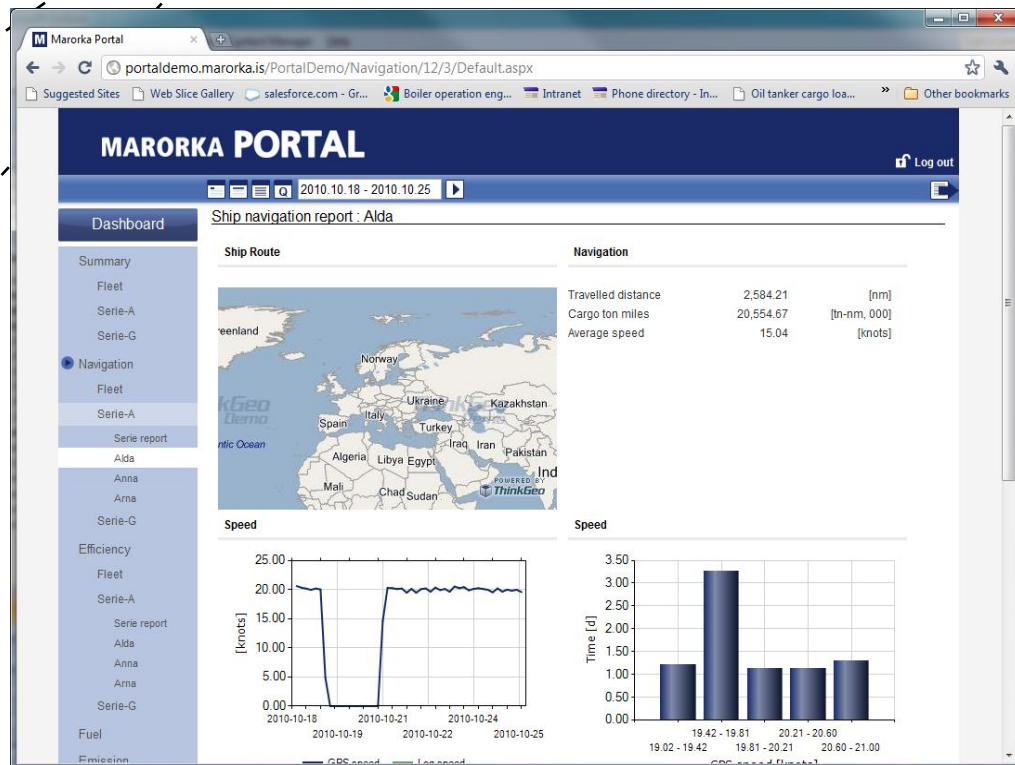
ENERGY MANAGEMENT IN PRACTICE

Selection of EM products installed



THE TOTAL CONCEPT

Daily follow up on ship performance



Portal User I

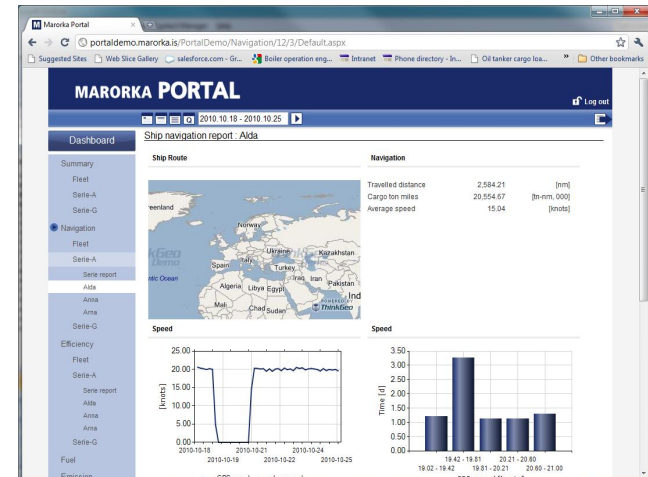
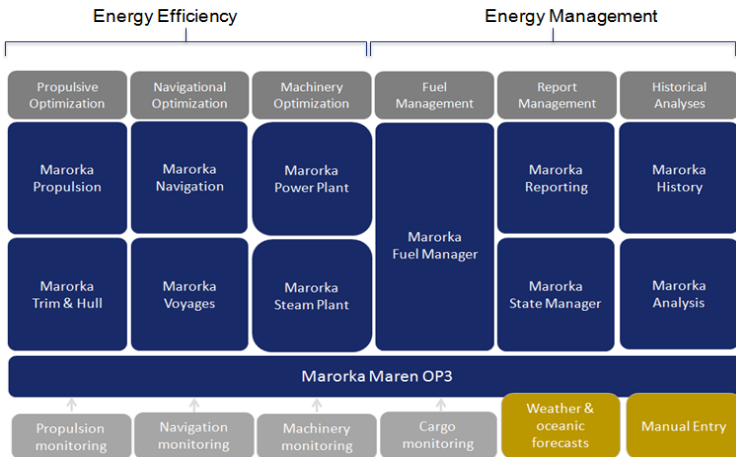
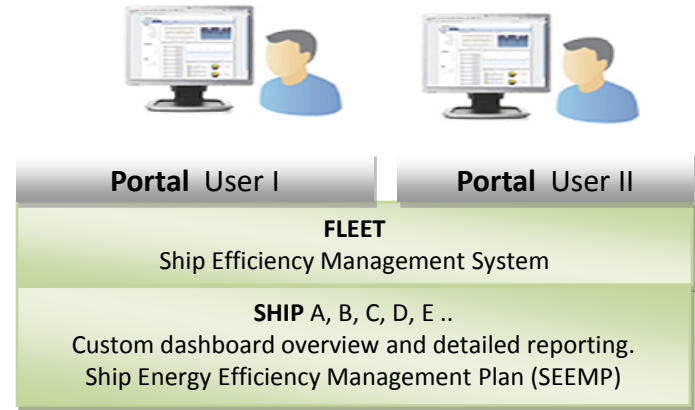
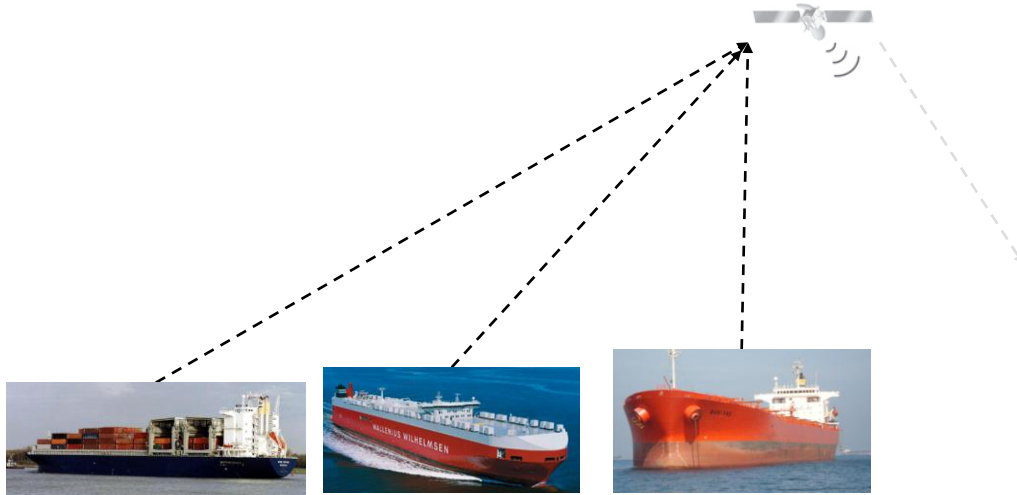
Portal User II

FLEET
Ship Efficiency Management System

SHIP A, B, C, D, E ..
Custom dashboard overview and detailed reporting.
Ship Energy Efficiency Management Plan (SEEMP)

THE TOTAL CONCEPT

Daily follow up on ship performance



EMIP 2

The success of EMIP 1 is the platform for EMIP2

The Objective of EMIP 2

" To utilize, strengthen, enhance and sustain the developed EMIP platform through stronger inclusion of R&D institutions and industry actors enabling a robust knowledge and innovation platform related to energy efficiency on ships, with rational utilization of limited resources and a strong focus on verification of practical energy efficiency measures, contributing to increasing Norwegian shipping's competitive edge and environmental performance"



Working group on environmental friendly shipping

Energy Management

MARORKA

Sensor Technology



KONGSBERG

Energy Profile



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MARINE ENERGY MANAGEMENT

More than a decade of success

- **Holistic approach** to energy management approach with a unique combination of **methodology** and **technology** has shown its strength for many years now
 - Over 200 **successful energy management projects** delivered worldwide with:
 - Standardized and proven Technology with on board and on shore solutions
 - Standardized and proven Methodology interlinked to ISO 50001 and SEEMP
 - Design optimization for improved machinery systems design for improved energy efficiency (EEDI)

MARINE ENERGY MANAGEMENT

More than a decade of success

- **Compliance** to existing and coming IMO regulations like SEEMP / EEDI / EEOI
- **Completely aligned** to ISO 14001, 50001 and TMSA2
- Developed for more than decade with **extensive R&D budget** for next decade.

SUSTAINABILITY MODEL

Energy Management is path to winner position



MARORKA



**Defining
Energy Management**