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Draft Terms of Reference for CEDA Working Group on Energy Efficiency (WGEE)

Introduction

Fuel consumption is one of the major components in dredging project budgets. On average, the percentage dedicated to vessel fuel, in a budget, is between 20 and 30 percent depending on equipment and features of the project. Also, with current challenging market conditions (such as over-capacity of dredging equipment), it's true to say that energy efficiency plays a major part in winning projects.

Additionally, we know that energy consumption, and in particular use of fossil fuels, strongly contributes to climate change and global warming. It's therefore extremely relevant to raise awareness of the use of sustainable energy sources.

Energy plays a role in the entire lifecycle of dredging projects, and decisions made early in the project initiation phase can have huge impacts on later energy consumption. This is evident, for example, in the location of a new dredging project in relation to a borrow or disposal area. Another example would be, when a dredging project can only be completed with new vessels in order to comply with strict environmental legislation. Also, dredging equipment plays an important role in the total energy consumption, therefore, design choices made early in the design process determine how much energy will be consumed by the vessel in its lifetime. Legislation on the management of dredged material can also be a dominant factor in the design (logistics) of the execution phase of projects.

Legislation in relation to emissions and sustainability is becoming more and more strict. IMO has adopted regulations to reduce sulphur and nitrogen emission from ships. With the Energy Efficiency Design Index (EEDI) IMO has also adopted mandatory energy-efficiency measures to reduce emissions of greenhouse gases from international shipping (dredgers are excluded for now).

The CEDA Environment Commission (CEC) has decided to establish a Working Group to prepare a CEDA information paper on Energy Efficiency. The paper will provide an overview of key aspects, of all project phases, to aid structured decision-making, in support of energy efficiency, in line with sustainability and cost reduction.

The CEC proposes the following Terms of Reference for the Working Group. The TOR will be formally established by the Working Group at their first meeting.

Understanding Dredging

Objective

The Working Group is tasked with preparing a CEDA information paper on Energy Efficiency in relation to sustainability. The aim of the information paper is to highlight all aspects related to energy efficiency during all stages of dredging projects (from initiation through to design, and execution to implementation). The paper should also address dredging equipment, looking at everything from choices made in the dredger design to equipment selection. Through these aspects the paper should allow for structured optimisation which leads to increased efficiency and reduced fuel costs.

The paper will facilitate knowledge exchange, promote considerations to be taken in equipment design and during project phases, and highlight current best practice. An accompanying presentation, as well as an interactive PDF, will also be prepared.

Scope

Issues to be addressed in the information paper include:

- Definitions on energy, efficiency and fuel
- Focus on energy efficiency and not on emissions (reference to emission docs)
- Legislation (Energy Efficiency Design Index IMO)
- Legislation for the management of dredged material as boundary conditions for design of the execution phase
- Pros and cons of different fuel types
- Project phases and decision-making (pros and cons)
 - Initiation phase
 - Design and planning
 - Construction
 - Operational phase
- Equipment design (hull shape design, drive train design)
- Equipment selection for dredging projects
- Measuring and monitoring operational profiles of equipment
- Operations (operators/staff/training)
- Highlight recent advances (trends) and best practice in energy efficiency, in the context of sustainable development, through the use of relevant case studies (e.g. Building with Nature)
- Highlight new developments in energy reduction for dredging equipment
- Identify new lessons learned from recent case studies and different attempts on energy efficiency (calculation method European Dredging Association - EuDA) opportunities for future projects
- Promote effective terminology and communication about energy efficiency
- Identify and direct readers to national and international initiatives that facilitate and promote energy efficiency

Thesis for the information paper

Learning the key aspects of energy efficiency, regarding dredging projects and dredging equipment, will lead to higher efficiency and lower costs, and contribute to a more sustainable dredging industry.

Deliverables

The following deliverables will be prepared by the Working Group:

- An information paper that will focus on an overview of the key aspects contributing to, or reducing, energy efficiency during all stages of (dredging) projects
- An accompanying presentation
- An interactive PDF visualizing the key aspects of energy efficiency
- Communication of WGEE milestones to the CEC and via social media

Length of the documents

Four-eight pages plus relevant case studies.

Timetable

The Working Group will have their first meeting on 22 March 2018 at the CEDA HQ in Delft, the Netherlands, at which point the Draft Terms of Reference will be finalised and a Work Plan will be developed. The Working Group is expected to deliver their paper one year after their first meeting.

The Working Group is expected to deliver the final paper, presentation and interactive PDF, 18 months after their first meeting.

Membership

It is envisaged that CEDA WGEE will be an international group of experts with knowledge and experience relating to energy efficiency of dredging projects covering: legislation, design and/or execution of dredging projects, design of dredging equipment, and equipment selection.

References

EUDA: <https://www.european-dredging.eu/>

IMO: <http://www.imo.org/en/MediaCentre/HotTopics/GHG/Pages/EEDI.aspx>

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CEDA Environment Commission