Central Dredging Association

PROGRAMME

5-6 November 2015
Ahoy Rotterdam, Rotterdam, the Netherlands

CEDA DREDGING DAYS 2015

CONFERENCE AND EXHIBITION

Innovative dredging solutions for ports

Pre-event technical visit on 4 November 2015

In conjunction with:

EUROPORT
exhibition for maritime technology
3-6 November 2015
Ahoy Rotterdam

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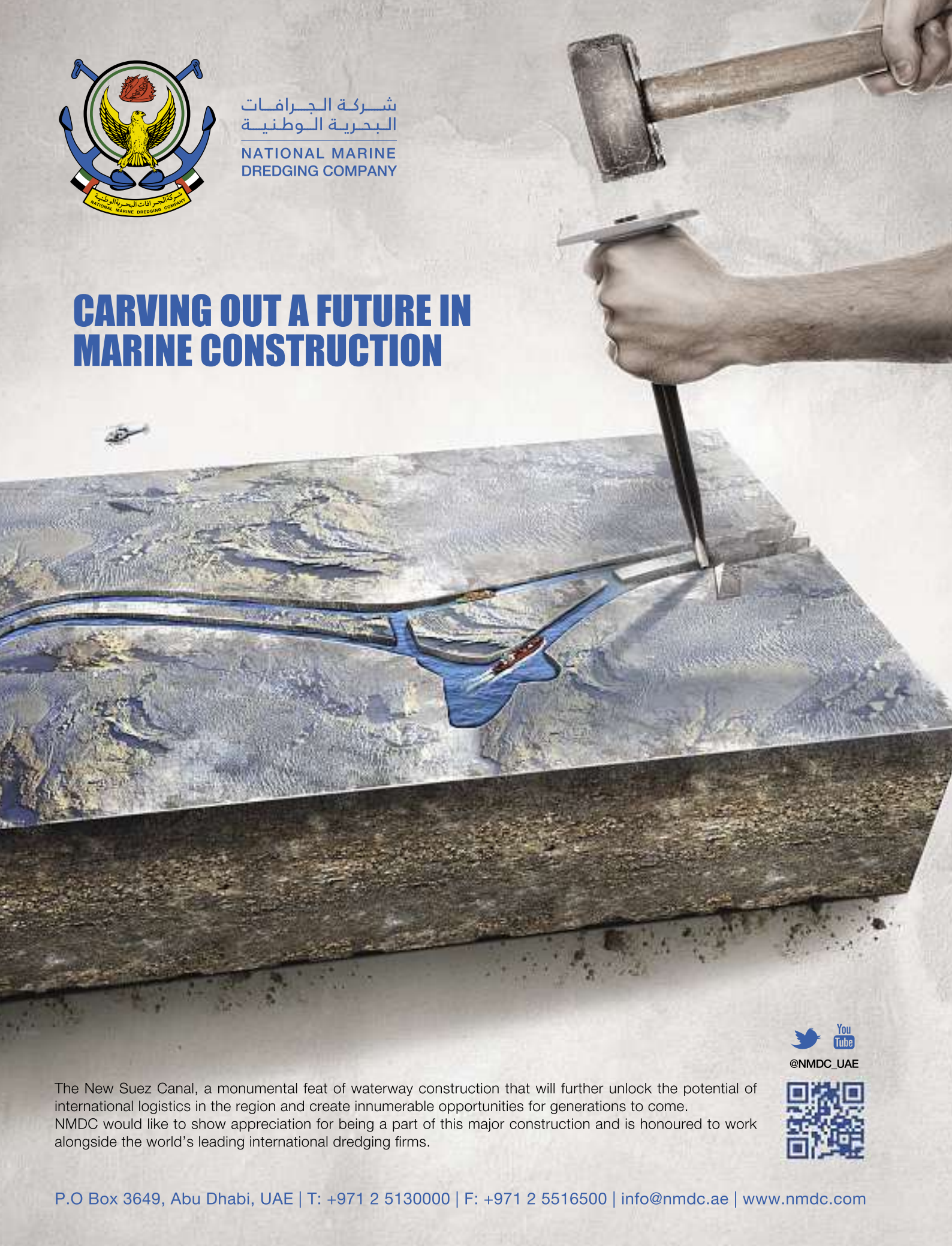

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Innovative dredging solutions for ports
5-6 November 2015
Ahoy Rotterdam, Rotterdam, the Netherlands

Technical visit
4 November 2015

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Website: www.ihsmaritime360.com

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Cover image left: Roberto Merlo / Cover image right: João Ferrand

The CEDA Dredging Days 2015 Programme is published by IHS Maritime and Trade, Sentinel House, 163 Brighton Road, Coulsdon, Surrey CR5 2YH, United Kingdom.
Tel: +44 (0)208 700 3700 Fax: +44 (0)208 763 1007 Web: www.ihsfairplay.com

Printed in the UK by Warners, The Maltings, Manor Lane, Bourne, Lincolnshire PE10 9PH, UK

IHS Maritime and Trade also publishes Dredging and Port Construction (DPC), the official magazine of both The Central Dredging Association and The Eastern Dredging Association.
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Welcome to CEDA Dredging Days

From CEDA president Anders Jensen

Over the past 35 years *CEDA Dredging Days* has established itself as the premier event for dredging professionals to get together and discuss key industry issues. This year's conference will focus on 'Innovative dredging solutions for ports' and, with its concentration of cutting-edge knowledge and practical applications, it should be an outstanding event.

In addition to a programme of 22 highly-focused presentations from international specialists, there will also be sessions – an academic session and Young CEDA pitch talks – that aim to support our young dredging professionals.

Also, with sustainability as a watchword, the CEDA Environment Commission will endeavour, in a special interactive session with the audience, to find a common understanding of what sustainability should mean for dredging projects.

CEDA Dredging Days 2015 will run alongside Europort 2015, at Ahoy Rotterdam, the Netherlands, making a wealth of knowledge, technology and innovation, available – all in one place. The conference programme perfectly complements the largest maritime trade show in the region. The combination will make Rotterdam the place to be for busy dredging professionals in November.

There is usually a lot of positive energy, inspiring talks, and discussion during *CEDA Dredging Days*, both in and outside the formal sessions, and this year will be no exception.

Alongside the technical sessions, there will be many opportunities for delegates to relax, network and exchange ideas over drinks, including the very popular CEDA Netherlands reception. As a bonus, those who opt for the technical visit will get to see some of the 30 locations on the Dutch water programme Room for the River, which is part of the largest water construction project in the Netherlands since the Delta Works.

I would like to thank our sponsors – Antea Group, Royal IHC, Seatools, Wärtsilä and Damen Dredging Equipment, and media partner *IHS DPC* – for their valuable support in making this such a great event.

The comprehensive programme, exhibitions, networking with over 250 like-minded peers and Room for the River technical visit, all promise to provide much inspiration and practical knowledge that will be useful beyond the event.

I look forward to seeing you at *CEDA Dredging Days 2015*.

Tony Slinn

"The conference programme perfectly complements the largest maritime trade show in the region. The combination will make Rotterdam the place to be for dredging professionals in November"

Anders Jensen, CEDA president

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Programme at a glance

Tuesday 3 November			
10:00 – 18:00	**Europort open**		**Europort 2015**
Wednesday 4 November			
10:00 – 18:00	**Europort open**		**Europort 2015**
12:00 – 17:00	**Technical visit, hosted by Room for the River of Rijkswaterstaat**		
20:00 – 22:30	**Young CEDA's ice breaker**		
Thursday 5 November			
07:00 – 08:30	Dredging exhibition build-up		
08:00 – 19:00	Dredging Days registration desk open		
09:00 – 10:00	**Session 1: Opening and keynote speeches**	**Dredging Exhibition**	
10:00 – 10:25	Coffee and tea served in the exhibition area		**Europort 2015**
10:00 – 22:00	**Europort open**		
10:25 – 12:15	**Session 2: Sustainable dredge material management**		
12:15 – 13:15	Lunch served in the exhibition area sponsored by Seatools		
13:15 – 14:20	**Session 3: Latest developments in dredging technology**		
14:20 – 14:45	Coffee and tea served in the exhibition area		
14:45 – 15:50	**Session 4: Academic session**		
15:50 – 16:15	Coffee and tea served in the exhibition area		
16:15 – 17:20	**Session 5: Plume monitoring and modelling**		
17:20 – 18:00	CEDA Annual General Meeting		
18:00 – 19:00	CEDA Netherlands reception		
Friday 6 November			
08:00 – 17:15	Dredging Days registration desk open	**Dredging Exhibition**	
09:00 – 10:30	**Session 6: Dredging contracts and environmental issues**		
10:00 – 18:00	**Europort open**		**Europort 2015**
10:30 – 11:00	Coffee and tea served in the exhibition area		
11:00 – 12:30	**Session 7: Interactive session: When is your project sustainable?**		
12:30 – 13:30	Lunch served in the exhibition area		
13:30 – 14:30	**Session 8: Young CEDA pitch talks**		
14:30 – 14:55	Coffee and tea served in the exhibition area		
14:55 – 16:25	**Session 9: Development in dredge sediment research**		
16:25 – 16:30	Presentation of the IADC Young Authors' Award		
16:30 – 16:35	Conference chairman's closing remarks		
16:35 – 17:15	Farewell drinks		

The organisers wish to thank the following companies for their support:

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Conference introduction

Cees van Rhee, Professor of Dredging Engineering, Delft University of Technology, and chairman of CEDA Dredging Days 2015 Technical Papers and Programme Committee, outlines this year's event

The theme of this year's conference is 'Innovative dredging solutions for ports'. Dredging and the management of sediments are key elements in the sustainable development and operation of most ports. There is a growing call for them to become greener, more environmentally aware and more responsible with regard to operations. As a result, innovative and cost-effective solutions that meet both economic and environmental objectives and offer opportunities for enhancing or creating natural ecosystems around the port are increasingly important.

We are very happy to have received many papers on this subject, starting with the keynote address of Professor Tiedo Vellinga, who has a lifetime of experience in sustainable port development. Since most ports have to handle the influx of sediment by maintenance dredging, innovative methods are presented in a session devoted to sustainable dredge material management. Sediment plumes are created during most dredging activities, hence the topic of plume monitoring and modelling is present at the conference. The latest developments on how to predict, monitor and minimise the effect of sediment plumes on the environment are presented.

A greener port also demands greener operations in the port, so more energy-efficient dredging technology and cleaner fuels will be addressed during the conference.

In the traditional academic session, young professionals will present high-quality papers on underwater sound, discrete element modelling of rock cutting, and computational fluid dynamics for slurry flows.

The CEDA Environment Commission organises an interactive session on the topic of sustainable projects this year. The most important issues will be prioritised through a discussion between the audience and an expert panel.

Also new at this year's event are the Young CEDA fast-paced pitch talks in the PechaKucha 20x20 style. Students, graduates and young professionals will present and promote their work, enabling them to get in contact with experienced professionals in the audience.

In summary, thanks to the authors and the papers committee, we're confident that we've put together an interesting programme that will bring you up to speed with dredging's latest developments.

CEDA / Jim Wilson

"New at this year's event are the Young CEDA fast-paced pitch talks in the PechaKucha 20x20 style. Students, graduates and young professionals will present and promote their work"

Professor Cees van Rhee, Delft University of Technology

Conference programme

Day 1, Thursday 5 November

09:00 - 10:00

Session 1 – Opening and keynote speeches

Chair: van Rhee C – Delft University of Technology, the Netherlands

Opening remarks
Anders Jensen, CEDA president – DHI, Denmark

Introduction
Cees van Rhee, Technical Papers and Programme Committee chairman and Professor of Dredging Engineering, Delft University of Technology, the Netherlands

Keynote address
'Implementation of sustainable design solutions in port development' by Tiedo Vellinga, Professor of Ports and Waterways, Delft University of Technology – Port of Rotterdam Authority, the Netherlands

Featured presentation
'Dredging projects – adaptive environmental management and related monitoring procedures' by Gerard van Raalte, chair of CEDA Working Group on Adaptive Management – Boskalis/ Hydronamic, the Netherlands, and Ida Brøker, chair of CEDA Working Group on Environmental Monitoring Procedures – DHI, Denmark

10:00 - 10:25 **Coffee and tea served in the exhibition area**

10:25 - 12:15

Session 2 – Sustainable dredge material management

Chair: Sheehan C – Anthony D Bates Partnership, United Kingdom

Innovative sustainable management of sediments
Dhervilly P and Bertrand M – SEDIGATE, France; Thanneberger L – VALGO, France; Levacher D – Université de Normandie, France; Houise C – INVIVO Environnement, France; Lafhaj Z – Ecole Centrale de Lille, France

Environmental dredging of a chromium-contaminated fjord in Valdemarsvik, Sweden
Pensaert S, Nollet H, Rombaut E and Lepère X – DEME Environmental Contractors, Belgium

Keeping draught depths and controlling sedimentation by making use of innovative geotextile constructions to steer fines and store sediment
Lauwerijssen FM, Stook PJ and Egbring GAR – Tauw Group, the Netherlands; Jansen MHP – Witteveen+Bos, the Netherlands

The future of maintenance dredging: Working with Nature? A synthesis
Sforzi G, Middlemiss D and Feates N – HR Wallingford, United Kingdom

Sediment recycling to mitigate the effects of harbour deepening on habitat – and what happened over the following 15 years
Spearman J and Baugh J – HR Wallingford, United Kingdom

12:15 - 13:15 **Lunch, sponsored by Seatools, served in the exhibition area**

13:15 - 14:20

Session 3 – Latest developments in dredging technology

Chair: van Rhee C – Delft University of Technology, the Netherlands

Application of LNG DF engines in dredging vessels
Shi W and Mestemaker BTW – MTI Holland, the Netherlands; den Boer LJA – Royal IHC, the Netherlands; Contessi C and Zotti A – Wärtsilä, Italy

An optimal dredging process by using new draghead control concepts
Van den Bergh PM and Osnabrugge J – IHC Systems, the Netherlands; de Keizer C – C. de Keizer Controls, the Netherlands

Fuel efficient drive train design for hopper dredgers
Den Boer LJA, Raimond CP, van der Blom EC and ten Heggeler OWJ – Royal IHC, the Netherlands

14:20 - 14:45 **Coffee and tea served in the exhibition area**

Conference programme

14:45 - 15:50

Session 4 – Academic session

Chair: van der Blom E – Royal IHC, the Netherlands

Underwater sound from dredging activities: establishing source levels and modelling the propagation of underwater sound
Harris KL, Jones D and Marten K – HR Wallingford, United Kingdom

Modeling the effect of water depth on rock cutting processes with the use of discrete element method
Helmons RLJ, Miedema SA and van Rhee C – Delft University of Technology, the Netherlands

Continuous flow modeling of soil and sand water mixtures
Goeree JC, Keetels GH and van Rhee C – Delft University of Technology, the Netherlands

15:50 - 16:15 **Coffee and tea served in the exhibition area**

16:15 - 17:20

Session 5 – Plume monitoring and modelling

Chair: R De Sutter, Antea Group, Belgium

A methodological modelling approach to assess the potential environmental impacts of dredging activities
Feola A, Lisi I, Salmeri A, Venti F and Romano E – ISPRA (Institute for Environmental Protection and Research), Italy; Pedroncini A – DHI, Italy

Practical use of dredge plume source terms
Van Eekelen EMM, van Wiechen JJJ and van Koningsveld M – Van Oord Dredging and Marine Contractors, the Netherlands

EcoPlume: operational proactive environmental management of dredging
Mol ACS and Huygens M – DEME, Belgium

17:20 - 18:00 **CEDA Annual General Meeting**

18:00 - 19:00 **CEDA Netherlands reception**
Sponsors: Boskalis, Dutch Dredging, Van Oord Dredging and Marine Contractors.

Day 2, Friday 6 November

09:00 - 10:30

Session 6 – Dredging contracts and environmental issues

Chair: Röper H – Hamburg Port Authority, Germany

Dredging contract specification for dispute avoidance
Sheehan C and Maloney M – Anthony D Bates Partnership, United Kingdom

The value of remote sensing in the environmental management of dredging projects
Knaeps E, Bertels L, Van De Kerchove R, De Keukelaere L and Goor E – VITO, Belgium; Raymaekers D – USENSE, Belgium; Bollen M and Decrop B – IMDC, Belgium

A different kind of Environmental Impact Assessment: assessing the impact of compliance with environmental obligations
Engelen KDR and Yzewyn T – DEME, Belgium; Read KM – DEME, United Kingdom

Development of sustainable marine infrastructure; public-private considerations on key enabling factors
Aarninkhof SGJ – Boskalis, the Netherlands; Bridges TS – US Army Corps of Engineers, United States of America

10:30 - 11:00 **Coffee and tea served in the exhibition area**

11:00 - 12:30

Session 7 – Interactive session: When is your project sustainable?

Chair: Laboyrie P – chairman CEDA Environment Commission, Witteveen+Bos, the Netherlands

This session is organised by the CEDA Environment Commission to get a more common understanding on how to improve the sustainability of dredging itself and dredging projects. Can we together prioritise the most important issues to tackle in the near future and devise a sort of 'action plan' for project owners, dredging companies and governments?

Conference programme

The discussion will be inspired by statements of panel members with a broad range of background and expertise including:
– Pieter de Boer, eco-engineer, Ministry of Infrastructure and Environment, the Netherlands;
– Erik van der Blom, mechanical engineer, Royal IHC, the Netherlands;
– Mark Bollen, bio-engineer, IMDC, Belgium;
– Ida Brøker, coastal engineer, DHI, Denmark;
– Astrid Kramer, marine biologist, Royal Boskalis Westminster, the Netherlands
See panel opposite for more details

12:30 - 13:30 **Lunch served in the exhibition area**

13:30 - 14:30

Session 8 – Young CEDA pitch talks

Chair: de Heer A – chairman Young CEDA, Witteveen+Bos, the Netherlands

The ecological potential of geosynthetic fabrics to provide novel habitat and trap sediment
Coulet W – Exo Environmental Ltd, United Kingdom

Comparability of suspended sediment concentration measurement equipment and calibration techniques
Crossouard NA – HR Wallingford, United Kingdom

A closer look at remote sensing: opportunities for the dredging industry
De Boer W – Deltares, the Netherlands

Measuring and modelling coarse particle slurry flow in inclined pipes and vertical S-bends
De Hoog E – Royal IHC/Delft University of Technology, the Netherlands

Siltation in the Harlingen harbour: from problem to opportunity?
Hoekstra R – Deltares, the Netherlands

The effect of a carbonate sand in a sandfill
Kapela C – Boskalis, the Netherlands

Continuous grid monitoring to support innovative sediment management techniques
Van Hoestenberghe T – Fluves, Belgium

14:30 - 14:55 **Coffee and tea served in the exhibition area**

14:55 - 16:25

Session 9 – Development in dredge sediment research

Chair: Cool L-R – dotOcean, Belgium

The impact of channel deepening and dredging on the suspended sediment concentration in the Ems Estuary
Van Maren DS and van Kessel T – Deltares, the Netherlands

Cohesive sediment research: current development by Flanders Hydraulic Research Laboratory, Antea Group and dotOcean
Meshkati Shahmirzadi ME, Van Hoestenberghe T and R De Sutter – AnteaGroup, Belgium; Staelens P – dotOcean, Belgium; Claeys S, Van Oyen T and Vanlede J – Flanders Hydraulics Research, Belgium

Tests on new maintenance concept in the port of Rotterdam driven by mud rheology insights
Geirnaert K, Staelens P and Deprez S – DotOcean, Belgium; Noordijk AC, Van Hassent A, Schot C and Rutgers R – Port of Rotterdam, the Netherlands

Port of Falmouth development initiative: habitat removal and relay as mitigation for dredging – a proposed approach
Adnitt CS – Royal Haskoning DHV, United Kingdom; Sheehan EV and Attrill MJ – Plymouth Marine Institute, United Kingdom; Sansom M – Falmouth Harbour Commissioners, United Kingdom

16:25 - 16:30 **Presentation of the IADC Young Authors' Award:**
René Kolman, secretary-general IADC, the Netherlands

16:30 - 16:35 **Conference chair's closing remarks:**
Cees van Rhee, chairman of Technical Papers and Programme Committee, Delft University of Technology, the Netherlands

16:35 - 17:15 **Farewell drinks**

Interactive session

When is your project sustainable?
This session is organised by the CEDA Environment Commission (CEC).

Sustainability is a broad term, but what does it mean in the context of (navigation) dredging projects, or in the different phases of a dredging project? The aim of this session is to stimulate debate and harness the collective knowledge, and creative thinking, of the audience and a panel of experts.

The discussion will highlight different perspectives on sustainability of dredging projects. Also, we hope to gain a more common understanding of how to improve the sustainability of dredging and dredging projects.

The session will seek to prioritise the most important issues that will need tackling in the near future. We will aim to devise an action plan for project owners, dredging companies, and governments, which will lead to more sustainable practices. CEC will publish the results in the future.

To get the discussion going we ask you to consider:

When is a dredging project sustainable?

- Is it when it's based on the ecosystem services approach?
- Is it when it applies on one of the 'with nature' approaches, e.g. working with nature, building with nature, engineering with nature, eco-engineering?
- Is it when it has a low-carbon footprint?
- Is it when there is no turbidity?
- Is it when it doesn't create noise disturbance?
- Is it when dredged sediments are used beneficially?
- Is it when it fully complies with all prevailing regulations?
- Is it when you consider social concerns and interact with their stakeholders?
- Is it when contractors are involved early?
- Is it when we 'co-create'?
- Is it when we manage a project in an adaptive way?
- Is it when all impacts (on the natural and social environment) of project activities are compensated for, or do we have the responsibility to improve these environments for future generations?
- Is a dredging-project sustainable when necessary?
- If you use the shared (best) knowledge/practice?
- If you gather/use/share big data (open earth)?
- If you work efficiently?
- If you use the best assessment techniques?
- If you are transparent?
- If you don't use fossil fuels?

Panel members from a diverse background, with range of expertise, will use opening statements to kick-start and inspire the debate.

The CEDA Dredging Days 2015 Technical Papers and Programme Committee reserves the right to adjust or change the programme if necessary.

About the papers

Session 1: Opening and keynote speeches

Keynote address: Implementation of sustainable design solutions in port development

Tiedo Vellinga, Professor of Ports and Waterways, Delft University of Technology – Port of Rotterdam Authority, the Netherlands; co-author: Daan Rijks, senior engineer – Boskalis, the Netherlands

- Combine environmental opportunities with sustainable economic port development and societal benefits
- Eco-based design approach delivers viable solutions that are effective on the longer term
- Demonstrate approach through case studies
- Implementation requires mind shift from reactive `ports or nature' to proactive `ports and nature´
- Evaluate alternatives based on their eco-system services and socio-economic added value

Featured presentation: Dredging projects – adaptive environmental management and related monitoring procedures

Gerard van Raalte, chair of CEDA Working Group on Adaptive Management – Boskalis/Hydronamic, the Netherlands; Ida Brøker, chair of CEDA Working Group on Environmental Monitoring Procedures – DHI, Denmark

- Environmental monitoring can be implemented for several project reasons
- Efficient and optimal environmental monitoring is a prerequisite for successful adaptive management of dredging projects
- Adaptive management requires some controllable flexibility in project arrangements
- Cases studies illustrate recommended procedures

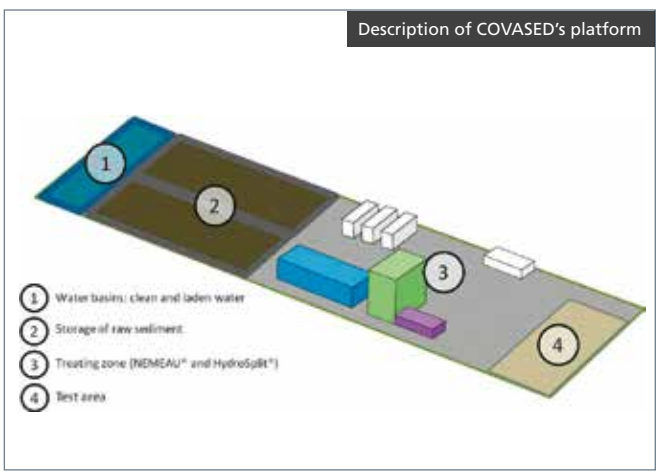
Poplar Island cell vegetation 2006

Session 2: Sustainable dredge material management

Innovative sustainable management of sediments

Dhervilly P and Bertrand M – SEDIGATE, France; Thanneberger L – VALGO, France; Levacher D – Université de Normandie, France; Houise C – INVIVO Environnement, France; Lafhaj Z – Ecole Centrale de Lille, France

- Innovative program to valorise dredged marine or fluvial sediments on a regional platform
- COVASED's platform is located on the third port in France: Dunkirk
- Mechanical dewatering and granulometric separation with NEMEAU® process and HydroSplit®
- Mixtures formulated with sediment, binders and eco-friendly additives for road engineering
- COVASED program takes place over a period of three years from 2014 to 2016



Description of COVASED's platform

About the papers

Environmental dredging of a chromium-contaminated fjord in Valdemarsvik, Sweden

Pensaert S, Nollet H, Rombaut E and Lepère X – DEME Environmental Contractors, Belgium

- The Valdemarsvik fjord was historically contaminated by chromium from a leather tannery
- Environmental dredging of about 200,000 m³ of sediment was carried out to stop chromium migration to the Baltic Sea
- The sediment was solidified and beneficially reused as backfill material near the fjord

Environmental dredging ongoing in Sweden

Keeping draught depths and controlling sedimentation by making use of innovative geotextile constructions to steer fines and store sediment

Lauwerijssen FM, Stook PJ and Egbring GAR – Tauw Group, the Netherlands; Jansen MHP – Witteveen+Bos, the Netherlands

- Sediment Settler to steer fines and keep draught depths
- Sediment Storer to store sediment, protect shorelines and restore nature
- Minimising maintenance costs and altering hydrodynamics
- Realising synergies between remediation, nature restoration and shore line protection
- Animation movie: www.youtube.com/watch?v=pPidN5_HXtA

Picture taken from Sediment Settler

The future of maintenance dredging: Working with Nature? A synthesis

Sforzi G, Middlemiss D and Feates N – HR Wallingford, United Kingdom

- The meaning of the new designing approach 'Working/ Building/Engineering with nature'
- How 'Working with Nature' can be applied to maintenance dredging projects
- What the sediment budget is and how it is influenced by maintenance dredging operations
- Case studies where 'Working with Nature' has been successfully applied to maintenance dredging projects

Poole harbour beach renourishment using maintenance dredging material

About the papers

Sediment recycling to mitigate the effects of harbour deepening on habitat – and what happened over the following 15 years

Spearman J and Baugh J – HR Wallingford, United Kingdom

- The use of sediment recycling to mitigate impacts associated with deepening of the approach channel to the Port of Felixstowe
- Assessment of the effects of the sediment recycling
- Development and refinement of the sediment recycling over a 15-year period
- Lessons learnt about estuary management arising from the experience

Session 3: Latest developments in dredging technology

Application of LNG DF engines in dredging vessels

Shi W and Mestemaker BTW – MTI Holland, the Netherlands; den Boer LJA – Royal IHC, the Netherlands; Contessi C and Zotti A – Wärtsilä, Italy

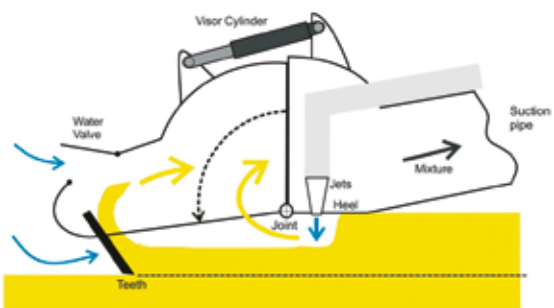
- Challenges for LNG dual-fuel engines in dredging application
- Royal IHC drive system solution
- Developments of the Wärtsilä dual-fuel engine for dredging application

An optimal dredging process by using new draghead control concepts

Van den Bergh PM and Osnabrugge J – IHC Systems, the Netherlands; de Keizer C – C. de Keizer Controls, the Netherlands

- Efficient dredging by balancing pump transport and draghead excavation production
- Model-based analysis of actuator effectivity and efficiency
- Automatic visor control to maintain optimal work point
- Caesar's draghead: new low-cost design with high-range controllability

Schematic representation of the draghead excavation process



Fuel-efficient drive train design for hopper dredgers

Den Boer LJA, Raimond CP, van der Blom EC and ten Heggeler OWJ – Royal IHC, the Netherlands

- Drive trains on hopper dredgers often operate on partial power, providing opportunities for fuel saving optimisation
- Alternative drive trains are compared on overall fuel consumption, using the fuel consumption tool
- Up to 15% overall fuel saving is possible with a two-speed gearbox, combinator curve and hybrid drive train

Example of typical hopper dredger drive train

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About the papers

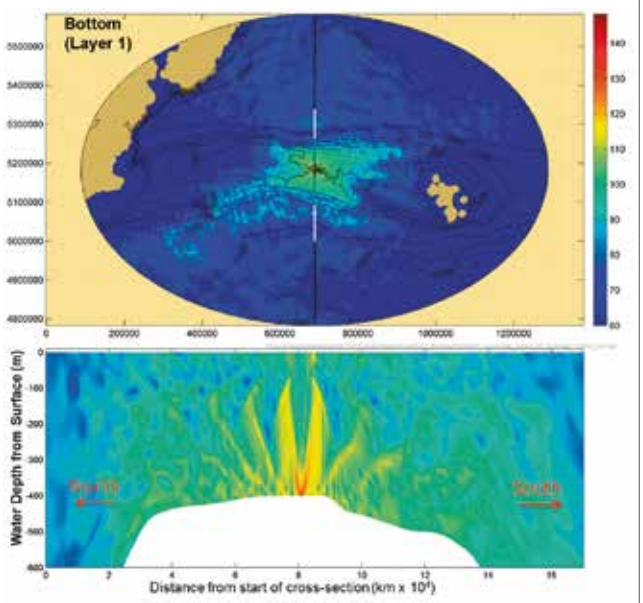
Session 4: Academic session

Underwater sound from dredging activities: establishing source levels and modelling the propagation of underwater sound

Harris KL, Jones D and Marten K – HR Wallingford, United Kingdom

- A review of underwater sound from dredging activities by different dredger types
- Method to estimate the source level of sound from dredging equipment based on power
- Numerical modelling types and data needs
- Discussion of data gaps and future research needs

Predicted underwater noise propagation from dredging activities in a deepwater location. Top panel showing the horizontal view from above, bottom panel showing a vertical cross section

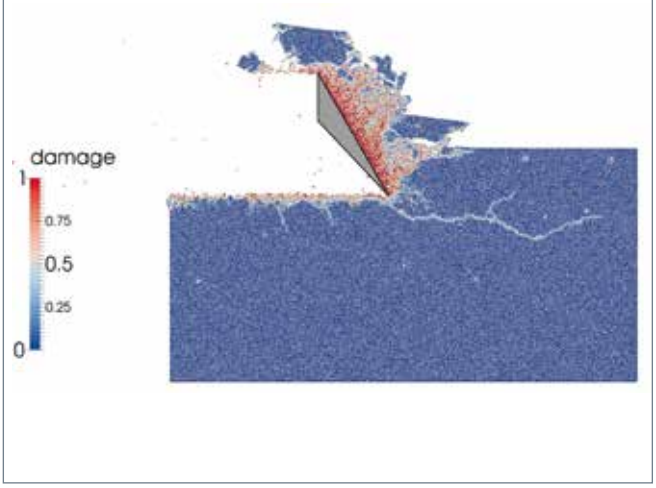


Modelling the effect of water depth on rock cutting processes with the use of discrete element method

Helmons RLJ, Miedema SA and van Rhee C – Delft University of Technology, the Netherlands

- Influence of confining and effective stress in rock mechanics
- Simulation of rock cutting process with discrete element method and smoothed particle method
- Modelling fluid-pressure effects in rock cutting
- The brittle-ductile transition in rock cutting processes

Typical result of rock cutting simulation



About the papers

Continuous flow modeling of soil and sand-water mixtures

Goeree JC, Keetels GH and van Rhee C – Delft University of Technology, the Netherlands

- Numerical flow model presented
- This model is able to describe mixtures ranging from dilute suspensions to dense granular flows
- Suspensions are described using the mixture formulation
- Dense granular flow is modelled using a rheological flow model
- The model has been validated successfully with experimental data

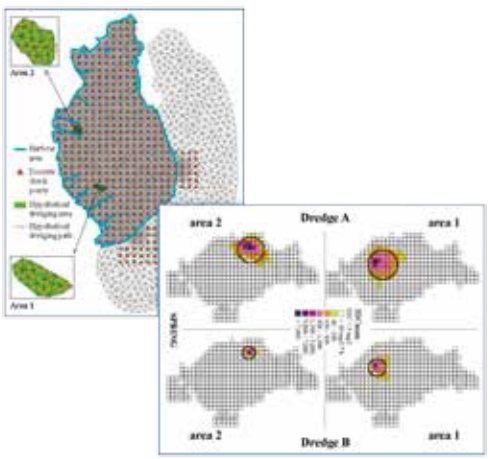
Session 5: Plume monitoring and modelling

A methodological modelling approach to assess the potential environmental impacts of dredging activities

Feola A, Lisi I, Salmeri A, Venti F and Romano E – ISPRA – Institute for Environmental Protection and Research, Italy; Pedroncini A – DHI, Italy

- Dredging plumes can be quantitatively described through spatially distributed statistics of suspended solid concentration (SSC)
- Different dredging techniques can be objectively compared in terms of re-suspension and deposition processes
- Dr-EAM method is applied to access effects related to dredging scenarios within an entire year
- Exceedance events of SSC threshold are characterised in terms of magnitude, duration and frequency
- Numerical modelling supports environmental management and planning of appropriate mitigation and monitoring measures

Maps of meaningful and spatially distributed statistical measures synthesising dredging plume variability. An integrated index (SSCnum) is proposed for impact assessment

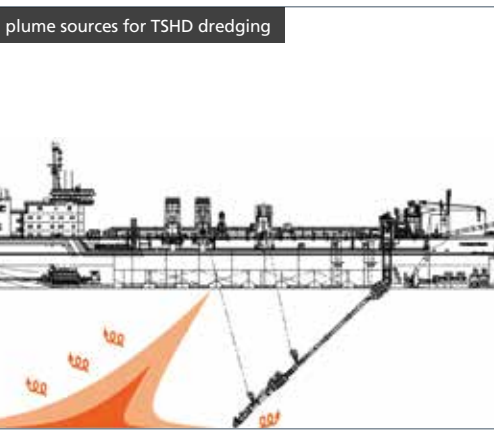


Practical use of dredge plume source terms

Van Eekelen EMM, van Wiechen JJJ and van Koningsveld M – Van Oord Dredging and Marine Contractors, the Netherlands

- Prediction of impacts caused by (re-)suspension by dredging is important in assessing dredging impact
- Deriving a realistic yet conservative source term for far-field spreading is challenging
- The concept of source term fractions can be used during various project phases to assess far-field spreading
- An example project has been included to demonstrate the use of source terms fractions during the phases of a project
- Consistent use of source term fractions provides the possibility to apply adaptive management of (dredge-) plume impacts

Potential plume sources for TSHD dredging



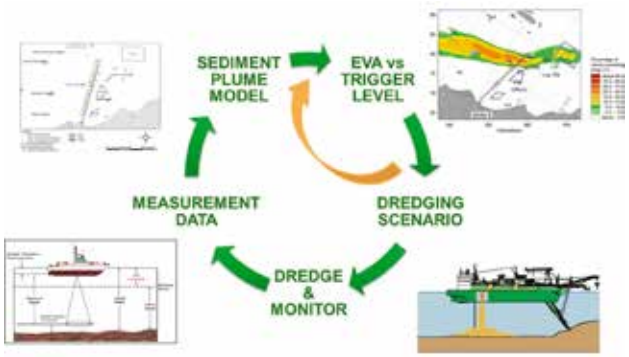
About the papers

EcoPlume: operational proactive environmental management of dredging

Mol ACS and Huygens M – DEME, Belgium

- EcoPlume is a pioneering tool to be used for adaptive environmental management of a dredging project
- EcoPlume achieves a shift from reactive compliance monitoring to proactive adaptive environmental management
- By merging technical project challenges with environmental interests, EcoPlume generates a common source of inspiration between all project stakeholders to guide the integrated project management
- The EcoPlume philosophy has been successfully tried, tested and applied in consecutive projects, as an essential operational tool to support day-to-day project management
- In particular, its application in the Wheatstone Downstream Project shows the common profits gained for all engaged parties, on both the operational dredging level as well as on the environmental aspects

EcoPlume system



Session 6: Dredging contracts and environmental issues

Dredging contract specification for dispute avoidance

Sheehan C and Maloney M – Anthony D Bates Partnership, United Kingdom

- Dredging is a unique and niche industry of civil engineering and therefore has distinctive associated issues
- Key dredging specification
- Removal of contractual ambiguity
- Risk versus price
- Minimisation of disputes and claims

The value of remote sensing in the environmental management of dredging projects

Knaeps E, Bertels L, Van De Kerchove R, De Keukelaere L and Goor E – VITO, Belgium; Raymaekers D – USENSE, Belgium; Bollen M and Decrop B – IMDC, Belgium

- Recent advancements in remote sensing image processing
- Technological developments (satellites and drones)
- A selection of remote sensing products of interest
- Examples how products can be used in the environmental management of a dredging project
- Focus on both land and water products

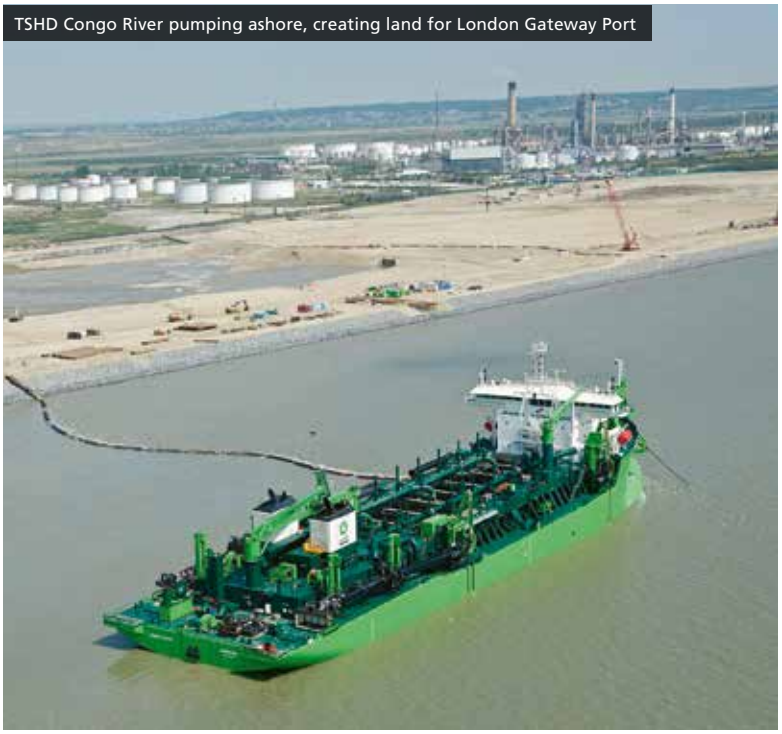
True colour Landsat-8 image of the Gironde river mouth

About the papers

A different kind of Environmental Impact Assessment: assessing the impact of compliance with environmental obligations

Engelen KDR and Yzewyn T – DEME, Belgium;
Read KM – DEME, United Kingdom

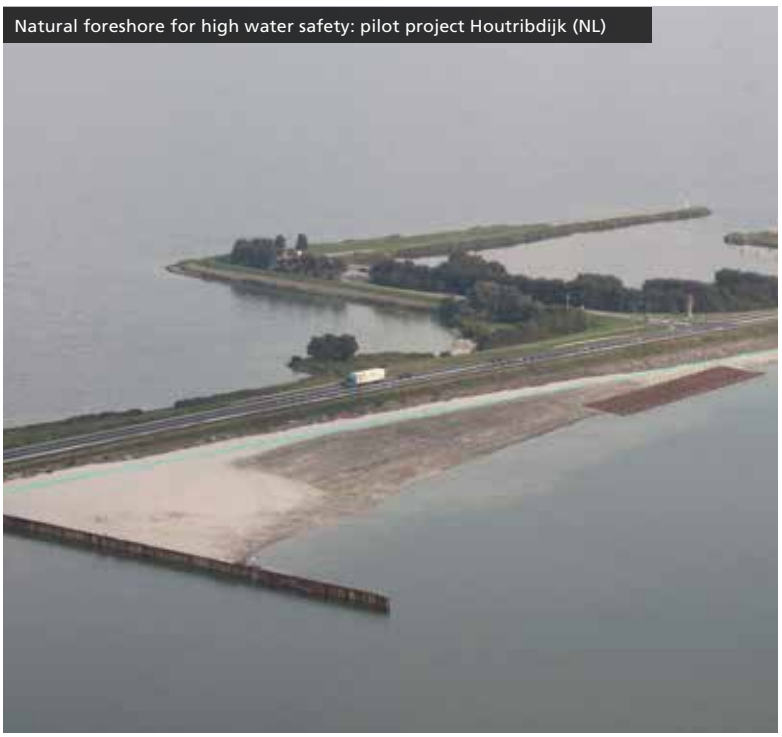
- Extensive marine environmental monitoring programme in the Thames, UK
- The importance of a robust and reliable environmental monitoring system at London Gateway Port
- Adaptive environmental management approach embraced by the stakeholders, the port developer and the contractor to enable improvements and rationalisations
- Better understanding of the Thames Estuary to allow more sophisticated assessments and fewer precautionary assumptions
- DEME's capability increased while the group's focus shifts to becoming a global solutions provider


TSHD Congo River pumping ashore, creating land for London Gateway Port

Development of sustainable marine infrastructure; public-private considerations on key enabling factors

Aarninkhof SGJ – Boskalis, the Netherlands;
Bridges TS – US Army Corps of Engineers, United States of America

- Development of sustainable marine infrastructure increasingly relies on nature-based solutions
- Implementation in daily practice is not always straightforward
- Enabling factors relate to engineering and ecology, as well as governance and stakeholders
- Potential for nature-based solutions is best if, introduced early in project development cycle


Natural foreshore for high water safety: pilot project Houtribdijk (NL)

About the papers

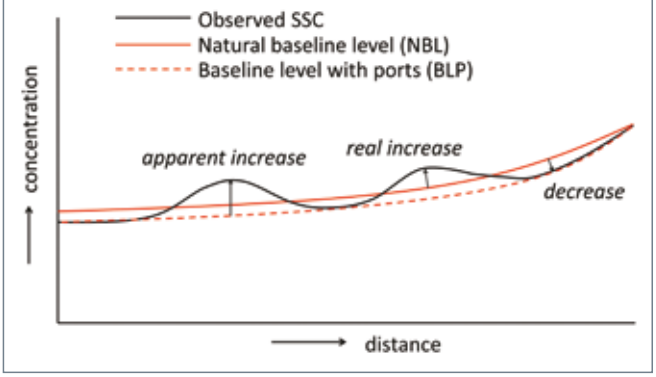
Session 9: Development in dredge sediment research

The impact of channel deepening and dredging on the suspended sediment concentration in the Ems Estuary

Van Maren DS and van Kessel T – Deltares, the Netherlands

- The turbidity in the Ems estuary has increased because of deepening but especially by changing sediment sinks
- Maintenance dredging and disposal mainly influences the spatial distribution of turbidity
- The presence of ports lowers the baseline SSC levels in a turbid estuary (BLP), and therefore the impact of dredging is usually overestimated

Changes in average concentration levels as a result of dredging

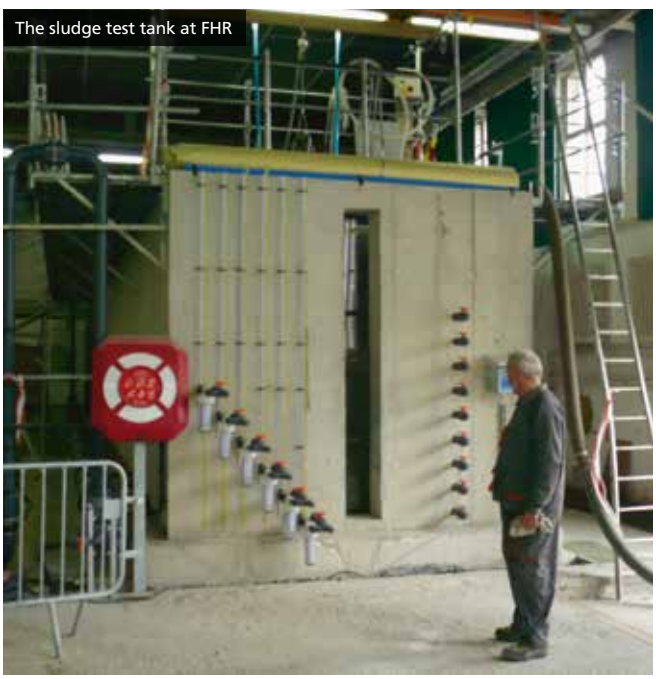


Cohesive sediment research: current development by Flanders Hydraulic Research Laboratory, Antea Group and dotOcean

Meshkati Shahmirzadi ME, Van Hoestenberghe T and De Sutter R – AnteaGroup, Belgium; Staelens P – dotOcean, Belgium; Claeys S, Van Oyen T and Vanlede J – Flanders Hydraulics Research, Belgium

- Summary of the tools and methodologies for cohesive sediment research
- Introducing a unique platform for developing, testing and optimising new dredging technologies as well as measurement devices
- Extensive information on the latest developments in equipment and methods for the monitoring of the self-weight consolidation of a fluid mud layer within large consolidation columns
- Presenting methods for investigation of exerted force on a partially submerged geometrical object towed through a fluid mud layer

The sludge test tank at FHR

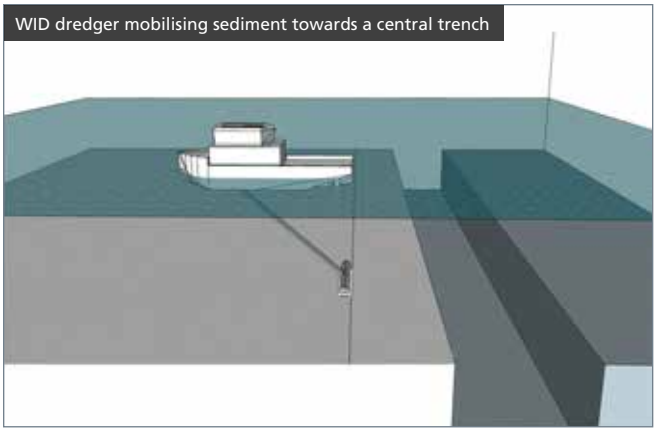


About the papers

Tests on new maintenance concept in the port of Rotterdam driven by mud rheology insights

Geirnaert K, Staelens P and Deprez S – DotOcean, Belgium; Noordijk AC, Van Hassent A, Schot C and Rutgers R – Port of Rotterdam, the Netherlands

- New maintenance concept based on combination of WID and hopper dredging
- Mobilisation of sediment towards a central buffer trench
- Optimisation of the port dredging operations and reduction of peak dredging interventions



WID dredger mobilising sediment towards a central trench

Port of Falmouth development initiative: habitat removal and relay as mitigation for dredging – a proposed approach

Adnitt CS – Royal Haskoning DHV, United Kingdom; Sheehan EV and Attrill MJ – Plymouth Marine Institute, United Kingdom; Sansom M – Falmouth Harbour Commissioners, United Kingdom

- Channel deepening on the Fal Estuary
- Special Area of Conservation
- Habitat removal prior to dredging
- Habitat relay following dredging
- Recolonisation of species

The papers will be available from February 2016 from www.dredging.org (Resources > CEDA publications online > Conference proceedings).

Young CEDA programme

Student programme

The student programme is a highly successful initiative that enables promising students to attend Dredging Days. Under this programme CEDA offers a considerable number of free registrations to graduate and postgraduate students. They are granted to students who have shown great affinity with dredging technology within their studies.

The free registrations have been organised and co-ordinated by Young CEDA, and 15 European universities and institutions of higher professional education have been offered up to three each.

Participating students will be "looked after" by members of the Young CEDA Commission who will make sure that they find their way both at the conference and in Rotterdam including meeting other students, young professionals and more senior members of the dredging community.

Young CEDA social event

As always, the social events will be an important part of the Young CEDA programme during Dredging Days 2015. They help to ensure that students and young professionals, attending the conference, have plenty of opportunities to meet their peers and spend some relaxed time with each other. A networking event for students and young professionals is scheduled for Wednesday, 4 November from 20:00 onwards, as an icebreaker for the conference. Exact location in Rotterdam to be announced.

Young CEDA pitch talks session

Young CEDA will be hosting a pitch talks session with the aim of providing a dynamic series of 7 short and sharp presentations on the overall theme of the conference. The pitch talks aim to provide a platform to students and young professionals to present their ongoing work expose their ideas to a broad expert audience and get immediate feedback and inspiration.

Young CEDA programme

Where to meet Young CEDA?

- At the Icebreaker
- In the Young CEDA corner
- During the Young CEDA Pitch Talks Session

Make sure you don't miss the traditional CEDA Netherlands reception on Thursday evening either, where there will be plenty opportunity to meet dredging enthusiasts from all segments of the dredging field from whom there is a lot to learn and who are fun to talk to.

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Technical visit

Wednesday 4 November 2015
12:00 – 17:00

Dutch water programme 'Room for the River'

Without dikes and coastal dunes, about two-thirds of the Netherlands would be flooded. Flood protection is therefore a very high priority. The 'Room for the River' programme, the implementation of which started in 2007, restores the river's natural flood plain in places where it is least harmful in order to protect those areas that need to be defended.

By 2015, through a series of measures at more than 30 locations across the country and costing €2.3 billion, the flood plain will be lowered and broadened and river diversions and temporary water storage areas will be created. Marshy riverine landscapes will be restored to serve once again as natural water storage 'sponges' and provide biodiversity and aesthetic and recreational values.

Room for the River projects Overdiep, Munnikenland and Noordwaard

For the CEDA Dredging Days the Room for the River projects Overdiep, Munnikenland and Noordwaard will be visited. These projects are realised to enlarge the discharge capacity of the river Waal (Rhine branche). Groynes in the river will be adjusted, floodplains will be lowered (200 ha) and a dike is realigned (1 km). Besides increasing the discharge capacity in this way, also new nature will be created and the access to Loevestein castle will be improved. The works are executed at this moment. When the project is finished the inhabitants of the river-area are better protected against the risks of flooding, and the area will be more attractive for recreation.

Beautiful river landscapes, fairy tale castle, farmhouses rebuilt on constructed mounds (terps) in the polder which is prown to flooding during (extreme) high water – we will see all this during our tour and visits. And of course we will be given specialist insight by experts from Rijkswaterstaat, the waterboard and the contractor into the technical solutions which make the Room for the River programme so unique.

You must register for the tour in advance (please refer to the registration form). There is an extra charge for participation: €50.00 (excluding VAT). Please note: The number of places is limited to a maximum of 50 and will be allocated on a first-come first-served basis.

The coach will depart from Rotterdam at 12:00 and will return at approximately 17:00. Please check the conference's website for up-to-date information.

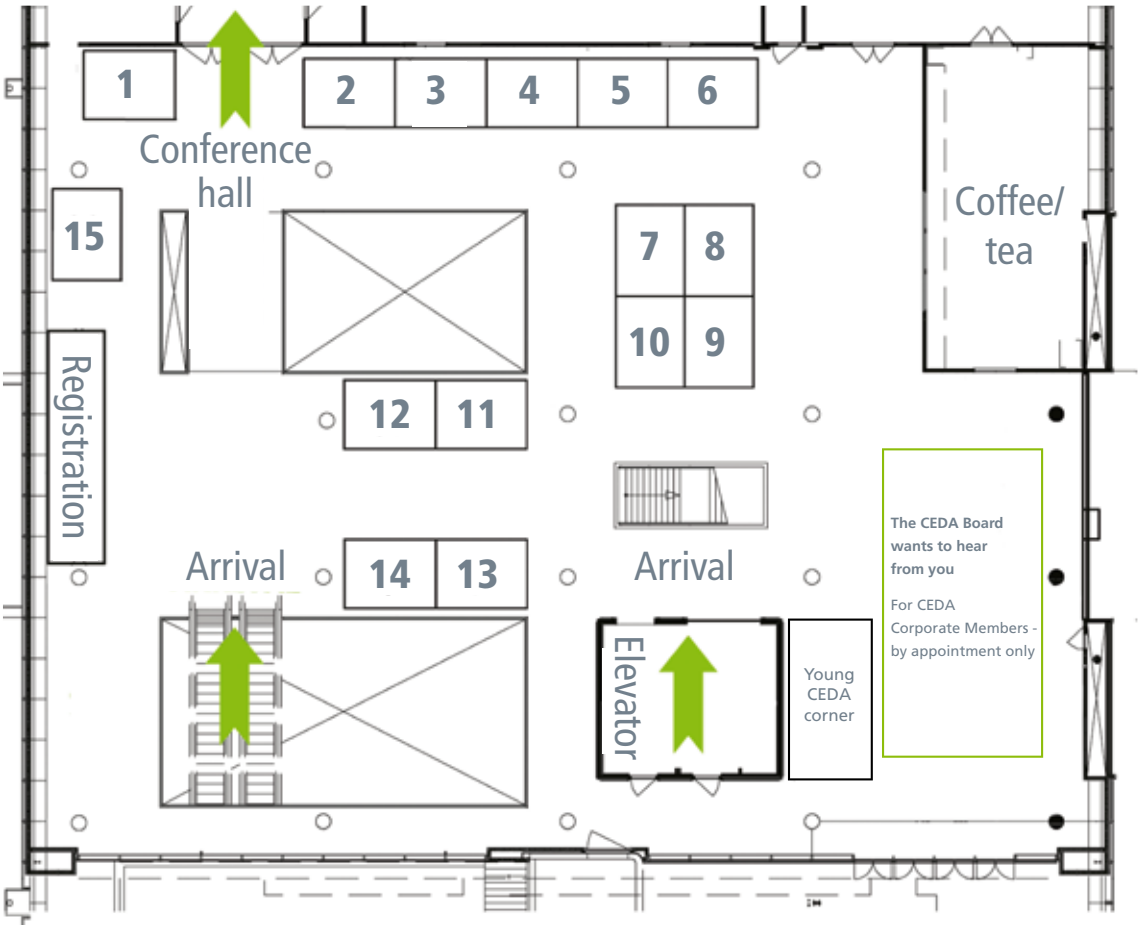
Participants registering for the visit will receive detailed joining instructions from the Conference Secretariat.

The visit is hosted by Room for the River of Rijkswaterstaat. Rijkswaterstaat is part of the Dutch Ministry of Infrastructure and the Environment and is responsible for the design, construction, management and maintenance of the main infrastructure facilities in the Netherlands.

Room for the River, Rijkswaterstaat

Room for the River, Rijkswaterstaat

Technical exhibition



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3 + 4	DEME
5	C-Cube
6	Van Oord
7 + 10	Teledyne RESON
8	TenCate Geotube®
9	Royal IHC
11	NORBIT Subsea
12	Holland Marine Technologies
13	Norden Maritime
14	Aqua Vision
15	Central Dredging Association

Aqua Vision

Booth 14

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E-mail: info@aquavision.nl
Website: www.aquavision.nl
Contact person: Mr Peter Meyer, director

Aqua Vision
Hydro-& Oceanographic Consultancy

Aqua Vision BV is an independent Hydro- en Oceanographic Consultancy with clients including government agencies, dredging & offshore industry and engineering companies worldwide. We offer a comprehensive range of services including inland and coastal surveying, hardware and software development, representation of leading industry manufacturers and leasing from our extensive instrument pool. ViSea, our in-house developed software, is used worldwide for ADCP data collection, validation and presentation.

C-Cube

Booth 5

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Tel: +31 (0)646 731 063
E-mail: th@ccube.nl
Website: www.c-cube-international.com
Contact person: Mr.Tjewei Hu, business developer

C-Cube international is a corrosion and wear specialist and has developed and patented technology to measure corrosion very precisely. With this technology, C-Cube international saves maintenance costs.
We have developed services and products for:

- Damage analyses, Materials testing and Consultancy;
- Onsite Corrosion Property measurement of metal and ceramic coatings, for example Hydraulic Cylinder Rods;
- Onsite Lifetime Enhancing Treatment for metal and ceramic coatings;
- Onsite Paint Coating Quality Measurement (EIS)

We operate globally covering a wide range of industries such as infrastructure, shipping and process industries, insurance companies or research organisations, offshore applications, dredging, hydraulics and coating applications.

Central Dredging Association

Booth 15

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Fax: +31 (0)15 268 2576
E-mail: ceda@dredging.org
Website: www.dredging.org
Contact person: Ms Anna Csiti, general manager

CEDA is an established authority and the leading independent forum for the professional dredging community and associated industries in Europe, Africa and the Middle-East. It represents dredging professionals and organisations from government, academia and business in the region and fosters and promotes the understanding and advancement of dredging to the wider community. Drawing on the collective knowledge of its members, and as an impartial body, CEDA regularly gives expert advice to government and international regulatory bodies.

CEDA members are representatives of consultancies, research and educational institutions, port authorities, government agencies, dredging contractors, designers and builders of dredging vessels, suppliers of ancillary equipment and organisations providing a whole range of related services.

CEDA is part of the World Organisation of Dredging Associations (WODA). CEDA's two sister associations, WEDA (Western Dredging Association) and EADA (Eastern Dredging Association), serve the Americas and Asia, Australia and the Pacific region respectively.

Damen Dredging Equipment

Booth 2

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Fax: +31 (0)33 247 4060
E-mail: david.tenwolde@damen.com
Website: www.damendredging.com
Contact person: Mr David ten Wolde, product director dredging

Damen Dredging Equipment is a specialised supplier of dredging equipment and dredging instrumentation & automation. The company, based in Nijkerk, the Netherlands, has over 70 years of experience in the construction of dredging equipment serving the worldwide dredging industry. All dredging tools, such as cutter suction dredgers, trailing pipe systems and DOP submersible dredge pumps are built to specific customer requirements, making use of a wide range of standard equipment. The company is fully owned by the Damen Shipyards Group.

DEME

Booth 3 + 4

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E-mail: hoorelbeke.karen@deme-group.com
Website: www.deme-group.com
Contact person: Ms Karen Hoorelbeke, communication department

The Belgian dredging, hydraulic engineering and environmental group DEME has a prominent position on the world market in dredging operations, land reclamation and complex hydraulic disciplines.

DEME is also proactively offering solutions in response to future needs, major threats and challenges the world will be facing in the next decades such as the effects of climate change and scarcity of resources. Through innovative thinking DEME is offering sustainable solutions in various fields such as soil and sediment remediation, water treatment, coastal protection, development of green and blue energy, offshore dredging of gravel and sand, deep sea harvesting of minerals and creation of land in densely populated regions, ports and industries.

DEME's multi-disciplinary know-how and experience, project synergies and integrated business structure allowed DEME to grow into a global solutions provider. The Group owns one of the most modern, high-tech and versatile fleets for dredging and hydraulic engineering activities. DEME employs 4,600 people. In 2014, the Group realised a turnover of EUR 2.58 billion.

Holland Marine Technologies

Booth 12

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Fax: +31 (0)348 410 019
E-mail: info@hollandmt.com
Website: www.hollandmt.com
Contact person: Mr Jan Willem de Wit, managing director

Holland Marine Technologies B.V. is an engineering & contracting company providing innovative dredger design and equipment packages to dredging contractors and shipyards (dredge builders). HollandMT's core activities include the following scope:

- Concept design studies and dredge consultancy services.
- Basic design of Trailing Suction Hopper Dredgers, Backhoe dredgers, and other custom designed dredgers.
- Supply of dredge equipment packages for above listed dredgers.
- Supply of customized dredge parts, such as gate-valves, ball-joints, pipe elbows, spuds, wear liners and sheave blocks.
- Project supervision, QA/QC and technical support services (for construction of dredgers)

HollandMT's practical project approach is focussed on providing value-added services and equipment by making use of state of the art engineering, project management and cost effective fabrication facilities. HollandMT's experienced team of engineers are highly motivated and eager to provide the ultimate solution for any of your dredge design- or equipment requirements.

NORBIT Subsea

Booth 11

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Norway
Tel: +47 (0)73 982 550
E-mail: anna.dunaeva@norbit.com
Website: www.norbit.com
Contact person: Ms Anna Dunaeva, key account manager

NORBIT Subsea, a manufacturer of wideband curved-array multibeam sonar sensors for bathymetry and forward looking applications, pioneers another industry solution: the all-new multi-sensing concept that combines multiple tightly integrated sensors into one hardware platform with a single LAN connection to survey laptop. Supported sensors include any combination of bathymetric multibeam echo-sounder, forward looking sonar and LiDAR. The ability to couple a forward looking bottom detection sonar opens doors for obstacle avoidance while safely carrying out a coastal survey along rugged coastlines or combining bathymetric multibeam with LiDAR. Allowing you to … explore more with NORBIT.

Norden Maritime

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Tel: +47 (0)5656 5570
E-mail: tl@norden-maritime.no
Website: www.norden-maritime.no
Contact person: Mr Tore Lunde, managing director

Norden Maritime AS is a major producer in Norway to the offshore and marine industry and has been that for many years. Established in 1997, we are a manufacturer of composite bearings and material in house at our factory in Os 30 kilometers south of Bergen.

Cutter head bearing
The Norden CM77 Bearing was developed specifically for Cutter Suction Dredging. It is a combination of two highly developed thermosetting cross-linked polymers. These optimize different characteristics in the design of these elastomeric bearings.

The outside polymer, blue in color, is a tough, hard material with high load-bearing capacity and resistance to impact and compression. The inside polymer, black in color, is a softer rubber-like material. It has good flexibility and the ability to resist tearing from abrasive particles.

Royal IHC

Booth 9

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2961 AW Kinderdijk
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E-mail: eac.peters@ihcmerwede.com
Website: www.ihcmerwede.com
Contact person: Ms Esther Peters, communication manager

Royal IHC (IHC) is focused on the continuous development of design and construction activities for the specialist maritime sector. It is the global market leader for efficient dredging and mining vessels and equipment – with vast experience accumulated over decades – and a reliable supplier of innovative ships and supplies for offshore construction.

IHC has in-house expertise for engineering and manufacturing integrated standard and custom-built vessels, advanced equipment and also providing life-cycle support. This integrated systematic approach has helped to develop optimum product performance and long-term business partnerships.

The company's broad customer base includes dredging operators, oil and gas corporations, offshore contractors and government authorities.

Stema Systems

Booth 1

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Website: www.stema-systems.nl
Contact person: Ms Maren Spanjer, marketing department

Stema Systems provides technical solutions for the marine construction and ocean industry. Within the four domains, Hydrography, Positioning, Geophysical and MetOcean Stema Systems provides both small as well as large scale marine solutions.

With the extensive in-house third party partnerships, rental, design and integration capabilities Stema Systems can provide tailor-made solutions for the most challenging environments and projects.

Teledyne RESON

Booth 7 + 10

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Contact person: Ms Helle Auken Lygum, marketing project manager

Teledyne RESON is the world's leading provider of high-quality underwater acoustic solutions. With global presence and worldwide service facilities, we specialize in the design, development, manufacture and commissioning of advanced multibeam sonar systems, sensors, transducers, hydrophones and survey software. Teledyne RESON operates in the hydrographic, offshore, dredging, defense & security and marine research business areas.

Teledyne RESON is part of the Teledyne Marine Group. Together with Teledyne Odom Hydrographic and Teledyne BlueView, we offer the market's strongest product portfolio for subsea acoustic imaging and multibeam echosounder solutions.

For more information, visit:
www.odomhydrographic.com, www.blueview.com or
www.teledyne-reson.com

TenCate Geotube®

Booth 8

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E-mail: g.vandenberg@tencate.com
Website: www.tencategeotube.com
Contact person: Mr Gerben van den Berg, marketing manager environmental remediation

TenCate Geotube® sludge and sand containment offers engineering companies, inland waterway and port authorities unexpected but proven possibilities to reduce silting, protect beaches or to manage large sludge volumes effectively and economically. Our unmatched experience stands for safe and superior design. TenCate Geotube® combines high volume sludge dewatering & containment in one, reduces transport volumes of hydraulically dredged sludge. Often allows the (contaminated) sediments to be used as construction material for landscaping, dike and berm restoration. Elements filled with locally found sand function as islands, groynes, jetties, breakwaters or dune cores. Cost effective. Short processing times. High social acceptance guaranteed.

Van Oord

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Website: www.vanoord.com
Contact person: Mr Robert de Bruin,
head corporate communication & markets

Van Oord operates around the world as a leading contractor for dredging, marine engineering and offshore energy projects (oil, gas and wind), offering innovative solutions to marine challenges. Van Oord is a private company with limited liability and its head office in Rotterdam, the Netherlands. Our employees are committed, entrepreneurial professionals who are passionate about water and technology.

Van Oord is a family-owned business offering marine solutions of value, both now and in the future. Safety, sustainability and continuity go hand in hand in this respect. Van Oord takes an interest in its value chain, which extends from suppliers to clients.

IHS MARITIME & TRADE

Weathering the Storm of the Future

Fleet Capacity Forecast

The global economic recession, shifting trade flow patterns, muted demand for trade, overcapacity, higher operating costs and lower freight rates. All these things have contributed to a need to find new ways to weather the storm.

The answer: Reliable, long term Fleet Capacity Forecasts from IHS

Only IHS has the deep maritime industry, economic, energy, geopolitical, manufacturing expertise to understand how these drivers combine to influence future trade flows and fleet capacity demand. And only IHS applies Advanced "Big Data" Analytics to extract precise, long term forecasts that you can trust to make business critical investment and market intelligence decisions.

For more information please see **IHS.com/maritime**
Or contact your Account Manager

IHS

Registration information

CEDA Dredging Days 2015 will be held at Ahoy Rotterdam, Ahoy-weg 10, Rotterdam, the Netherlands, on Thursday and Friday 5 and 6 November and in conjunction with Europort.

Registration fees	
Members of CEDA, EADA and WEDA	€ 550
Non-members	€ 725
Speakers and PhD students	€ 350
Students	€ 150
Technical visit	€ 50

You can register in two ways:

- Online registration via www.cedaconferences.org/dredgingdays 2015
- By emailing a copy of the registration form to sylvia@mintenprojectmanagement.nl

Conference Secretariat CEDA Dredging Days 2015:
Sylvia Minten, Minten Projectmanagement,
Rotterdamseweg 183c, 2629 HD Delft, the Netherlands
Tel: +31 (0)6 1660 3947, Fax: +31 (0)84 215 0053
NB: Same details apply throughout the conference

Registration desk location and opening hours

When you arrive at CEDA Dredging Days 2015, contact the registration desk. You'll find it located on the second floor.
NB: To enter Ahoy on the first day you will be asked to show an email, provided by the conference secretariat. We'll send it to you a couple of days before the start of the conference.

- Thursday 5 November – from 08:00 to 19:00
- Friday 6 November – from 08:00 to 17:15

NB: If you are an exhibitor, you may set up your stand from 07:00 on Thursday 5 November; breakdown will be from 17:15 on Friday 6 November.

Registration entitlements

Conference delegate and student registration fee includes:

- Conference sessions on 5 and 6 November
- A full set of conference documents
- Morning coffees, lunches, afternoon teas, reception and farewell drinks
- The official Europort 2015 exhibition catalogue

Exhibition staff registration fee includes:

- Morning coffees, lunches, afternoon teas, reception and farewell drinks
- The official Europort 2015 exhibition catalogue

NB: This fee does not include the conference papers or entry to the conference sessions. Staff who would like to attend the technical sessions should register as conference delegates.

Technical visit registration fee includes:

- Transportation
- Site visit and refreshments

Ahoy Rotterdam

Name badges

These will be issued to all registered delegates and exhibitors. Badges must be worn for entry to all technical sessions, the exhibition and social functions. Those not wearing a badge will be refused entry.

Name badges will be colour coded as follows:

Conference delegate	White
Exhibitor	Blue

Liability and insurance

Registration fees do not include insurance of any kind. It is strongly recommended that when registering for the conference and booking travel arrangements, participants should arrange personal insurance cover for the following:

- Loss of registration and tour fees, deposits, hotel costs and airfares through cancellation of the conference for *force majeure* or any other reason
- Failure to use pre-booked arrangements due to airline delays, for *force majeure*, or any other reason
- Medical expenses and loss or damage to personal property.

CEDA, Minten Projectmanagement and Ahoy Rotterdam will not accept responsibility for any personal injury, damage or loss of property that may occur in connection with the conference. The insurance is to be purchased in the participant's own country.

CEDA Dredging Days 2015 is organised by the Central Dredging Association. Minten Projectmanagement has been appointed as the Conference Secretariat.

The Central Dredging Association (CEDA) is an internationally recognised independent professional association. It is an easy-to-access leading platform for the exchange of knowledge and an authoritative reference point for impartial technical information. CEDA actively strives to contribute towards sustainable development by strongly recommending working with nature. CEDA members are corporations, professionals and stakeholders involved in a diversity of activities related to dredging and marine construction. CEDA represents the common interest of all fields related to dredging and marine construction and does not promote the interest of any particular industry sector or organisation.

For more information visit: **www.dredging.org**

Practical information

What you need to know for CEDA Dredging Days 2015

The city of Rotterdam is known for its Erasmus university, riverside setting, lively cultural life and maritime heritage. Obviously the main attractions are CEDA Dredging Days 2015 and the Europort event, but if you have some spare time, download a Rotterdam City Guide app to your phone: en.rotterdam.info/visitors/practical/mobile-city-guide-app/ or get more information at www.rotterdam.nl or www.holland.com.

Danny Cornelissen

Transport

By air

- **Rotterdam The Hague Airport**

This airport is only 20 minutes away from Ahoy Rotterdam, either by taxi or by metro. For more information see www.rotterdamthehagueairport.nl.

- **Schiphol Airport**

Schiphol airport is located 65km from Rotterdam. The NS Hispeed intercity train will bring you from Schiphol to Rotterdam Central Station in just 27 minutes.

By public transport

- **By train** – Rotterdam offers excellent train connections. The international high speed trains stop here, but intercity trains from all over the Netherlands also call at Rotterdam Central Station. The Thalys high-speed train (ten times a day) makes Rotterdam just a short trip from Antwerp (30 min), Brussels (1h11 min) and Paris (2h36 min). UK travellers can take the Eurostar to Brussels and transfer to the Thalys there.
- **Metro** – At Rotterdam Central Station, take the metro with direction 'De Akkers' (Line D) or direction 'Slinge' (Line E). Get off at 'Zuidplein' (in front of Ahoy Rotterdam). It will take less than 3 minutes to walk to the main entrance. Please check www.9292ov.nl or www.ret.nl for a timetable of NS and metro in Rotterdam.
  Note: a public transport chip card is mandatory for the Rotterdam Metro. A disposable card can easily be bought in Rotterdam Central Station at the entrance to the metro. It is also possible to order a chip card on forehand through the web shop on www.ret.nl. where you can also find more information on travelling with the "OV-chipkaart."
- **Taxi** – If you are traveling by taxi, you can find the taxi stand at the entrance / exit of Hall 8. You do not need to call taxis yourself – Ahoy Rotterdam ensures enough taxis.

Parking and shuttle services at Ahoy

- **Parking** – the Ahoy parking area offers space for 3.000 cars at €12,50 per car per day. Other nearby parking areas are Q-Park Zuidplein and Q-Park Ikazia.
- **Hotel shuttle service** – during Europort, a daily shuttle service will be available from a wide range of hotels in Rotterdam. A detailed time schedule, including all listed hotels, will be available on its website.

By car

- **Coming from Amsterdam/The Hague**

Take the A4 to The Hague; follow the A13 towards Rotterdam; take the A20 towards Hoek van Holland. Take the A4 through the Benelux tunnel, then follow A15 direction Rotterdam. Take the exit Rotterdam-Charlois (19). From the Groene Kruisweg take the 4th exit right onto the Oldegaarde. Then turn left onto the Zuiderparkweg at the traffic lights. On the Zuiderparkweg take the first right onto the Ahoy-weg.

- **Coming from Utrecht**

Take the A12 to Gouda; follow the A20 towards Rotterdam and take exit A16 towards Dordrecht/Breda. After the Van Brienenoord bridge take the Ring Rotterdam towards Zierikzee / Barendrecht / Europoort (A15). On the A15, follow the Ring A15 towards Rotterdam-Zuid before you reach intersection Ridderkerk, then follow Ring Rotterdam Zierikzee (A29) and take exit Rotterdam-Zuidplein (19A). At the 2nd traffic lights, turn left onto the Oldegaarde. Turn right at the next traffic lights. On the Zuiderparkweg take the first right onto the Ahoy-weg.

- **Coming from Dordrecht/Breda**

Stay on the A16 towards Rotterdam. On the A16 take the Ring Rotterdam-Zuid towards Zierikzee (A15). On the A15 follow the Ring A15 towards Rotterdam-Zuid before you reach intersection Ridderkerk, then follow Ring Rotterdam Zierikzee (A29) and take exit Rotterdam-Zuidplein (19A). At the 2nd traffic lights, turn left onto the Oldegaarde. Turn right at the next traffic lights. On the Zuiderparkweg take the first right onto the Ahoy-weg.

- **Coming from Zeeland/Roosendaal**

Stay on the A29 towards Rotterdam. Drive to the end of the A29. At intersection Vaanplein, take exit Rotterdam-Zuidplein (19A). At the 2nd traffic lights, turn left onto the Oldegaarde. Turn right at the next traffic lights. On the Zuiderparkweg take the first right onto the Ahoy-weg.

Staying there

Hotel rooms have been reserved at a special rate but the number available has greatly reduced as conference nears. Information about booking remaining accommodation, including an interactive map, can be found on the Europort website where you can make a hotel reservation.
Please contact Preferred Hotel Reservations directly if you have difficulties, or would like to check-in earlier/ later. It can be reached Monday – Friday 9am – 5.30pm by telephone (+31 299 656 527), or by email (hotelservice@ahoy.nl) mentioning 'Europort 2015' in the subject line.

IHS MARITIME & TRADE

Ports of the Future: are you ready?

Ports are channels for international trade. Understanding the medium and long- term developments affecting ports is vital for making strategic business decisions.

IHS is uniquely positioned to understand the variety of factors that affect port development, overarching industry trends, through put, ports of origin, how many vessels will call and what kind of vessels will call. Combining deep industry expertise, valuable data assets and forecasts, and advanced modelling techniques IHS is able to answer these questions to help ports best position themselves for their future.

Together, these capabilities offer a unique opportunity for ports to gain a competitive advantage. Our solutions can be customized to suit the needs of the individual client.

Please contact us to discuss your needs at
Maritime.consulting@ihs.com
Phone + 44 1344 328 155

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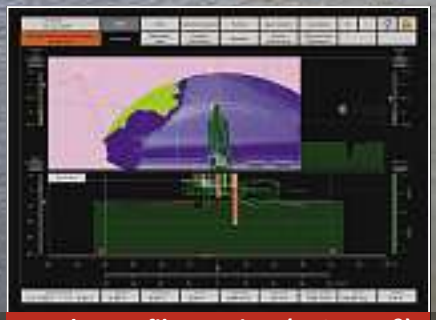
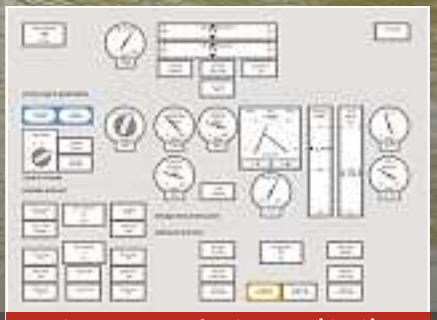


Dredge Profile Monitor (IHC DPM®)

Integrated production measurement



Operator Assist System (OAS)

IHC Systems is dedicated to Efficient Dredging practices. As part of Royal IHC, the company is the market leader in process monitoring, control, automation and simulation, as well as the integration of dredging, nautical and hydrographical tasks on board dredgers. IHC Systems designs and builds electric, electronic and IT systems, from robust sensors and transmitters to integrated control, monitoring and automation systems, training simulators, and hydrographical and survey equipment. Life-cycle support services include 24/7 sales support, system integration management, training, and remote and worldwide field support.

IHC Systems

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