

PROGRAMME

WODCON XX

World Dredging Congress and Exhibition

the Art Of DREDGING

3-7 June 2013 • Square Brussels Meeting Centre, Brussels, Belgium

Organised by CEDA on behalf of WODA, which incorporates

WEDA • Western Dredging Association

CEDA • Central Dredging Association

EADA • Eastern Dredging Association

With the support of the Government of Flanders

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WODCON XX: The Art of Dredging

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Essential information

Everything you need to know at WODCON XX

The WODCON XX organising team will be available at the registration desk located in the Registration Hall of the Square Brussels (accessible from the Terrace Entrance or the Glass Entrance) which will be open the following times:

Monday 3 June	12:00-19:30
Tuesday 4 June	08:00-18:00
Wednesday 5 June	08:30-17:30
Thursday 6 June	08:30-16:30

Emergency procedure

In case of emergency, please follow instructions given by WODCON XX organisers or Square venue staff, vacating the venue via the emergency exits – follow GREEN emergency signs on the walls.

Dress code

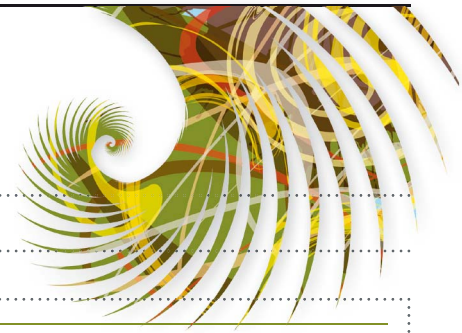
There is no set dress code for the congress. Smart, casual attire is suggested for all daytime sessions. For the Gala Dinner, cocktail attire is suggested for women and jacket and tie for men.

Don't be late

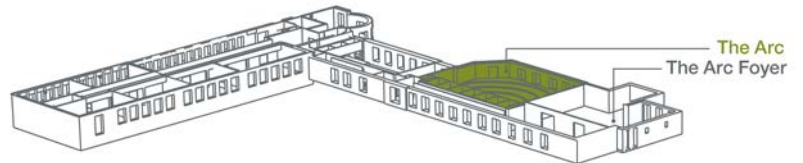
The published timetable will be strictly adhered to, enabling delegates to move between sessions.

Don't miss...

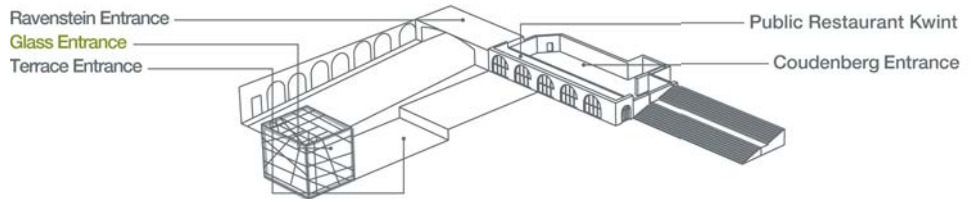
WODA's principles of sustainable dredging will be launched at the closing ceremony on Thursday 6 June



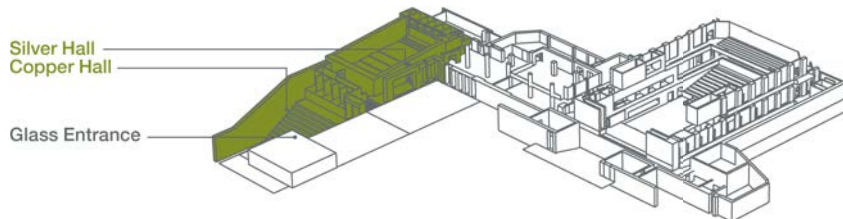
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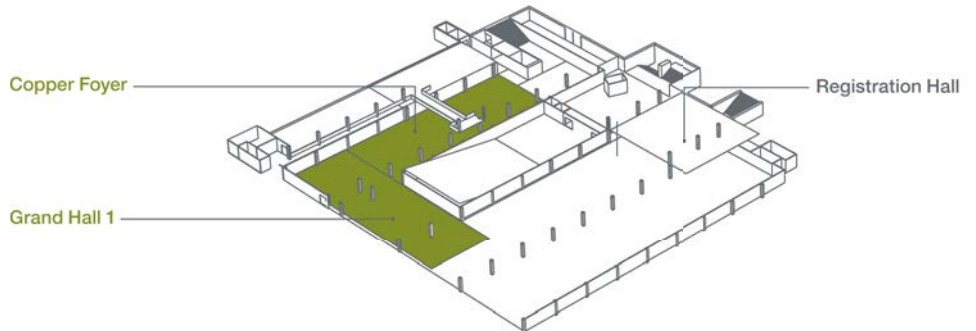
ENTRANCES



LEVEL 0



LEVEL -2-1



Emergency numbers

Medical Service	100
Police	101
Fire Service	100
Pan-European emergency number	112

Calls are free from any mobile, cellular or fixed-line telephone for any life-threatening situation including: serious medical problems (accident, unconscious person, severe injuries, chest pain, seizure); any type of fire (building, car); or life-threatening situations (crimes).



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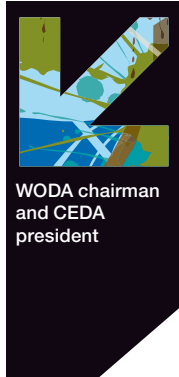
Let's talk. Tell us about your challenges

Welcome to WODCON XX

Anders Jensen welcomes the world to the premier dredging event



Photo: CEDA



Dear delegates, speakers, spouses, sponsors and exhibitors – a very warm welcome to WODCON XX in Brussels, Belgium. Forty-six years

have passed since WODCON I was held in New York in 1967. Now we are celebrating the 20th edition of WODCON. This milestone date coincides with the 35th anniversary of the current WODA and its three component associations, CEDA, EADA and WEDA, making this event even more special.

Some 95 technical papers will be presented over the three days, covering all aspects of dredging and maritime construction. Do not miss the technical exhibition and the technical visits. These technical visits provide an excellent opportunity to meet old friends and make new friends from all over the world in a

friendly and inspiring atmosphere.

I wish to thank the organising committee from CEDA's Belgian section which has worked day and night to organise this event. Thanks too, to all the speakers and authors as well as the papers committee. Without their contributions, this event would not be possible.

Finally, I want to thank the sponsors and the exhibitors for their contribution to making this WODCON XX an enjoyable and interesting event.

I wish you all a very good and rewarding conference.

Anders Jensen

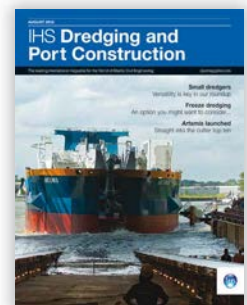


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“We are many in our organisation who like this magazine (IHS Dredging and Port Construction), and normally I have always circulated it internally and then forwarded it to my German colleagues - it was easy as I received 3 copies!!! We value the information in DPC because first of all it is easy to read with articles that are both interesting and instructive, often illustrated with many photographs it also has high production values.”

Kirsten Drachmann, Rohde Nielsen A/S



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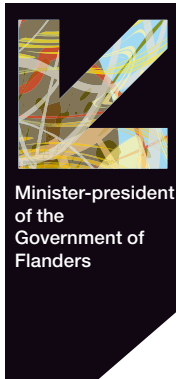


Belgian know-how

Welcome to my country: we know dredging, says **Kris Peeters**



Photo: Gov. of Flanders



Minister-president
of the
Government of
Flanders

Dear visitor,
With this congress and exhibition in Brussels, WODCON XX is taking place in one of the leading

dredging countries in the world. Our companies are scattered across the face of the earth, realising prestigious projects. They make sure that the biggest ships can reach the world's leading harbours; they reclaim land from the sea; and they literally change the face of the earth. Indeed, companies hailing from the Flanders region of Belgium have collaborated on high-profile projects such as the artificial islands in the United Arab Emirates. These companies show the cutting edge craftsmanship that is typical of Flanders. They are

Keynote speakers

The organising committee of WODCON XX is delighted to announce two exceptional keynote speakers: **David McGillewie** (Transnet National Ports Authority) and **Rogelio Gordon** (Panama Canal Authority - ACP)

great exponents of our very open Flemish economy. During WODCON XX, the world of dredging meets to discuss challenges, make new contacts, renew old ones, and look for ways of collaboration. I therefore wish you all a fruitful and productive WODCON XX, right here in the beautiful city of Brussels.

Kris Peeters

DREDGING & LAND RECLAMATION

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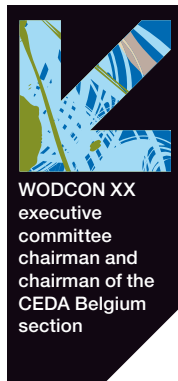
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SOLID
GROUNDS

WODCON XX starts here!

On behalf of those who have put together the event you're about to enjoy, **Eric Van den Eede** welcomes everyone to WODCON XX



Photo: CEDA



Ladies and gentlemen,
As WODCON XX executive committee chairman and chairman of the CEDA Belgium section, it is my privilege to invite you to Brussels for the 20th edition of the World Dredging Congress.

Dredging has developed into a major branch of the Belgian economy. Starting from a sustainable home market, our major dredging companies have extended their activities to all continents. The Flemish seaports and waterways agencies have also demonstrated that they play a leading role in their respective fields.

Not all of you may be aware that Brussels is linked to the sea by a maritime canal and the River Scheldt, so its port may rightfully be called a seaport, but of course it is better known as the capital of Belgium and of the European Union, as well as the seat of NATO and many other international political and economic organisations.

In addition, the city is famous for its

cultural heritage involving a lot of Art Nouveau, museums of all sorts and, of course, not forgetting chocolate and beer – both major and much-appreciated export products.

The venue of the congress, the Square Brussels, is located on the so-called Mount of Arts, close to the most famous cultural sites and providing a great view of the old lower city centre around the town hall that will be the venue of the welcome reception.

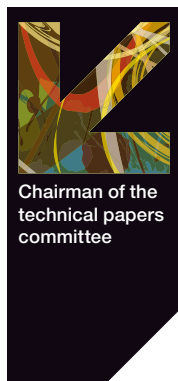
Dear CEDA members and guests, the WODCON XX executive committee and the CEDA Belgium section are looking forward to meeting you in Brussels for a marvellous WODCON XX.

Eric Van den Eede

Cees van Rhee expects the fantastic programme to educate and stimulate



Photo: CEDA



Dredging is vital to social and economic development. In particular, it's vital to the construction and maintenance of much of the infrastructure upon which our economic prosperity and social well-being depend. It is also an important tool to restore and enhance the natural environment. Meeting the demand created by

enormous increase in global trade and transport and the demographic developments would not be possible without dredging.

With the expected effects of climate change and the increasing demands for energy and minerals, in the future the dredging world will face additional challenges and will be presented with exciting new opportunities. Already dredging activities must be carried out taking environmental effects into account and, in many cases, those who promote and execute dredging projects increasingly look for opportunities to improve the natural environment while meeting the project objectives.

As a result, the industry and its tools in the broadest sense change with a speed never seen before. Innovation – new approaches – are a 'must' from design to

implementation in many large, complex projects where dredging is an integral element.

The call for papers resulted in a large number of high quality submissions covering important issues related to dredging. As usual, a wide range of different topics are covered: technical papers on equipment development, modelling of dredging processes, environmental monitoring, economic and legal issues and case studies. Two sessions are devoted to papers dealing with the Scheldt.

In all, thanks to the authors and the paper committees of all regions, we're confident that we've put together an interesting programme that will bring you up to speed with dredging's latest developments.

Cees van Rhee

David Padman explains what WODCON XX means to members



Photo: Port Klang Authority



Chairman of the Eastern Dredging Association (EADA) and general manager of the Port Klang Authority

One of the main criteria for a successful port is the provision of safe and adequate fairways, navigational channels and turning basins with sufficient depths to ensure ships are at all times safe, whether navigating, anchoring or moored within the port area. So dredging is an integral part of a port's initial development and subsequent maintenance regime to ensure its continued survival and well being.

Over the past two decades, WEDA, CEDA and EADA – working together as WODA – have collaborated very closely to improve the negative perception that the industry faces. Technical co-operation and information sharing has contributed to uniformly accepted practices applicable worldwide. The dredging industry's developed from cumbersome environmentally unfriendly methods to modern advanced and efficient techniques and equipment. Cutting-edge technology is used to minimising negative impacts while maximising productivity.

Best practices, guidelines, environmental studies and innovative solutions are published and distributed to respective members and WODCON's recognised as the most important and far-reaching forum for this. Scientists, technology experts, academicians and scholars view the

So who is coming?

Experts, scientists and practitioners, representing manufacturers, universities, research institutes, consultants, contractors, port & harbour authorities, government agencies and public authorities working in the dredging, navigation, coastal and inland flood protection, alluvial and deepsea mining and other related fields

congress as the most appropriate forum to showcase their research and technological breakthroughs but it's also a great place for industry and client networking.

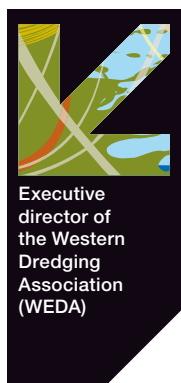
As the Asia Oceania Chapter of WODA representing one of the fastest growing areas in the world, EADA's proud to host WODCON every nine years (the last ones were in 2001 and 2010) and to do its part in guiding the industry towards a better sustainable future.

David Padman

Larry Patella anticipates lots of information and lots of contacts



Photo: Tony Shin



Executive director of the Western Dredging Association (WEDA)

Why attend WODCON XX or any World Dredging Congress?

In earlier days, information – which enabled the global dredging industry to create a strong global economy and cleaner world environment – was not readily available to the emerging industry.

However, following the creation of the World Organisation of

Dredging Associations (WODA) and its periodic World Dredging congresses, the exchange of information as it relates to dredging navigation, marine engineering and construction technology has been enhanced immeasurably.

Those attending have the opportunity to engage in discussion with some of the world's leading dredging experts; to participate in and listen to dredging, environmental and dredger safety presentations. Our knowledge is expanded immeasurably and this can only be good for the industry as a whole.

Western Dredging Association (WEDA) members are eagerly looking forward to attending and to meeting with their peers in historic Brussels, Belgium, in what is certain to be an outstanding learning environment.

Held every three years and hosted by one of the three organisations that constitute WODA, this one's being hosted by the Central Dredging Association (CEDA) but WEDA will be honoured to host WODCON XXI in 2016.

In fulfilling the associations' major goals and objectives – to promote the exchange of knowledge in fields related to dredging, navigation, marine engineering and construction – it's fitting that the 2013 congress will be held in Belgium, the cradle of dredging and hydraulic engineering.

Larry Patella

Programme at a glance

Monday 3 June

12:00-19:30	Registration desk (registration hall)
12:00-18:00	Exhibitors' set-up
19:00-20:30	Ice-breaker: beer tasting discovery sponsored by SeaTools (Grand Hall 1)

Tuesday 4 June

Congress

	Copper Hall	Silver Hall
08:00-09:00	☕ Morning coffee – exhibition area	
08:00-18:00	Registration desk (registration hall)	
09:15-11:15	Opening Ceremony in the Copper Hall (see panel, right), followed by a tour of the exhibition by Kris Peeters	
11:00-11:30	☕ Coffee break sponsored by Brusselle Enterprises – exhibition area	
11:30-13:10	Technical session 1 Developments in dredging equipment	Technical session 2 WODA Environmental Panel
13:10-14:40	🍴 Lunch – exhibition area	
14:40-16:00	Technical session 3 Modelling hydraulic transport	Technical session 4 Use of dredged sediments
16:00-16:30	☕ Coffee break sponsored by Brusselle Enterprises – exhibition area	
16:30-17:50	Technical session 5 Monitoring the dredging process	Technical session 6 Treatment of sediments /1
19:30-21:00	Welcome reception (Brussels Town Hall)	
21:00	Young CEDA Drinks (Le Roy d’Espagne)	

Wednesday 5 June

Congress

	Copper Hall	Silver Hall
08:30-09:00	☕ Morning coffee – exhibition area	
08:30-17:30	Registration desk (registration hall)	
09:00-10:20	Technical session 7 Modelling of dredge pumps	Technical session 8 Dredging for navigation
10:20-10:50	☕ Coffee break – exhibition area	
10:50-12:30	Technical session 10 Methods & equipment: case studies	Technical session 11 ...With nature
12:30-14:00	🍴 Lunch – exhibition area	
14:00-15:20	Technical session 13 Modelling optimisation of equipment	Technical session 14 Treatment of sediments /2
15:20-15:50	☕ Coffee break – exhibition area	
15:50-17:10	Technical session 16 Methods, equipment and techniques: dealing with silt	Technical session 17 Assessment and monitoring /1
19:30-22:00	Gala dinner at Autoworld	

Thursday 6 June

Congress

	Copper Hall	Silver Hall
08:30-09:00	☕ Morning coffee – exhibition area	
08:30-16:30	Registration desk (registration hall)	
09:00-10:20	Technical session 19 Optimising the dredging processes	Technical session 20 Assessment and monitoring /2
10:20-10:50	☕ Coffee break – exhibition area	
10:50-12:10	Technical session 21 Numerical simulation of dredging processes	Technical session 22 Assessment and monitoring /3
12:10-13:40	🍴 Lunch – exhibition area	
13:40-15:00	Technical session 23 Alluvial and deep sea mining	Technical session 24 Management and economics
15:00-15:30	☕ Coffee break – exhibition area	
15:30-16:30	Closing ceremony - Plenary in Copper Hall (see panel, right)	
	Free evening	

Friday 7 June

Technical visits

09:00-15:00	Deurganckdock lock, Antwerp (meet 08:45 Square Glass entrance)
09:00-16:00	AMORAS mechanical silt dewatering plant (meet 08:45 Square Glass entrance)
09:00-16:00	Sigma flood protection plan (meet 08:45 Square Glass entrance)

Premium sponsors



Silver sponsors



Bronze sponsors



The Arc		
	Exhibition Grand Hall 1	Partner programme
	Exhibition (Grand Hall 1) 08:00-18:00	09:00 - 17:00 Visit to Bruges (meet 08:45 meeting point Square Glass entrance)
The Arc		
	Exhibition Grand Hall 1	Partner programme
Technical session 9 Dredging for port development	Exhibition (Grand Hall 1) 08:30-17:30	09:00 - 13:00 Surrealism and Art Nouveau (meet 08:45 meeting point Square Glass entrance)
Technical session 12 Environmental dredging		
Technical session 15 Dredging works in the Westerschelde /1		
Technical session 18 Dredging works in the Westerschelde /2		
The Arc		
	Exhibition Grand Hall 1	Partner programme
	Exhibition (Grand Hall 1) 08:30-15:30	09:00 - 16:00 City tour of Brussels and chocolate workshop (meet 08:45 meeting point Square Glass entrance)
	Exhibitors' break-down	

WODCON XX OPENING CEREMONY Tuesday 4 June

09:00-09:15

Guests and delegates to be seated in **Copper Hall**

09:15-10:55

OPENING CEREMONY – *master of ceremonies: Eric Van den Eede, WODCON XX executive committee chairman*

- **Welcome to WODCON XX** – *Eric Van den Eede*
- **Welcome to Belgium** – *Kris Peeters, minister-president of the Government of Flanders*
- **Opening Address** – *Anders Jensen, WODA chairman, CEDA president*
- **Celebrating the 20th WODCON**
- **Keynote Address: Capital dredging in the ports of South Africa** – *David John McGillewie, deputy chief engineer, Transnet National Ports Authority, South Africa*
- **Keynote Address: The art of dredging to connect the world** – *Rogelio Gordón, head of dredging operations, Panama Canal Authority, Panama*
- **Introduction to the Technical Programme** – *Cees van Rhee, WODCON XX Technical Papers Committee chairman*
- **Cultural programme:** *Belgian group Lais – ‘Songs we embrace’*
- **10:55-11:00 Official opening of the Exhibition in Grand Hall 1** – *Kris Peeters, minister-president of the Government of Flanders*

WODCON XX CLOSING CEREMONY Thursday 6 June

15:30-16:30 CLOSING CEREMONY in **Copper Hall** – *master of ceremonies: Eric Van den Eede, WODCON XX executive committee chairman*

- **WODA Principles of Sustainable Dredging** – *Polite Laboyrie, chairman WODA/CEDA Environment Commissions*
- Presentation of the **International Association of Dredging Companies’ (IADC) Young Authors Award** – *René Kolman, secretary general, IADC*
- Presentation of the **Dredging Contractors of America’s (DCA) Best Paper Award** – *Michael Gerhardt, assistant executive director, DCA*
- **What WODCON XX has given us** – comments on the technical papers – *Cees van Rhee, chairman of the WODCON XX technical papers committee*
- **Closing of WODCON XX** – *Anders Jensen, WODA chairman, CEDA president hands the reins of WODA to WEDA, organiser of WODCON XXI*

Lead Media Media partners



The technical sessions:

an exceptional concentration of knowledge and experience

WODCON XX is showcasing about 95 technical presentations by experts from all over the world. The technical sessions run from Tuesday 4 June to Thursday 6 June in two or three parallel tracks

The technical papers committee has selected the best papers which cover the design and execution of dredging projects and tools from mathematical models

to machines – a combination of knowledge and understanding, skill, peer reviewed and published in the congress proceedings.



Tuesday 4 June			
09:00-10:55	Opening Ceremony – Plenary in Copper Hall		
	Venue: Copper Hall	Venue: Silver Hall	
11:00-11:30	Coffee break sponsored by Brusselle Enterprises – exhibition area 		
11:30	SESSION 1 – Developments in dredging equipment / 1 Chair: van Rhee C – Delft University of Technology, the Netherlands	SESSION 2 – WODA Environmental Panel hosted by the CEDA Environment Commission Chair: Laboyrie P – WODA & CEDA Environment Commission / Witteveen+Bos Consulting Engineers, the Netherlands	
11:30	TSHD dredging pump operation condition analysis Lv Y, Liu J and Liu Y – Shijiazhuang Kinda Pump Industry Group Co Ltd, People’s Republic of China	Invited Speaker: WODA technical guidance on underwater sound in relation to dredging Thomsen F – DHI, Denmark	
11:50	A study on the standard operation of the cutter suction dredger in a dredging project Gao W, Li D and Liu H – CCCC Tianjin Dredging, People’s Republic of China; Tian J – China Communication Institute Co Ltd, People’s Republic of China; Li X – Tianjin Normal University, People’s Republic of China	Invited Speaker: CEDA information paper on ecosystem services and dredging De Boer P – Ministry of Infrastructure and Environment, the Netherlands	
12:10	Developments in mining equipment and pumps for subsea and inland submerged deposits Kapusniak S – Soil Machine Dynamics Ltd, United Kingdom; Tenwolde D and Winkelman M – Damen Dredging Equipment, the Netherlands	The Dredging Debate Panelists: <i>CEDA Environment Commission:</i> Harris K – HR Wallingford, United Kingdom; Laboyrie P – Witteveen+Bos Consulting Engineers, the Netherlands; van Raalte G – Royal Boskalis Westminster, the Netherlands <i>WEDA Environment Commission:</i> Vogt C – Craig Vogt Inc, United States of America <i>EADA:</i> Dobson J – independent consultant, Australia <i>PIANC Environment Commission (invited partner organisation):</i> Koethe H – German Federal Ministry of Transport, Building and Urban Affairs, Germany	
12:30	Solution for the vibration challenges on cutter suction dredgers Bakker J – Van Oord Dredging and Marine Contractors, the Netherlands; de Bruijn A – IHC Merwede, the Netherlands; van Ramshorst DJ – Loggers, the Netherlands		
12:50	Development of a new-type plough-shaped tooth Lou OM – Key Laboratory of Dredging, Shanghai, People’s Republic of China; Lin F – CCCC Shanghai Dredging, Peoples Republic of China		
13:10	Lunch – exhibition area		

14:40	SESSION 3 – Modelling Hydraulic transport Chair: de Nijs M – Van Oord Dredging and Marine Contractors, the Netherlands	SESSION 4 – Use of dredged sediments Chair: Costaras M – HR Wallingford, United Kingdom	
14:40	An overview of theories describing head losses in slurry transport Ramsdell R – Great Lakes Dredge & Dock Company, United States of America; Sape M – Delft University of Technology, the Netherlands	The use of engineered sediments for the construction of a compartment dyke in the Controlled Flooding Area Vlassenbroek Van Renterghem B, Van Nederkassel J and Joos P – Envisan, Belgium; Vermeersch T – Jan De Nul Group, Belgium; Quaeysaegens H – Waterwegen en Zeekanaal, Belgium	
15:00	A head loss model for slurry transport based on energy considerations Miedema S – Delft University of Technology, the Netherlands; Ramsdell RC – Great Lakes Dredge & Dock Company, United States of America	Land reclamation using a mixture of dredged soil and converter slag Matsumoto A – Penta-Ocean Construction, Japan	
15:20	Numerical simulation of hydrodynamical behaviour of sand water mixtures Goeree JC – Delft University of Technology, the Netherlands; van Rhee C – Delft University of Technology, the Netherlands	Fine-grained organic dredged materials for dyke cover layers – material characterisation and experimental results Cantré S, Nitschke E, Große AK and Saathoff F – Universität Rostock, Germany; Henneberg M – Steinbeis Transferzentrum Angewandte Landschaftsplanung, Germany	
15:40	Experimental study on applying hydrocyclone for improving the loading efficiency of a TSHD Zhao T – CCCC Key Laboratory of Dredging, Shanghai; Lin F – CCCC Shanghai Dredging; Jiang J – Shanghai Waterway Engineering, Dredging & Consulting; all from the People's Republic of China	Using waste products as building material for landfill closure and construction of a sediment treatment plant Pallemans I, Van Zele S and Nachtergaele K – Envisan, Belgium	
16:00	Coffee break – exhibition area		☕
16:30	SESSION 5 – Monitoring the dredging process Chair: Ni F – Hehai University, People's Republic of China	SESSION 6 – Treatment of sediments / 1 Chair: Mohan R – Anchor QEA, United States of America	
16:30	Construction of a perimeter bund using the PM-CLAY method Saitoh T – Tao Corporation, Japan	Solindus experimental dredged material treatment platform: a versatile solution for sediment treatment and clay flocculation Bréquel H, Gineys N and Urbain F – Centre Terre et Pierre, Belgium; Couturier F and Duchadeau A – SNF, France	
16:50	Innovative free fall sediment profiler for preparing and evaluating dredging works and determining the nautical depth Geirnaert K, Staelens P and Deprez S – dotOcean, Belgium; Noordijk A and Van Hassent A – Port of Rotterdam, the Netherlands	Soil washing techniques for sediment dewatering and sand recycling Pensaert S, van de Velde K, De Bruecker T and Lepere X – DEME, Belgium	
17:10	Monitoring the consolidation process of mud from different European ports in a full-scale test facility Staelens P, Geirnaert K, and Deprez S – dotOcean, Belgium; Noordijk A and Van Hassent A – Port of Rotterdam, the Netherlands	Twenty years of large-scale sediment treatment at the METHA-plant, Hamburg Detzner HD – Hamburg Port Authority, Germany	
17:30	Pinpoint underwater grab bucket navigation system (PUGNAVI) applied to restoration work of Great East Japan earthquake Fujiyama E – Shinko Construction, Japan	High-speed dewatering of ultra-fine sediments Hodges M and Shobrook C – Genesis Water, United States of America	

WEDNESDAY 5 June

	Venue: Copper Hall	Venue: Silver Hall	Venue: The Arc
08:30-09:00	Morning coffee – exhibition area		
09:00	SESSION 7 – Modelling of dredge pumps Chair: Verkaik KJ – IHC Merwede, the Netherlands	SESSION 8 – Dredging for navigation Chair: Souquiere A – Cetmef, France	SESSION 9 – Dredging for port development Chair: Dafu C – Changjiang Waterway Planning, Design & Research Institute, People's Republic of China
09:00	Numerical simulation of the motion trajectory of sediment particles in a dredge pump Guojun H – CCCC Key Laboratory of Dredging, Shanghai, People's Republic of China; Ji AJ – Shanghai Waterway Engineering Design & Consulting, People's Republic of China; Guo LY – Shanghai Jiaotong University, People's Republic of China; Ni F, Zhao L, Li H and Jiand S, Hohay University, People's Republic of China	Licensing navigation dredging – developing a proportionate, risk-based approach Basford K and Clay N – Royal HaskoningDHV, United Kingdom; Birchenough A – Cefas, United Kingdom	Development of the preliminary dredging plan for the Vale Ponta da Madeira pier IV export facility, Sao Luis, Brazil Morais M – North Logistic Program – Port Vale, Brasil; Delaure S – WF Baird & Associates, Oman; Nairn R and Dibajnia M – Baird, Canada; Fournier CP – Baird, Chile; Lu X - WF Baird & Associates Coastal Engineers Ltd, Canada
09:20	Restratification in hydraulic transport: is it a bend effect? Brouwers RJP, van Fulpen ML and Talmon AM – Delft University of Technology, Faculty 3Me, the Netherlands	Treating the highly contaminated sediments from the industrial canal Ghent-Terneuzen: towards a cleaner environment with maximum re-use of materials Pynaert K, Van Zele S, Pallemans I and Nachtergaele KI – Envisan, Belgium; David C – DEME Environmental Contractors, Belgium	The expansion of the Botlek Tank Terminal area: a sustainable solution in the Port of Rotterdam Jumelet HD – DEME Group, the Netherlands; Laenen KCJ – Port of Rotterdam, the Netherlands; Plate SE – De Vries and van de Wil, the Netherlands
09:40	Latest developments in dredge pump technology Bugdayci HH – IHC Parts & Services, the Netherlands; Grinwis H and Munts E – MTI Holland, the Netherlands	Recent developments in sediment management in the Port of Hamburg Röper H and Netzband A – Hamburg Port Authority, Germany	Rebirth of the Izmir Bay (Turkey) by dredging Nesor G – the Metropolitan Municipality of Izmir, Turkey
10:00	Estimating production and booster pump location for long-distance pumping Randall R, Yeh P and Augur C – Texas A&M University, United States of America	Maintenance dredging in Ponta da Madeira maritime terminal Gaglianone de Moraes D and Loureiro Monteiro RF – Vale SA, Brazil	Port of Lisbon maintenance dredging in a sensitive environmental system Sá Pereira T and Silveira Ramos R – Port of Lisbon Authority, Portugal
10:20	Coffee break – exhibition area		
10:50	SESSION 10 – Methods & equipment: case studies Chair: Vidal R – Dravosa, Spain	SESSION 11 – With nature... Chair: Pennekamp J – Deltares, the Netherlands	SESSION 12 – Environmental dredging Chair: Van den Eede E – Waterwegen en Zeekanaal, Belgium
10:50	Installing blocks of fish reefs in the deep sea Yamamoto K – Tomac Corporation, Japan	Working with nature: applying the philosophy to maintenance dredging Brooke J – Jan Brooke Environmental Consultant, United Kingdom; Bird R – Mersey Docks and Harbour Company, United Kingdom	A critical review of lessons learned after nearly three decades of environmental dredging in the United States Doody J P, Gardner R and Mohan R – Anchor QEA, United States of America
11:10	The use of encapsulated sand elements for beach protection Zengerink E and ter Harmsel M – TenCate Geosynthetics, the Netherlands; Koffler A – TenCate Water en Enviroment Region France, France	Building with nature works! van Raalte G – Royal Boskalis Westminster, the Netherlands; Zwemmer DJ, Hof D and Daan M – Boskalis BV, the Netherlands	Environmental dredging of chromium contaminated sediments at Valdemarsvik, Sweden Pensaert S, Nollet H, Rombaut E and Lepere X – DEME, Belgium
11:30	Study on combined dredging concept for a twin-hull trailing suction dredger with self-propelled barges Yang ZW – China Dredging Association (CHIDA), People's Republic of China; Fei L and Liu HS – Marine Design & Research Institute of China, People's Republic of China; Lin F – CCCC Shanghai Dredging Corporation, People's Republic of China	'Aquapuncture': adaptation and optimal use of inland waterways and their waterfronts Waterman R – Ministry of Infrastructure & Environment, the Netherlands; Brouwer JA – Soeters van Eldonk Architects, the Netherlands	YH Bay clean-up project involving marine sediments in Busan, South Korea Kim SH, Choi KY, Kim K and Hong GH – Korea Institute of Ocean Science & Technology, South Korea

11:50	Improving the capacity of Altamira Port (Mexico) by dredging Verdugo I, Iribarren JR, Atienza R, Cal CB, Pecharroman L and Trejo I – Sipo21, Spain	Flanders Bays: smart beach and dune nourishments to achieve an integrated and sustainable reinstatement of beach barrier systems Malherbe B and Fordeyn J – Jan De Nul Group, Belgium; Defloor D – DEME, Belgium	Environmental dredging project ‘Remediation Ketelmeer-West’ in the IJsselmeer, the Netherlands Dekker JSG – de Vries & van de Wiel, the Netherlands
12:10	Cuttability and abrasivity of rocks in capital dredging: applicability to the Port Miami dredging 2013-2014 Prieto L – Piedroba Consulting Group, United States of America; Verna T – US Army Corps of Engineers, United States of America	Dredging for flood management in river systems: opportunities and dilemmas Hakstege P – Rijkswaterstaat Centre for Infrastructure, Ministry of Infrastructure and Environment, the Netherlands	Human health risk assessment guidance for dredging and disposal at sea of marine and estuarine sediments Droit J – CETMEF, France; Bataille T – Guadeloupe Port Caraïbes, France; Delouis A – GEODE / GPM Nantes Saint Nazaire, France
12:30	Lunch break – exhibition area 		
14:00	SESSION 13 – Modelling optimisation of equipment Chair: Tian J – China Communications Construction Company, People’s Republic of China	SESSION 14 – Treatment of sediments / 2 Chair: Netzbund A – Hamburg Port Authority, Germany	SESSION 15 – Dredging works in the Westerschelde / 1 Chair: Sas M – International Marine and Dredging Consultants, Belgium
14:00	Half a century of changing the design of a dredger: market pull or technology push? de Bruijn A, de Graaff PC and Verkaik CJ – IHC Beaver Dredgers, the Netherlands	Use of fibres waste in sediments stabilisation/solidification Levacher D – Caen University, France; Liang Y – Université du Québec en Abitibi-Temiscamingue, Canada / Caen University, France	Introduction Meersschaut Y – Maritime Access division, Flemish Government, Belgium
14:20	Study and application for high-precision excavation by a grab dredger Cao XB, Chen L and Liu GS – CCCC Guangzhou Dredging, People’s Republic of China	Investigation and implementation of sediment remediation at the An-Shun remediation site, Tainan City, Taiwan Mastin BJ – Southern Research Institute, Birmingham, United States of America; Moore WM – ENVIRON, United Kingdom; Renfrew D – Weston Solutions, United States of America; Chen J, Weston Solutions, Taiwan	The AMORAS project: dewatering and reuse of the Antwerp Port sediments Van Esbroeck M and Dockx J – Dept of Mobility and Public Works, Maritime Access, Flemish Government, Belgium; Van de Velde K and Pensaert S – Deme Environmental Contractors, Belgium; Pynaert K – Envisan, Belgium
14:40	Optimising drive train design for TSHDs using dynamic simulation models den Boer L, Kuypers R and van der Blom E – IHC Dredgers, the Netherlands; Gonçalves Castro B and Mestemaker B – MTI Holland, the Netherlands	Breaking technology for dewatering and valorisation of sediment in France Mancioppi L and Dhervilly P – Sedigate, France; Levacher D – Normandy University, France	The development/realisation of a current-deflecting wall in estuarine conditions (salinity gradients) to reduce siltation in the tidal Deurganckdok, Port of Antwerp Roose F and Meersschaut Y – Maritime Access division, Flemish Government, Belgium; Sas M – International Marine & Dredging Consultants, Belgium
15:00	Provision for geologic investigation in capital waterway dredging engineering in China and its peculiarities Dafu C, Ming B, Huaihan L, Jun ZZ, Wei X, Qinhua L and Lijia S – Chiangjiang Waterway Planning Design & Research Institute, People’s Republic of China	Soil decontamination and soil volume reduction technologies for benthic sediment in lakes, reservoirs and other bodies of water Enomoto T – Toyo Construction, Japan	Monitoring the siltation rate at Deurganckdok, Port of Antwerp, and its reduction by a current deflecting wall Decrop B and Sas M – International Marine & Dredging Consultants, Belgium; Roose F – Maritime Access division, Flemish Government, Belgium
15:20	Coffee break – exhibition area 		
15:50	SESSION 16 – Methods, equipment and techniques: Dealing with silt Chair: Nakazawa N – The Japan Workvessel Association, Japan	SESSION 17 – Assessment and monitoring / 1 Chair: Doorn Groen SC – DHI Water & Environment (S), Singapore	SESSION 18 – Dredging works in the Westerschelde / 2 Chair: Sas M – International Marine and Dredging Consultants, Belgium
15:50	Turbidity caused by spillage from dredging/mining transverse axis cutter Sarkar M and Bose N – Australian Maritime College, University of Tasmania, Australia; Chai S – School of Health Sciences, University of Ballarat, Australia; Dowling K – SAIPEM, United Kingdom	The UK marine aggregate regional environmental assessment: an effective model for regionalised dredging areas worldwide? Lloyd Jones D and Reach I – MarineSpace, United Kingdom; Powell M – South Coast GIS, United Kingdom	Dredging works in the Western Schelde to deepen the navigation channel and to create ecologically valuable areas: status after three years of monitoring Depreiter D and Sas M – International Marine & Dredging Consultants, Belgium; Beirincx K – Flemish Government, Belgium; Liek GJ – Ministry of Infrastructure and the Environment, the Netherlands

16:10	The art of screening: effectiveness of silt screens Radermacher M – Delft University of Technology, the Netherlands; van der Goot F and Rijks D – Boskalis, the Netherlands; de Wit L – Svasek Hydraulics, the Netherlands	A method for identifying a new offshore dredging disposal site based on environmental sensitivity Harris K – HR Wallingford, United Kingdom	Long-term modelling of dredging strategies on morpho- and hydro-dynamic developments in the Western Scheldt Dam G, Poortman SE and Bliet AJ – Svašek Hydraulics, the Netherlands; Plancke Y – Flanders Hydraulics, Belgium
16:30	Towards a comprehensive design for silt screens in open configuration – from the hydraulics perspective Vu TT – Nanyang Technological University, Singapore	Design and implementation of marine monitoring studies with reference to dredging projects: essentials Lee MW, Pendle M, Taylor JA and Dearnaley MP – HR Wallingford, United Kingdom	Tidal evolution in the Scheldt estuary and its interaction with dredging works Taal M, Wang ZB and Kuijper K – Deltares, the Netherlands; Cleveringa J – Arcadis, the Netherlands; Sas M – International Marine & Dredging Consultants, Belgium
16:50	Study on dredging at head area and utilisation of sediment resources in Three Gorges Reservoir Hu X – Hubai Changjiang Dredging Engineering, People's Republic of China	Monitoring system of the environmental quality of the sediments derived from dredging activity Moraes e Sousa MES and Fialho GO – GARTA / COPPE / UFRJ, Brazil	Impact of human interventions on estuarine dynamics – towards a regime shift in the Scheldt? Winterwerp JC – Delft University of Technology, the Netherlands; Wang ZB – Deltares and Delft University of Technology, the Netherlands

THURSDAY 6 June

Venue: Copper Hall		Venue: Silver Hall	
08:30-09:00	Morning coffee – exhibition area		
09:00	SESSION 19 – Optimising the dredging processes Chair: Randall B – Texas AM University, United States of America	SESSION 20 – Assessment and monitoring / 2: Plumes Chair: Roukema D – Blue Pelican, the Netherlands	
09:00	Decision support system for dredging and reclamation environmental monitoring and management plans (EMMPS) Hoa VKH – DHI Water & Environment, Australia; Doorn-Groen SM, Forster TM and Trung TT – DHI Water & Environment (S), Singapore	Detailed full-scale simulations of near-field overflow plume mixing de Wit L and van Rhee C – TU Delft, the Netherlands	
09:20	Towards a faster and cleaner fairway maintenance of Dutch rivers Talmon A – Deltares and Delft University of Technology, the Netherlands; Sieben J – Rijkswaterstaat, the Netherlands; van der Lugt T – Delft University of Technology, the Netherlands	Physical modelling-based assessment of some influence factors on overflow plume behaviour Decrop B and Sas M – International Marine & Dredging Consultants, Belgium; De Mulder T – Hydraulics Laboratory, Ghent University, Belgium; Toorman E – Hydraulics Laboratory, KULeuven, Belgium	
09:40	Optimising manpower and reducing fuel consumption while increasing dredging production Osnabrugge J and Van den Bergh PM – IHC Systems, the Netherlands	Trial monitoring of dredger plumes using a multibeam echosounder Brett C, Lee M, Taylor J and Dearnaley M – HR Wallingford, United Kingdom; Bellamy A – Tarmac Marine Dredging Ltd, United Kingdom	
10:00	A validated tool for evaluating the design and predicting the workability of dredgers Hannot SDA and Los JG – MTI Holland, the Netherlands; van Spaendonk BAW – IHC Dredgers, the Netherlands; Krijger ACL, Kruijswijk AB – IHC Beaver Dredgers, the Netherlands	Far-field and long-term dispersion of released dredged material van Kessel T and van Maren B – Deltares, the Netherlands	
10:20	Coffee break – exhibition area		
10:50	SESSION 21 – Numerical simulation of dredging processes Chair: Malherbe B – Jan De Nul, Belgium	SESSION 22 – Assessment and monitoring / 3 Chair: Bose N – Australian Marine College, Tasmania Australia	

10:50	<p>Study on fine silt loading characteristics for a TSHD based on computerised fluid dynamics (CFD) method</p> <p>Yang Z and Qin L – CCCC Tianjin Dredging, People's Republic of China; Li Z and Gao W – CCCC Tianjin Port and Waterway Research Institute, People's Republic of China</p>	<p>Development of a numerical modelling module for dredging and relocation in the COHERENS software</p> <p>Martens C – Department of Mobility and Public Works, Flemish Government, Belgium; Breugem A and van Holland G – International Marine & Dredging Consultants, Belgium; Luyten P – Management Unit of the North Sea Mathematical Models, Belgium; Rocabado I – Antea Group, Belgium</p>	
11:10	<p>Numerical simulation of the current drag force on the hull of a cutter suction dredger</p> <p>Xu L – Engineering Research Centre, Dredging Technology, Hebei University, People's Republic of China; Zhang P, Ni F, Zhao L, Gu L, Jiang S and Li H – Hohai University, People's Republic of China</p>	<p>Environmental monitoring and control of sediments around dredging and reclamation works, Thames, UK</p> <p>Leggett DJ and Read K – Dredging International UK, United Kingdom; Black K – Partrac, United Kingdom</p>	
11:30	<p>Constructing the shields curve. Part C: cohesion by silt</p> <p>Miedema S – Delft University of Technology, the Netherlands</p>	<p>The application of three-dimensional geological modelling in a dredging project</p> <p>Wang Y – CCCC Tianjin Dredging, People's Republic of China</p>	
11:50	<p>On self-emptying at high discharge mixture densities</p> <p>de Nijs M – Van Oord, the Netherlands</p>	<p>Invited Speaker: WODA's role in revising the Dredged Material Assessment Guidelines of the London Convention and its 1996 Protocol and regional sea conventions.</p> <p>Laboyrie P – chair CEDA Environment Commission / Witteveen+Bos Consulting Engineers, the Netherlands</p>	
12:10	Lunch break – exhibition area		
13:40	<p>SESSION 23 – Alluvial and deep sea mining</p> <p>Chair: Benali A – Atlantic Dredging Maroc, Morocco</p>	<p>SESSION 24 – Management and economics</p> <p>Chair: Jensen, A – DHI Denmark</p>	
13:40	<p>Porosity calculation in discrete element modelling of sand cutting process</p> <p>Chen X and Miedema SA – Offshore and Dredging Engineering, Delft University of Technology, the Netherlands</p>	<p>An overall applicable general strategy for optimising maintenance dredging works: a case study for the Port of Bayonne</p> <p>De Wit K – IMDC, Belgium; Fages S – Conseil Régional Aquitaine, France</p>	
14:00	<p>Advances in the modelling of vertical hydraulic transport by a continuum approach</p> <p>van Wijk J – MTI Holland, Belgium; van Rhee C – Delft University of Technology, Belgium; Talmon AM – Deltares, the Netherlands</p>	<p>Development, implementation and results of cutter suction dredger operator competence & certification system (DOCS)</p> <p>Zhou LY – Guangzhou Dredging Company, People's Republic of China; Ooijens SC – Beaver Dredgers, IHC Merwede, the Netherlands; Roosendaal LA and Shi W – Training Institute for Dredging, the Netherlands</p>	
14:20	<p>Cutting through hard rock-like materials – a review of the process</p> <p>Helmons RLJ and Miedema SA – Delft University of Technology, the Netherlands</p>	<p>Dealing with price fluctuations in dredging contracts</p> <p>Roukema DC – Blue Pelican Associates, the Netherlands; Kinlan DG – Kinlan Consulting, Australia</p>	
14:40	<p>System design for sustainable phosphate mining operations at the Chatham Rise</p> <p>Steenbrink S, van Doorn T, Jansen J and van Raalte GH – Royal Boskalis Westminster, the Netherlands; van Hoesen B – Boskalis Dolman, the Netherlands; Falconer R – Chatham Rock Phosphate, New Zealand</p>	<p>Carbon neutrality? Blue carbon provides opportunities for the dredging industry</p> <p>van der Klis P – Van Oord, the Netherlands; Sansoglou P – European Dredging Association, Belgium; Mink F – Interel European Affairs, Belgium</p>	
15:00	Coffee break – exhibition area		
15:30	Closing Ceremony – Plenary in Copper Hall		

Culture and chocolate – a charming combination

Brussels achieves the rare feat of combining small-town charm with big-city facilities and grandeur



Partners will experience that for themselves, as there's an appealing programme of outings, taking in architecture, surrealism and chocolate.

Each day, a different tour will introduce partners to local historic attractions and delights. Relying heavily on the knowledge of our local committee members, we've selected three tours as catering to those with investigative minds and exploratory tastes.

Day trip to Bruges

Tuesday 4 June

Full day tour 09:00 – 17:00

**Meeting point 08:45 at the Square
Glass Cube entrance**

Often referred to as the Venice of the North, Bruges is one of Belgium's crown jewels: a splendid city that, unlike any other in Europe, has somehow managed to preserve the atmosphere and look of medieval times.

The name Bruges dates back to the ninth century and comes from the Scandinavian word bryggja which means quay. Here the first stock-exchange was born! And the city's been listed in the UNESCO World Patrimony since 2000.



Bruges preserves the look and feel of medieval times

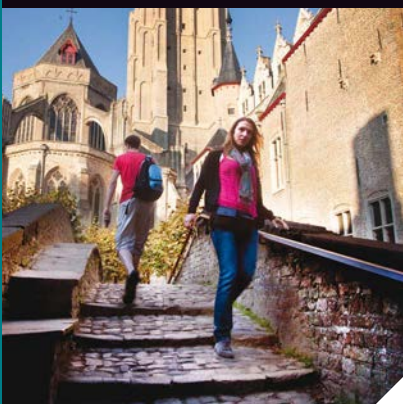


Photo: CEDA

Surrealism and Art Nouveau

Wednesday 5 June

Half day 09:00 – 13:00

**Meeting point 08:45 at the Square
Glass Cube entrance**

One of Belgium's most famous industrialists, Ernest Solvay, used to invite Nobel prize-winners to meet in Brussels. For example, he met Albert Einstein several times at the Métropole Hotel – one of the best examples of the Art Nouveau period. Aficionados of this style will be spoilt by first looking at various building facades in the city and then visiting the interior of an Art Nouveau house.



The Mount of Arts – the cultural heart of Brussels



Photo: CEDA

Brussels city tour and chocolate workshop

Thursday 6 June

Full day 09:00 – 17:00

**Meeting point 08:45 at the Square
Glass Cube entrance**

For those who have not yet been to Brussels, the city tour is a 'must'. It will include a short stroll in the old city centre. A guide will provide information as you tour the capital, seeing spectacular landmarks.

Belgian chocolate is the gourmet standard by which all other chocolates are measured. Participants on the Chocolate Brussels city tour will see chocolate makers around the Grand Place then, in a workshop at a traditional chocolate factory, learn the history of chocolate and how to make your own, both to taste on the tour and to take home.



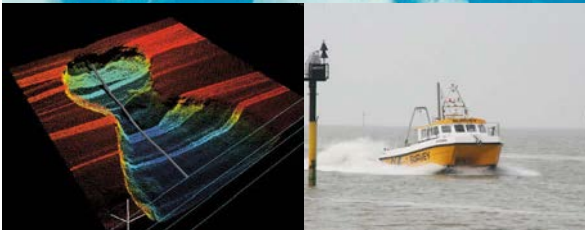
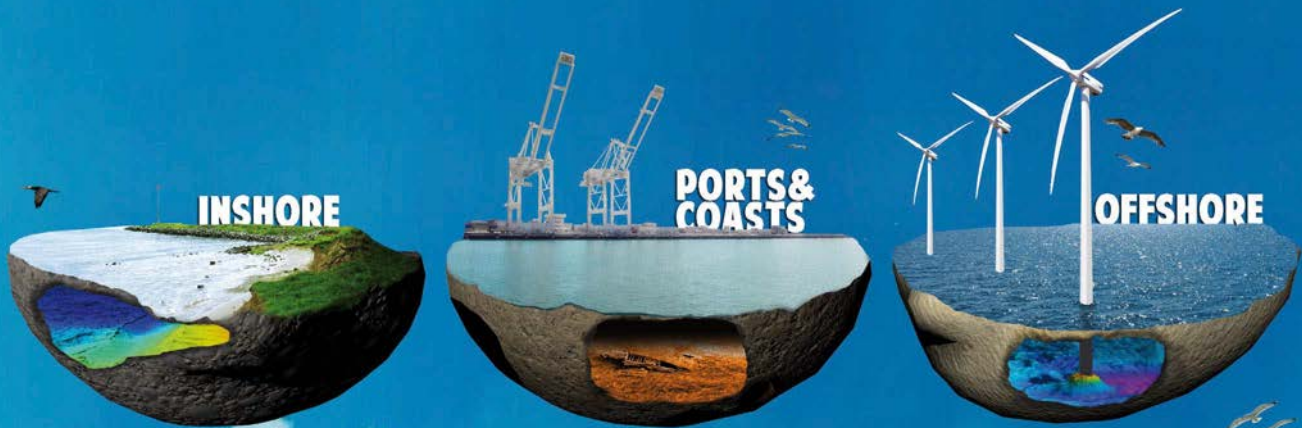
Belgium is renowned for its wide choice of delicious chocolate



Photo: CEDA

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Social events

WODCON XX's not just about business and technology – there's networking and fun too. The event offers a lively social programme that brings together delegates, sponsors, exhibitors and accompanying partners

Monday 3 June

It all begins with Monday evening's **Ice-breaker – beer tasting discovery** event – sponsored by **SeaTools** – in the Square Brussel's exhibition hall.

It's a perfect opportunity to meet up and network fellow industry professionals in the exhibition area – it's open to all conference delegates, exhibitors and partners.

Tasting beer can be very rewarding. as you encounter new styles or brands, it helps to know what to look for in a new beer as well as how to appreciate it.

Tuesday 4 June

Lais will be the cultural entertainment in the **Copper Hall** during the **Opening Ceremony** (see panel on p10).

Lais means 'voice', but it also refers to three women from the town of Kalmthout: Jorunn Bauweraerts, Annelies Brosens and Nathalie Delcroix.

Encouraged by folk group Kadril and described by Emmylou Harris as "angel voices", Lais has been recording and touring since 1994, supporting Sting, Clannad, Värttinä, I Muvrini and Alain Souchon. Their repertoire inclines to Flemish traditional songs but they also cover more modern artists such as Sinead O'Connor.

Time: 09:15-11:00
Place: Copper Hall

Also on Tuesday is the **Welcome Reception** – the Gothic magnificence of the 15th-century Town Hall is the impressive venue.

The City Hall of Brussels is a masterpiece of the Gothic civil architecture of the 15th century. The wealth inside also makes it one of the most luxurious city halls in the country.

It possesses an important artistic and historic heritage (paintings, sculptures, tapestries). Inside, various styles and time periods mix.

Guided tours – of the city council hall, the Maximilienne hall, the Grangé Gallery, the Wedding Hall, the Gothic Hall, the stairs and the waiting room of the mayor – will be organised for the first 100 participants who signed up at the registration: All tours start at 20:00 and finish around 20:30. Guides will meet the lucky participants at the Gothic room.

Time: 19:30-21:00
Place: Brussels Town Hall
Grand-Place
1000 Brussels
(a short walk from the Square)

Wednesday 5 June

You don't have to be a 'petrolhead' to be fascinated by **Autoworld**, the venue for the **Gala Dinner** on Wednesday evening.

More than 250 gleaming exhibits trace the history of the motor vehicle from its

earliest days to modern electric vehicles.

Enjoy a great dinner in this special atmosphere and let's celebrate the XXth anniversary of WODCON.

At 19:15, transport will be provided

for participants of the congress from the WODCON XX headquarters hotel, the Royal Windsor and other selected hotels.

Autoworld is also easily accessible from the Merode and the Schuman metro

Thursday 6 June

As part of the **Closing Ceremony** (see panel on p10) in the **Copper Hall**, the following paper awards will be presented to encourage the highest standards in

research and presentations:

The *Young Authors* award, presented by the International Association of Dredging Companies (IADC) comes with a €1,000

cash prize.

The *Best Paper* award offered by Dredging Contractors of America (DCA) is worth \$500.

Interesting bars and cafés



Photo: Congres Belgium

Stunning congress venue



Photo: Square Brussels Meeting Centre

Take your time and work through the aspects of the brew one-by-one and enjoy every single drop.
Time: 19:00-20:30

Place: Square Exhibition Hall (Grand Hall 1) – Glass Entrance rue Mont des Arts, 1000 Brussels

Young CEDA drink

After the Welcome reception, young professionals are invited to continue their evening at Le Roy d’Espagne, a real Belgian brasserie with a view overlooking the Town Hall. It’s a not-to-be-missed opportunity to spend some time with your peers to broaden your professional network and start valuable friendships that last for life.

Le Roy d’Espagne, built in 1697, was originally the House of the Baker’s guild. The name is due to the bust of Charles II (at that time King of Spain and sovereign of the Southern

Netherlands) which decorates the façade on the second floor.

See www.roydespagne.be

Time: 21:00
Place: Le Roy d’Espagne Grand-Place 1/A, 1000 Brussels (across from Brussels Town Hall)

stations for those who prefer to travel by rail.
 Parking will also be available.

Time: 19:30
Place: Autoworld Parc du Cinquantaire 11 1000 Brussels

Take your chance to win a free pass for WODCON XXI: drop your business card at the WODA stand during the Congress and the

winner will be picked during the closing ceremony.
Time: 15:30
Place: Copper Hall



Congress Committee

- Anders Jensen CEDA president, DHI, Denmark
- David Padman EADA chairman, Port Klang Authority, Malaysia
- Paul Quinn WEDA chairman, Ellicott Dredges, USA

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- Kathleen De Wit IMDC, Belgium
- Larry Patella WEDA, USA
- Johan Pennekamp Deltares, the Netherlands
- Ann Wittemans DEME, Belgium

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- Henrich Roeper Port of Hamburg, Germany
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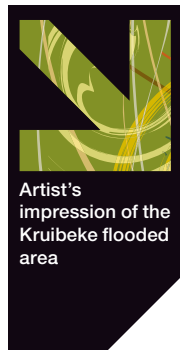
Technical trio

A superb programme of technical visits is planned for the last congress day giving a chance to see the latest dredging technology within reach of Brussels

There are three field trips to choose from. All are unique and full of technical interest. They are open to exhibitors and partners, as well as delegates.

Check with the organisers' office for any remaining availability.

On each tour, participants will get detailed explanations and have the opportunity for face-to-face discussions with experts who've been directly involved in these projects.



Artist's impression of the Kruiabeke flooded area



Photo: Waterwegen en Zeekanaal

Day tour to Sigma Plan

Delegates can travel on the vessel *Blauwe Reiger* ("Grey Heron") to learn about the Sigma Plan for flood protection along the River Scheldt, from its inception after the disastrous 1953 floods to the present focus on safety, nature and accessibility.

During the disastrous 1976 storm tide, flooding by the Scheldt River and its tributaries seriously affected large areas of Flanders, especially Antwerp (Ruisbroek) and a number of areas in east-Flanders. The human cost and material damage was enormous, so the Belgian government decided that improved protection was required.

This took the form of the Sigma Plan, similar to The Netherlands' Delta Works. The plan is intended to contribute to a multifunctional and sustainably used Scheldt so a robust and powerful river will emerge, able to fulfill its functions with dynamism, now and well into the future.

At a strategically chosen location at Kruiabeke, where the Scheldt makes two capricious bends, first north then eastward, works for the flood control area Kruiabeke-Basel-Rupelmonde (FCA KBR) are nearing their end. It's the larg-

est of the 13 flood control areas in the Scheldt basin and will be completed during 2013. Sailing to Kruiabeke aboard the ship *Blauwe Reiger*, participants will be able to tour the area and visit the outlet and inlet sluices.

Once operational, the FCA KBR alone will provide a five-fold increase in Flanders' flood protection. As the last project of the original Sigma Plan, the Kruiabeke area's now being implemented: part is set up as a flood control area with reduced tides, while another is wetland. The project will provide an en-

vironmental boost to the Scheldt region – no less than 300ha of mudflats and marshes, 150ha of meadowbird area and 92ha of alder marsh forests will be added. The area's intended to serve as an example of sustainable tourism as a unique nature reserve where hikers and cyclists are also welcome.

Host and sponsor for this will be **Waterwegen en Zeekanaal**, which took over the project (from the previous waterways administration) when it was established in 2004.

* Timings

Departure and arrival timings are dependent on traffic conditions

Friday 7 June, 09:00-15:00/16:00

08:45	Gather at the Square Brussels, Glass Entrance
09:00*	Departure by bus from the Square Brussels to Rupelmonde
10:00*	Arrival in Rupelmonde and boarding of the vessel <i>Grey Heron</i> for trip to Kruiabeke
10:05	Departure of <i>Grey Heron</i> to Kruiabeke
10:30	Arrival of <i>Grey Heron</i> in Kruiabeke
10:35	Start of the visit of the controlled flooding area KBR
12:30*	Departure from Kruiabeke by bus to the restaurant in Bazel to have lunch
14:00◇	Departure of <i>Grey Heron</i> for trip to Antwerp Scheldt quays
15:00*	Arrival at Antwerp Scheldt quays and departure by bus to the Square Brussels
circa 16:00*	Arrival by bus at the Square Brussels

◇ Attendees who want to skip the visit to the Antwerp Scheldt quays will directly be transferred by bus from Bazel to Square Brussels and will arrive there at about 15:00

Day tour to AMORAS

The innovative AMORAS silt dewatering and storage scheme in Antwerp is an ingenious answer to the storage problem posed by the huge quantities of silt dredged each year. As well as saving space, it's energy-efficient and environment-friendly.

Guaranteeing sufficient draught to shipping traffic is an essential condition for the Port of Antwerp to prosper both now and in the future. To do so, the port's authority needs to dredge and store large volumes of material annually but the available disposal areas are insufficient.

Hence AMORAS – a mechanical silt dewatering plant, has been built as a lasting and innovative solution for the treatment and storage of dredged material.

This ambitious project provides a permanent solution for recycling and storage of dredged sediment for the port of Antwerp and the tour, hosted and sponsored by the **DEME Group**

(Dredging, Environmental and Marine Engineering) will highlight AMORAS' distinctive aspects:

- The exploitation of various silt treatment centres
- Dredging and transport of dredged sediments
- De-sanding
- Mechanical dewatering and
- Storage of dredged material.

Those joining this tour will undoubtedly be impressed by its sustainability – the silt dewatering

installation meets all contemporary ecological demands, and aims for maximum efficiency of used energy at every phase of the process.

The silt dewatering plant also has a reliable and user-friendly design as a result of far-reaching automation, in-depth control systems and optimal use of available capacity, intended to guarantee a very long life-cycle for the project.



Friday 7 June, 09:00-16:00

08:45	Gather at the Square Brussels, Glass Entrance
09:00*	Buses depart from the Square Brussels
10:00*	Arrival at Deurganckdock site Welcome at site office; introduction to the project (video + short presentation by project manager)
11:00	Personal protective equipment for all visitors
11:15	Site visit in groups of max 20 persons
12:30	Transfer by bus to the restaurant for lunch
13:00	Lunch
15:00	Transfer back to Brussels
16:00*	Arrival back at the Square Brussels

Day tour to Deurganckdock Lock

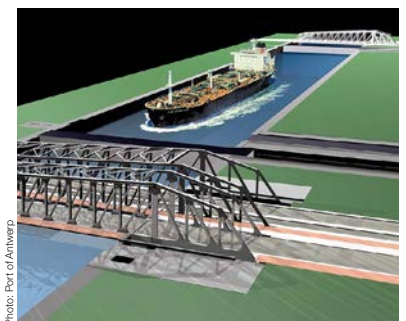
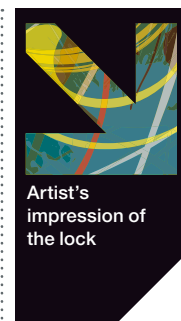
In the Port of Antwerp, the Deurganckdock lock will be the key to opening access to docks on the left bank of the River Scheldt. The lock itself is set to be the world's biggest.

The port will link the existing Deurganckdock with the others, which, at present, have only one access to the rest of the port area. The figures for the proposed construction are impressive: the new dock will use the existing Berendrecht dock – currently the world's largest – as its model. It will be 500m-long, 68m-wide and 17.8m-deep. The width will be equivalent to a 19-lane motorway.

Construction is expected to take about four-and-a-half years, with the new dock becoming operational in 2016. This second lock will ensure greater business security by defending the competitive position of 'Europe's second most-important port'.

Participants on this tour hosted and sponsored by **Jan De Nul** will see:

- The Doel dike – a 25.5m-high dike in sand, built on a 10m-thick silt layer strengthened by the soft soil improvement method
- Construction of the Deurganckdock lock
- The dredging works at the Deurganckdock and
- The access channels.



Friday 7 June, 09:00-15:00

08:45	Gather at the Square Brussels, Glass Entrance
09:00*	Departure from the Square Brussels
10:00*	Arrival (by bus or individual cars) and coffee
10:30	Presentation
11:15	Start guided tour on site
13:15	Lunch buffet
14:00	End of tour
15:00*	Arrival back at the Square Brussels

Brussels before you die!

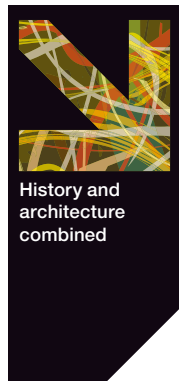
Remember those ubiquitous lists of ‘things to do before I die’ that were so popular a few years ago?

Well if you could never visit Brussels again, what would you regret not trying? Apart from chocolate, fries, beer, waffles...

We collected some ideas from natives and visitors alike – from restaurants to venues, from bars to sights to see. How many can you tick off before you leave?

In the city

The congress venue is in the heart of a city that has the capacity to surprise with its mix of the historic and the new, the serious and the quirky. The serious end is its European quarter, home to the European Commission, the European Parliament and NATO.



It is a major European commercial hub too, where many international companies are based.

There are numerous metro links, bus and tram stops close by (www.mivb.be). You can also hail a licenced taxi from Central Station or hire a city bike from two nearby terminals (www.villo.be).

Yet Brussels is also a compact city, which gives it a friendly, accessible feel. It has a wealth of restaurants and cafes to suit all tastes, and for those with the post-congress energy to enjoy it, Brussels boasts a thriving nightlife, with many concert halls, bars, clubs, theatres and dance venues. For those in search of a more relaxing way to unwind, there are

Your check list

What?	Where?	Done!
Maison des Brasseurs – a beer is part of your admission ticket price to this small museum	10 Grand Place	
Horta Museum	25 Rue Américaine, St-Gilles	
Le Cirio café – a 127-year-old institution	18-20 Rue de la Bourse	
Delecta – for wine, cocktails and meat platters	2 Rue Lannoy, Ixelles	
René Magritte Museum	Place Royale 1	
MAD (Mode and Design) Brussels , Centre Dansaert	7-11 Rue d'Alost	
Fancy fish and chips at Bia Mara	41 Rue du Marché aux Poulets	
Le Roi des Belges bar	35 Rue Jules Van Praet, Saint-Géry	
Glass-roofed shopping at Les Galeries Saint Hubert	116 Rue du Marché-aux-Herbes/Rue de l'Ecuyer	
If art deco rather than art nouveau is more your thing... Musée David et Alice van Buuren	41 Avenue Leo Errera, Uccle	
...and another museum the Schaerbeek museum of beer	33 Avenue Louis Bertrand, Schaerbeek	
Graffiti-style Recyclart murals in the Marolles	25 Rue des Ursulines (Gare de Bruxelles-Chapelle)	
The Moof (museum of original figures) Museum	116 Marché-aux-herbes, in la galerie Horta	
Live music with your beer at Bonnefooi	8 Rue des Pierres	
Viva M'Boma – for Flemish home cooking	17 Rue de Flandres	
Burlesque – vintage retro fashion	64 Rue du Midi	
Wiels contemporary art exhibition space	354 Avenue Van Volxem, Forest	
Le Coq beer house	14 Rue Auguste Orts	
La Rotonde du Botanique – concert hall for jazz, indie and hip-hop, modern art gallery	236 Rue Royale	
Café Belga – retro chic ambience as you eat American-style deli salads and sandwiches	Place Eugene Flagey	
Art nouveau fine arts venue Bozar	23 Rue Ravenstein	
...and finally – if you really can't leave without seeing him! – the Manneken Pis	on the corner of Rue du Chêne and Rue de l'Etuve	

plenty of parks and green spaces.



VISITBRUSSELS is the communication agency for tourism in the Brussels capital region; its aim is to promote and strengthen the image of the capital of 500M Europeans. Dedicated VISITBRUSSELS personnel will assist congress participants with restaurants, entertainment, taxis, bookings, tourist information and brochures at the concierge desk located next to the registration area. A welcome desk with VISITBRUSSELS personnel will assist congress participants at Brussels airport and at the Midi station. Look for the CEDA and WODA logos displayed on the screens above their welcome desks. *More information on Brussels can be found at www.visitbrussels.be*

✈ Getting there

Brussels International Airport is only 17 minutes away from the city centre and Square. A direct train shuttle from the airport stops at Brussels Central Station, the railway station in front of the Square.

www.brusselsairport.be

Brussels Airport (BRU) is served by many of the major airlines. From there, trains (€7) to the city centre run every 15 minutes. Buses 12 and 21 depart from Level 0 of the airport and run every 20–30 minutes, calling at metro station Schuman, where you can transfer to metro lines 1 and 5. The same ticket is valid for 60 minutes on metro, buses or trams into the centre; it costs €3.50 from a vending machine or €6 on board. Taxis to the city centre cost €35.

Brussels South Charleroi Airport (CRL) is served by the budget airlines and has a half-hourly shuttle bus (€13) service to Brussels Midi/Zuid station. To go by train, take TEC Bus A90 and change at Charleroi station (combined bus/train ticket €12). The taxi charge is €90.

The city is well served by international trains from Germany, France, the Netherlands and the UK, all of which call at Brussels Midi/Zuid



Photo: CEDA



station. From here bus, tram and metro services reach all parts of the city. The nearest station to Square is Brussels Central.

www.nmbs.be / www.thalys.com / www.eurostar.com

By car, it takes about 45 minutes to drive from the airport to the centre of Brussels via the A54. There are 660 parking spaces right underneath The Square. You can get in via Place de la Justice Gerechtsplein, and Stuiversstraat-rue des Sols, and then walk straight into the building.

🛏 Staying there

Hotel rooms have been reserved at a special rate but the number

Late registration?

E-mail: wodcon@congrex.com

Go online: www.wodcon.org

Onsite: Registration desk, The Square Brussels

available has greatly reduced as congress nears. Information about booking remaining accommodation, including an interactive map, can be found on the website www.wodcon.org, under general information – accommodation.

Local hotels

Hotel	Category	Distance from venue
Royal Windsor Hotel (WODCON XX headquarters)	5★	350m
NH Grand Place Arenberg	4★	600m
NH Hotel du Grand Sablon	4★	600m
Novotel Brussels off Grand Place	4★	400m
Hotel Sandton Brussels Centre	4★	400m
Hotel Scandic Grand Place	4★	550m
Ibis Brussels off Grand Place	3★	400m
Novotel Brussels Tour Noire	3★	400m
Ibis Brussels Centre St Catherine	3★	1km
Ibis Brussels Centre Gare du Midi	3★	1.7km
Hotel Chambord	3★Luxe	750m
Hotel Floris Arlequin Grand Place	3★	650m
Hotel La Madeleine	2★	450m

Technical exhibition

The dredging exhibition complements technical discussions

The dredging exhibition allows leading companies from around the world to demonstrate the latest products and services. The exhibition area doubles as the space for the Ice-breaker, sponsored

by **SeaTools**, on Monday evening, plus all lunch and refreshment breaks, so this will be a busy area for networking and doing business, as well as simply catching up with old friends.

Exhibition's opening hours

Monday 3 June – **19:00-20:30**
(set-up – **12:00-18:00**)

Tuesday 4 June – **08:00-18:00**

Wednesday 5 June – **08:30-17:30**

Thursday 6 June – **08:30-15:30**
(break-down after **15:30**)

Exhibitor listing by stand number

Stand	Company	Stand	Company	Stand	Company
01	Stema Systems	17	DHI	37	REMU Oy
02	Shijiazhuang Kingda Pump Industry Group Co	18	Prolec	38	Seatools BV
03	National Marine Dredging Company	19	AquaVision	39	EMSTEC
04-05	Changjiang Waterway Bureau	20	IADC	40	Nortek BV
06	Teledyne RESON AS	21	Deltares	41	Machinefabriek L Straatman
07-08	China Communications Construction Company	22	Aquamec – Watermaster	42	Shijiazhuang Muyuan Industry & Trade Co
09	ASICON	23	Jan De Nul	43	Alfa Laval Benelux
10	Van Oord	24	Marinestar (Fugro Satellite Positioning)	44	Vosta LMG
11-12, 25-26	IHC Merwede	27-28	Damen Dredging Equipment	45	dotOcean
13	Jiangsu Huaxia Heavy Industry Co	29	ContiTech Fluid Technology (E+S)	46	Global Industrial Supply Co
14	Holland Marine Technologies	30	Brusselle Enterprises	47	AML Oceanographic
15	Shanghai Xin GeGang	31	The Japan Workvessel Association	48	Terrastar
16	Tianjin Puyou Mechanical & Electrical Equipment Manufacturing Co	32	E-Crane Worldwide	49	CableArm
		33	Observator	50	WODA
		34	Trimble	51	Redwise Maritime Services
		35	DEME NV	52	HR Wallingford
		36	GEOxyz		



CEDA reserves the right to adjust the location of the catering stations and other items per venue request

A-Z listing of exhibitors

The dredging exhibition showcases leading companies from around the world, who will be demonstrating their latest products and services



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Aquamec Ltd – Watermaster

Aquamec manufactures Watermaster dredgers – multipurpose water construction machines with excellent mobility. Watermasters offer versatility and solutions for many kinds of work sites in shallow water areas such as city canals, rivers, industrial ponds, lakes, marinas and seashores. A Watermaster's capabilities include suction dredging, backhoe dredging and pile driving – all with one versatile machine. Aquamec holds the ISO 9001 quality certificate and the ISO 14001 environmental certificate. There are over 220 Watermasters – manufactured in Finland – operating around the world. Watermasters are versatile, mobile and proven.

Address: PO Box 260,
27801 Säkyliä, Finland
Tel: +358 (0)10 402 6400
E-mail: johannes.karvonen@watermaster.fi
Website: www.watermaster.fi
Contact: Mr Johannes Karvonen



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Aqua Vision BV

Aqua Vision is an independent hydro- and oceanographic consultancy, with clients that include 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. Interested in our activities? Take a further look at our website.

Address: Servaasbolwerk 1,
3512 NK Utrecht, the Netherlands
Tel: +31 (0)30 24598 72
E-mail: s.ni.fhlaitharta@aquavision.nl
Website: www.aquavision.nl
Contact: Ms Shauna ni Fhlaitharta



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Alfa Laval Benelux

Alfa Laval is a leading global supplier of products and engineering solutions based on creating the best heat transfer, separation and fluid handling technologies in the world for 130 years. The company's equipment, systems and services are dedicated to assisting customers in optimising the performance of their processes, also for dredging. Its products are also used in power plants, maritime applications, in the mechanical engineering, oil & gas and mining industry and for wastewater treatment, as well as for comfort climate and refrigeration applications.

Address: PO Box 9377,
4801 LJ Breda, the Netherlands
Phone: +31 (0)76 57 91 210
E-mail: heleen.vanhout@alfalaval.com
Website: http://local.alfalaval.com
Contact: Ms Heleen van Hout



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AML Oceanographic

AML Oceanographic designs, sells, and services innovative instruments and sensors for many segments of the ocean sensing market. Our customers are located in more than 100 countries and include organisations in the fields of hydrography, dredging, environmental monitoring, offshore construction, and others. As the only provider of Sensor Xchangeable instruments, AML is in a unique position to simplify recalibration, maximise system redundancy and increase return on investment. Over the past 39 years, we have developed a list of engineering firsts of which we are proud. We are confident our list of innovations will grow over the years.

Address: 2071 Malaview Avenue,
Sidney, BC V8L 5X6, Canada
Tel: +(1) 250-656-0771
Fax: +(1) 250-655-3655
Web: www.aml-oceanographic.com



09

ASICON, a division of ASTRON

Since 1991 the company developed its activities as consultant, agent and reseller of specialised hydrographic equipment, namely high precision GPS receivers (including Glonass), echo sounders, Doppler current probes, turbidity sensors, side scan sonars, multibeam sounders, gyro and motion sensors, meteorological equipment etc. Our specialties include SEQUOIA Scientific LISST equipment and Teledyne survey echo sounders.

Address: Bredastraat 136-138,
2060 Antwerpen, Belgium
Tel: +32 (0)3 227 74 00
E-mail: Steve.beckers@astron.be
Website: www.asicon.be
Contact: Mr Steve Beckers



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Brusselle Enterprises

Brusselle Enterprises has operated in the maritime sector since 1928, producing winches and steering gears for all type of vessels. In recent years, its engineering team has increasingly been contacted to design winch types for new dredgers – particularly TSHDs, CSDs and backhoes – ranging from standard sizes to mega vessels. These winches can be draghead, intermediate, trunnion, bow-connection, or underwater-pump and all are already part of the equipment Brusselle can supply for these increasingly sophisticated vessels. We also design and manufacture Ram-type steering gears for TSHDs up to 30,000m³ to work with our product range.

Address: Westendelaan 1,
8620 Nieuwpoort, Belgium
Tel: +32 (0)58 223118
E-mail: pbu@brusselle.eu
Website: www.brusselle.eu
Contact: Mr Patrick Buckens



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Cable Arm

We provide solutions: *environmental dredging* via our ClamVision positioning software, plus the unique design characteristics of our environmental clamshell bucket; *navigational dredging* – our navigational clamshells are built with special features to help meet a dredger's needs; *bulk materials* – our buckets use a patented level-cut bite to be faster and more efficient, and are available as a two- or four-line system and start at 8yd³ yards or 6m³.

Address: 3452 West Jefferson Avenue,
Trenton, Michigan 48183, USA
Tel: +1 (734) 676 6108
Fax: +1 (734) 676 1345
E-mail: info@cablearm.org
Website: www.cablearm.com
Contact: Mr/Ms R Bergeron



04-05

Changjiang Waterway Bureau

Changjiang Waterway Bureau is an institute in the People's Republic of China, which, under the leadership of the ministry, engages in the main contracts for port and waterway projects. It owns six subordinate waterway bureaus, four waterway engineering bureaus, one salvage bureau, one Changjiang waterway planning, design and research institute and one waterway school. Currently, it has more than 600 vessels of various types. 'Quality first, reputation first' is CWB's philosophy and we look forward to co-operating with friends all over the world to achieve world-class hydraulic dredging enterprise goals and do our best to create a better future.

Address: China Heubei Province, Wuhan City,
Jiefang Park Road 20, 430010, China
Tel: +86 (27) 8271 51 27
E-mail: li_dudu@izb.com or world.chida@yahoo.com.cn
Website: www.cjwhweb.eu
Contact: Mr/Ms Li Yi

	07-08 China Communications Construction Company (CCCC) Initiated and founded by China Communications Construction Group in 2006. CCCC is the first large-scale state-owned transportation infrastructure company entering the overseas capital market (H shares were listed on the main board of the Hong Kong Stock Exchange in 2006). It ranked 216 in the FORTUNE 500 firms in 2012. CCCC is primarily engaged in the design and construction of transportation infrastructure, dredging and heavy machinery manufacturing businesses. Dredging is one of CCCC's major businesses and stands first in the world in the aspects of installed power in dredging ships, as well as dredging capacity.	Address: No 85 Deshengmenwai Street, Xicheng District, Beijing 100088, China Tel: +86 (10) 8201 6263 E-mail: ygzhuhece@yahoo.com.cn or world.chida@yahoo.com.cn Website: http://en.ccccltd.cn Contact: Mr Zhu Yuguang
	29 Contitech Fluid Technology – Edelbüttel+Schneider GmbH Founded in 1925 as a trading and engineering office, Edelbüttel+Schneider GmbH is part of the ContiTech Group. For more than 80 years, we have specialised in the development, design, production and distribution of big bore rubber hoses with inner diameters up to 1,400mm and lengths up to 36,000mm – eg for handling fluid dredged material, such as sand and gravel, coral, brine and many other products. E+S hoses are designed for service in dredger-, sewage- and water-intake lines, as required by power plants and similar applications. Our specific and highly developed know-how and patents secure our top position in the international market.	Address: Hannoversche Strasse 88, 21079 Hamburg, Germany Tel: +49 (0)40 767 366 0 E-mail: Florian.Schmidt-Bormann@fluid.contitech.de Website: www.e-s.de Contact: Mr Florian Schmidt-Bormann
	27-28 Damen Dredging Equipment – Damen Shipyards Damen Dredging Equipment is a specialised supplier of dredging equipment and dredging instrumentation and 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. The dredging tools it makes are all built to specific customer requirements, making use of a wide range of standard equipment. The company is fully owned by the Damen Shipyards Group.	Address: Industrieterrein Avelingen West 20, 4202 MS, Gorinchem, the Netherlands Tel: +31 (0)183 65 5260 E-mail: rwi@damen.nl Website: www.damendredging.com Contact: Ms Rosemarijn Wijmans
	21 Deltares Deltares is an independent applied research institute for applied research in the field of water, subsurface and infrastructure. We work worldwide on smart solutions, innovations and applications for people, environment and society. Our main focus is on deltas, coastal regions and river basins. We work closely with governments, businesses, other research institutes and universities, at home and abroad. Our motto is 'enabling delta life'. Knowledge is our core business. Ours can be used in and for society and the quality of our expertise and advice is foremost. Furthermore, our software and models are freely available.	Address: Rotterdamseweg 185, 2629 HD Delft, the Netherlands Tel: +31 (0)88 335 8442 E-mail: Astrid.vanBragt@deltares.nl Website: www.deltares.nl Contact: Mrs Astrid van Bragt
	35 DEME NV DEME (Dredging, Environmental and Marine Engineering) has won a prominent position on the world market in a number of highly specialised and complex hydraulic disciplines. The group has diversified from dredging operations and land reclamation to marine engineering projects at sea, services to oil and gas companies, installation of offshore wind farms, environmental activities such as soil remediation, sludge recycling and revalidation of brownfields and wreck clearance. Its investment in high-tech equipment means it has one of the most modern, high-tech and versatile fleets for dredging and marine engineering.	Address: Haven 1025 – Scheldedijk 30, 2070 Zwijndrecht, Belgium Tel: +32 (0)3 250 53 69 E-mail: Hoorelbeke.Karen@deme.be or Wittemans.Ann@deme.be Website: www.deme.be Contact: Ms Eva Boeckling
	17 DHI DHI is an independent research and consultancy not-for-profit organisation. We advance technological development, governance and competence in the fields of water, environment and health and offer a wide range of consulting and policy services, as well as a leading edge technologies. Competencies include numerical modelling, environmental laboratories and scale model test facilities, field surveys and monitoring programmes, and institutional capacity building and training.	Address: Agern Allé 5 DK-2970 Hørsholm Denmark Tel: +45 4516 9200 E-mail: anj@dhigroup.com Website: www.dhigroup.com
	45 dotOcean dotOcean created the GraviProbe, a free fall penetrometer characterising sediments and mud layers. It's mainly used by leading ports and dredging companies to optimise their dredging efforts, follow up sediment consolidation and (re)define the nautical depth. dotOcean also gives advice on innovative dredging strategies for ports and harbours.	Address: Bedrijvencentrum Brugge, Lieven Bauwensstraat 20, 8200 Brugge, Belgium Tel: +32 (0)50 68 30 54 E-mail: sebastien@dotoccean.eu Website: www.dotoccean.eu Contact: Mr Sebastien Deprez
	32 E-Crane Worldwide (Indusign NV) JE-Crane Worldwide, better known as E-Cranes, is the leader in the design and construction of hydraulic balanced cranes. These are designed and used for high volume bulk material handling in ports and floating terminals around the world where the key factors are low cost per ton of material handled, long machine lifetime and reliability. Machines are designed and built according to the highest classifications and are often used 24/7. For more information please visit our website.	Address: Koekoeklaan 53, 9991 Adegem, Belgium Tel: +32 (0)9 378 06 45 E-mail: ann-sophie.degroot@e-crane.com Website: www.e-crane.com Contact: Ms Ann-Sophie Degroot
	39 EMSTEC EMSTEC is a world player for hoses, oil transfer hoses, marine equipment and mechanical engineering for the dredging, offshore and marine-related and environmental projects. Both in the design and execution phases, key activities are carried out by the company's in-house engineers. Combining diverse activities, EMSTEC can offer an overall package and execute large-scale projects from start to finish. It can react quickly to customer requirements for technical development, special designs, delivery times, or choice of materials and delivers a wide range of high quality products for new development, replacement or spares.	Address: Gewerbering 8, 22113 Oststeinbek, Germany Tel: +49 (0)40 79 686 345 E-mail: egbert@denialink.com or info@emstec.net Website: www.emstec.net Contact: Mr Egbert Wibbelink
	36 GEOxyz GEOxyz is an independent company, specialising in hydrographic, geophysical & geotechnical surveys. Through our local offices and representatives in Belgium, the Netherlands, France and the UK, we provide our services to local authorities, the dredging, marine construction and offshore industries and also to consulting companies and research centres. We use professional highly-specialised staff, advanced technologies and state-of-the-art survey systems to reply to the most demanding requests. Work is executed all over Europe, from Russia to the Mediterranean and specific project support can be provided all over the world.	Address: Harelbeekstraat 104D, 8550 Zvevegem, Belgium Tel: +32 (0)56 70 68 48 E-mail: charlotte.vanpeteghem@geoxyz.be Website: www.geoxyz.be Contact: Ms Charlotte Vanpeteghem

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Global Industrial Supply Co Ltd

Global Industrial Supply (GIS), a new Beijing-based Sino-Swiss joint venture, mainly engages in logistics and procurement services for the machinery manufacturing sector. Its main business scope is dredger hoses, steel pipe, marine machinery, hydraulic equipment, casting, forging parts, automobile casting parts, and light industry products. Dredger hose and steel pipe are the main products of the dredging products department. With an ISO 9001 certificate, its products are exported all over the world, including to Belgium, Holland, Egypt, Singapore, USA, Korea and Japan. Come to GIS, for business and friendship.

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 Website: www.bj-gis.com
 Contact: Mr/Ms Bei Sing



14

Holland Marine Technologies

HollandMT is a leading engineering & contracting company providing innovative dredge engineering and equipment packages to dredging contractors and shipyards worldwide. Its experienced engineers and project managers respond rapidly and professionally to clients' needs. With its practical approach, in-house expertise and reputable co-makers, HollandMT is equipped to integrate customer-specific requirements with first-class design, highest fabrication standards and competitive price levels – whether it's a single gate-valve or a complete dredging system for a trailing suction hopper dredger. We're ready to meet any requirement.

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 Tel: +31 (0)348 416075
 E-mail: jwdewit@hollandmt.com
 Website: www.hollandmt.com
 Contact: Mr Jan Willem de Wit



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HR Wallingford

We're an independent civil engineering and environmental hydraulics organisation delivering practical solutions to complex water-related challenges faced by our international clients. A dynamic research programme underpins all that we do and keeps us at the leading edge. Our unique mix of know-how, assets and facilities includes state of the art physical modelling laboratories, a full range of numerical modelling tools and enthusiastic people. Based in the UK, we reach clients and partners globally through a network of offices, agents and alliances.

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IADC

IADC – International Association of Dredging Companies – is the global umbrella organisation for contractors in the private dredging industry. IADC's mission is to inform the world about the fundamental need for dredging and the economic, social, technological and environmental benefits thereof; improve the international business climate for the private dredging industry; promote fair contract conditions and fair competition within the dredging markets; promote worldwide the standards of professional conduct which form the basis for all members' operations; and promote the industry as an innovative one with attractive career opportunities.

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 Website: www.iadc-dredging.com
 Contact: Ms Melanie Taal

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IHC Merwede

IHC Merwede focuses on the development of design and construction activities for maritime customers including dredging operators, oil & gas corporations, offshore contractors and government authorities. It's the global leader in efficient dredging and mining vessels and equipment, with experience accumulated over decades, and a reliable supplier of custom-built ships and supplies for offshore construction. With in-house engineering expertise, it manufactures innovative vessels and advanced equipment, provides life-cycle support and develops optimum product performance and long-term partnerships.

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 E-mail: ka.jansen@ihcmerwede.com
 Website: www.ihcmerwede.com
 Contact: Ms Katja Jansen



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Jan De Nul Group

People and vessels is the driving force behind Jan De Nul Group. Thanks to skilled employees and an ultramodern fleet, Jan De Nul Group ranks at the top of the international dredging industry as well as being one of the largest civil engineering and environmental contractors. The supporting services of the dredging, civil and environmental division enable Jan De Nul Group to perform large-scale projects to its clients' satisfaction, whether this concerns a Palm Island in Dubai, a new port facility in Australia or the construction of the new locks in the Panama Canal.

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Jiangsu Huaxia Heavy Industry Co

Jiangsu Huaxia Heavy Industry Co was established in 2009, with registered capital of RMB 80M yuan. It is a research & development, production and sales enterprise which specialises in marine dredging equipment and complete dredging vessels. It covers an area of 105,228m² and employs about 360 staff and workers; fixed assets are nearly RMB 500M yuan. It has passed ISO9001:2008 quality management system certification, and is a member of the China Dredging Association.

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 Website: www.jshxzg.com
 Contact: Ms Sherry



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Machinefabriek L. Straatman BV

Machinefabriek L. Straatman is a well-known supplier of dredging and mooring equipment. With years of experience, we are specialists in a safe connection between the ship and the floating pipeline. In our own production facility in Holland, we build bow discharge installations, pinch ball joints and turning glands. Apart from the dredging market, we also have a complete package of quickrelease mooring and towing equipment, including load monitoring and berthing systems. With our focus on high quality and reliability, we can meet the requirements of the world's leading dredging companies, as well as ports and harbours.

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 Website: www.mfstraatman.nl
 Contact: Mr Gertjan Strietman



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Marinestar – Fugro Satellite Positioning BV

Marinestar's high performance positioning products and services (delivered to you by Fugro Satellite Positioning) are able to meet a varied range of applications in dredging, marine construction, cable lay and hydrographic survey. Marinestar's services deliver decimeter accuracies in the XY&Z, in high availability, using 10 overlapping L-band satellite beams. With standard GPS and GLONASS as options, a double navigation satellite constellation is made available. Our redundant infrastructure and 24/7 global customer service makes this precise positioning service the exact tool you need!

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03

National Marine Dredging Company


NMDC is an Abu Dhabi-based dredging and marine & civil works company. It provides infrastructural services that form the basis for the realisation of the present and future development needs in Abu Dhabi, in oil & gas, ports, real estate and tourism. Our areas of specialisation are: dredging & reclamation (maintenance & capital dredging, shore approach dredging, land reclamation), channel management (buoy installation & maintenance), survey services (bathymetric hydrographic survey) and civil & marine-related works (rock revetment, armour unit installation, quay wall installation). Please visit our website for further details.

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 Website: www.nmdec.com
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	40	Nortek BV Nortek installs measurement systems and monitoring networks for river and ocean currents and waves and sediment transport within Benelux and further afield. Clients are dredging companies, governments, research institutes and offshore companies. Our mother company Nortek AS (www.nortek-as.com) develops and produces acoustic doppler current profilers for use in oceans, rivers and laboratories. Our SeaDarQ radar products are used for oil spill detection, small object detection and upper layer current measurements. The advanced software is in use both on ships and as part of land-based radar networks.	Address: Schipholweg 333a, 1171 PL Badhoevedorp, the Netherlands Tel: +31 (0)20 654 3600 E-mail: sicco.kamminga@nortek-bv.nl Website: www.nortek-bv.nl Contact: Mr/Ms Sicco Kamminga
	33	Observator Observator Instruments is a supplier of high-quality hydrological and meteorological measurement systems. The company develops its own products but, as a system integrator, also regularly uses third-party products. Products include water quality sensors, meteorological sensors, data loggers, data buoys, data processing software and complete measurement networks. Observator delivers turnkey measurement solutions as well as individual instruments. The main customers are dredging companies, harbour authorities and governmental organisations.	Address: 6, Rietdekker, 2984 BM Ridderkerk, the Netherlands Tel: +31 (0)18 046 3530 E-mail: mko@observator.com Website: www.observator.com Contact: Ms Marjolein Koudijs
	18	PROLEC Prolec, part of James Fisher and Sons Group, is a market leader with 30 years of experience supplying machine productivity and safety systems to the construction equipment industry. It's a market leader in machine control systems for excavators used in dredging and marine engineering activities. Employing its marine-grade angle sensor technology and application-specific pcX-Pro or Digmaster technology, its expertise is in the control, measurement and guidance of equipment to enhance functionality, deliver higher productivity and reduce costs. Its systems enable users and OEM manufacturers to drive safe productivity to the highest level.	Address: 25 Benson Road, Nuffield Industrial Estate, BH17 0GB Poole, UK Tel: +44 (0)120 268 1190 E-mail: kwatt@prolec.co.uk Website: www.prolec.co.uk Contact: Ms Karen Wyatt
	51	Redwise Maritime Services Redwise offers full-service, global ship delivery and professional crewing. With an average of 50 moves per annum, Redwise Maritime Services is a world leader in delivering vessels under their own power on a global scale. We assist dredging companies, shipyards, tug and AHTSV operators and other owners to (de) mobilise their vessels on a lump sum contract including: fuel, full crew, port expenses, security, registration etc. In addition, Redwise Maritime Recruitment, a specialist recruitment agency for mariners, provides owners, operators and yards with qualified and experienced personnel.	Address: Amersfoortseweg 12E, 3751 LK Bunschoten Spakenburg, the Netherlands Tel: +31 (0)33 421 7860 Fax: +31 (0)33 421 7879 Email: info@redwise.nl Website: www.redwise.com
	37	REMU Oy REMU is a manufacturer of Big Float amphibious excavators, REMU screening buckets and REMU combi screening plants. The company was established in 1997 and is located in Ähtäri, Finland. The Big Float is a floatable excavator, which is used in the most challenging environments – such as shorelines, marshland, canals and other places – where normal excavators cannot operate. Its patented pontoon structure can be narrowed for easy transportation and then widened for safe and secure operation. More information can be found at our website.	Address: Inhantie 7, FI-63700 Ähtäri, Finland Tel: +358 (40) 747 0868 5 E-mail: hanna@remu.fi Website: www.remu.fi Contact: Ms Hanna Rissanen
	38	Seatools BV Seatools provides complete solutions for almost any underwater challenge. Its success is proven by its extensive track record, supplying high quality tailor-made underwater equipment to clients worldwide in the offshore industry, dredging and civil construction. Its success is due to the 'all-in-one company' concept. Seatools can provide a complete solution to complex problems in-house, including the mechanical, hydraulic, electrical / electronic and software design and implementation. With all the required skills and staff in-house, Seatools' compact organisation guarantees a rapid response and a solution that matches the client's requirements.	Address: Yan v/d Heydenstraat 11, 3281 NE Numansdorp, the Netherlands Tel: +31 (0)18 668 0000 E-mail: bdk@seatools.com Website: www.seatools.com Contact: Mr Berdien Kaper
	15	Shanghai XinGeGang Wear Resistant Compound Materials XGG is the biggest chromium carbide-clad pipe manufacturer in China for the dredging industry. The chromium carbide-clad pipe with its fine chemistry has been applied to dozens of trailing suction hoppers dredgers and cutter suction dredgers over the last five years. Operating both on land reclamation and offshore projects, these bear witness to the safety, reliability and excellent wear performance. Time and again, dredging industry users tell us that the pipeline provided by XGG is the best choice to combat wear.	Address: No 150, Hua Song Road, Xi Du Industry Area, Fengxian District, Shanghai, China Tel: +86 (21) 5793 2582 E-mail: world.chida@yahoo.com.cn Contact: Ms Sherry
	02	Shijiazhuang Kingda Pump Industry Group Co Kingda is the biggest Chinese industry base for researching, designing and manufacturing pumps – whether dredging, water, slurry, seawater, sewage or submersible pumps. It has four branches and seven subsidiaries, with a production capacity of 26,000 sets of pumps per year. Our main products are primarily supplied to dredging vessels, the metallurgy and mining industry, etc, which are No 1 in domestic market share, but they are also exported to South America, Africa, Asia, the Middle East and more than 50 countries and areas.	Address: No.239 Tianshan Great Street, Shijiazhuang, Hebei 050035, China Tel: +86 (311) 8090 8116 E-mail: shihuaben@sina.com or world.chida@yahoo.com.cn Contact: Ms Sherry
	42	Shijiazhuang Muyuan Industry & Trade Co The Muyuan company focuses primarily on the production and supply of high quality slurry pumps and slurry pump parts. Our pumps are designed for the harshest abrasive and corrosive pumping environments. They can be made of high chrome, a wide variety of elastomers or the latest in ceramic materials for longer service life and higher efficiencies. Also, the parts are interchangeable with one of the most recognised brands worldwide in the slurry pump business. That means a further reduction in customer costs due to consolidation of inventory and interchangeability with existing equipment.	Address: Building 32, Zhuoda Garden, No 389 Zhaiying Street, Shijiazhuang, Hebei 050031, China Tel: 0086-311-86131743 Fax: 0086-311-87706011 Email: sales@cnmuyuan.com Website: www.cnmuyuan.com
	01	Stema Systems Stema Systems supplies hydrography, positioning and oceanology-related measurement systems. Besides the design and manufacturing of these products, Stema Systems integrates sensors, systems and software based upon customer requirements. Our mission is to contribute to the quality and efficiency of the hydrographic survey and dredging community, working on high seas offshore to the smallest waters inshore, by supplying and implementing state of the art and innovative sensors, systems and concepts.	Address: Poppenbouwing 52, PO Box 69, 4190 CB Geldermalsen, the Netherlands Tel: +31 (0)34 558 0395 E-mail: brian.aldjah@stema-systems.nl Website: www.stema-systems.nl Contact: Mr Brian Aldjah





06

Teledyne RESON AS

The RESON name is a hallmark of class-leading sonar equipment, transducers, hydrophones and survey software that you can count on. Headquartered in Denmark, RESON has a global presence with offices and representatives around the world. RESON flagship products include the Seabat multibeam echosounders and our data acquisition software PDS2000.

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Website: www.reson.com
Contact: Mr Nico Van Woerkom




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TerraStar

As an early innovator in precise positioning, Terrastar aims to be the market leader in precise land navigation, positioning, and guidance solutions, through the innovative application of technology, continuous service and product development, and operational excellence. We operate, maintain and control our own network of GNSS reference stations and associated infrastructure to ensure maximum operational reliability of our augmentation services for land precise positioning. This gives us full control and the ability to respond rapidly to customer requirements and advances in technology – not just a supplier, but a partner for positioning.

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E-mail: laura.cowie@veripos.com
Website: www.terraStar-global.com
Contact: Ms Laura Cowie




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The Japan Workvessel Association

The Japan Workvessel Association (JWA) was founded in 1958 to attain a further overall development and improvement of work vessels, facilities and related equipment to lead to better utilisation. JWA consults on basic designs for new building and repair of work vessels. The association's main activities are: survey and study of improvements in work vessels, and the machinery and equipment used in them; survey and study of construction methods using work vessels; consultation on planning, design, and information distribution of work vessels, machinery and equipment; and study of waste oil treatment facilities.

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E-mail: shiba@s-jwa.or.jp
Website: www.s-jwa.or.jp
Contact: Mr Toyoaki Shiba




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Tianjin Puyou Mech & Elec Equipment Co Ltd (Puyou)

Puyou is a professional factory developing and manufacturing the electric motors, pumps and matched equipment used in specialised industries. Its products include motors (the YQN series of submersible dredge electric motors, and the PY(H) series of water (or seawater) submersible electric motors) and pumps (the Q(H)B series of water (or seawater) submersible pumps, the QHBC series of vertical shaft fire pumps, and the QSB submersible sand pumps).

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E-mail: puyou@china.com or world.chida@
yahoo.com.cn
Website: www.puyou.com.cn
Contact: Ms Sherry



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Trimble

Founded in 1978, the company offers a complete solution for the user – one that includes both hardware and software. Trimble's solutions use positioning technologies – such as GPS, lasers and optics – and are focused on applications requiring position or location, including surveying, marine, construction, agriculture, fleet and asset management, public safety and mapping. Its site positioning system, GNSS receivers and antennae are advanced positioning systems developed for marine solutions. Its receivers can also be easily incorporated into system integrator solutions.

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Van Oord Dredging & Marine Contractors

Van Oord is a leading international contractor specialising in dredging, marine engineering and offshore projects (oil, gas and wind). We are an innovative partner for our clients and, for over 100 years, have helped to create the infrastructure for the world of tomorrow. Van Oord provides innovative solutions for worldwide maritime challenges. A Dutch-based, independent family business, Van Oord is characterised by leadership, long-term vision and a sound financial position. Activities include dredging, marine construction, and engineering, land reclamation, offshore wind park installation, offshore pipelines and subsea rock installation.

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Vosta LMG BV

We are a leading engineering and contracting company, serving the worldwide dredging industry. Apart from custom-built and standard dredgers, we also market various dredge component packages and offer engineering and contracting services. VOSTA LMG has 100 employees in eight offices – Amsterdam, the Netherlands; Lübeck, Germany; Zhuhai and Beijing, China; California, USA; Dubai, UAE; New Delhi, India; and Singapore. More information on projects and activities can be found at our website.

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Website: www.vostalmg.com
Contact: Ms Petra Koomen



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WODA (World Organization of Dredging Associations)

WODA has no individual members – it consists of three associations that convene the triennial World Dredging Congress (WODCON), hosted in turn by each region.

- CEDA – Central Dredging Association serving Europe, Africa and the Middle-East
- EADA – Eastern Dredging Association serving the Asian and Pacific region
- WEDA – Western Dredging Association serving the Americas

Their joint interests include all aspects of dredging and encompass a range of disciplines and activities. The three associations CEDA, EADA and WEDA do not represent the interest of the entire dredging community and they do not represent the interest of any single sector or company.



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