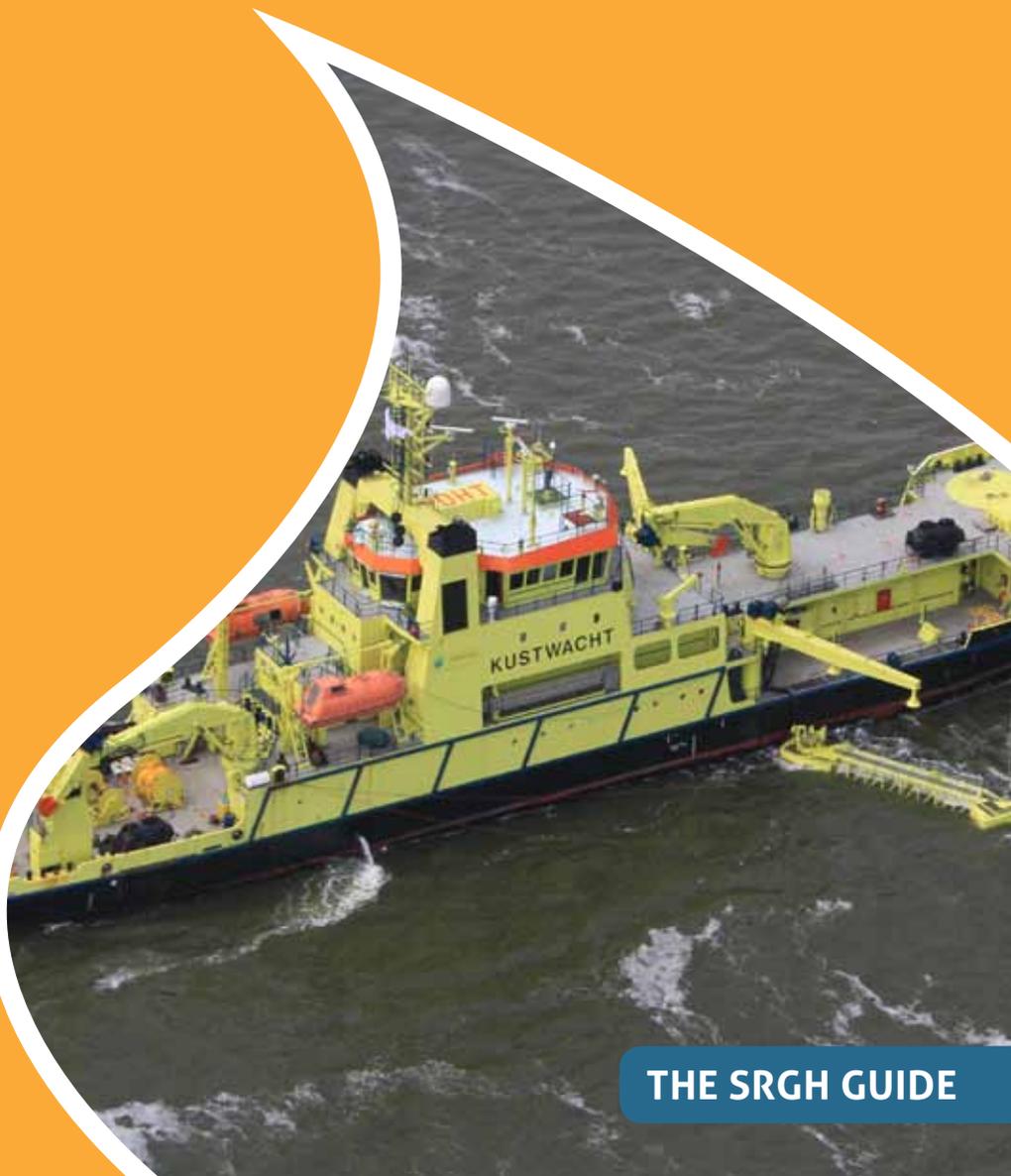




SPILL RESPONSE GROUP HOLLAND



THE SRGH GUIDE

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INTRODUCTION

Dear Colleagues,

On behalf of the Spill Response Group Holland members we have the great pleasure to present you with the updated SRGH guide. This guide introduces our members and their specific services to you. It shows their capabilities in the field of oil and chemical spill preparedness and response at sea, on the coast and on inland waters.

Set-up in 2005, the SRGH Association represents a wide selection of Dutch companies and organizations active in the maritime sector with a focus on spill prevention, preparedness, response and control. Members include manufacturers of response equipment and materials, response organizations, oil disposal contractors, consultancy companies, R&D institutes, training providers, salvage companies, contractors and shipbuilding companies. In recent years SRGH members have proven their skills across the globe and have become international leaders in their fields of expertise.

SRGH actively exchanges information with Rijkswaterstaat, a department within the Ministry of Infrastructure and the Environment in the Netherlands, that is responsible for oil spill response activities on Dutch inland waters, the coastal areas and in the North Sea and with the Port of Rotterdam. Both are associated members.

Please do not hesitate to contact the SRGH or one of our members for more information or when assistance is required.

We hope you enjoy reading the SRGH guide,

The board of the SRGH

SRGH PRODUCTS

Consultancy and R&D

- Contingency planning
- Risk assessment
- Spill evaluation
- Development skimmers
- Testing response equipment
- Testing response chemicals
- Auditing
- Port and shipping studies
- Marine ecological studies
- Environment impact studies
- Expertise in national legislation
- Expertise in EU legislation
- Integrated water management

Knowledge

- Oil spill response knowledge
- Chemical spill response knowledge
- Ecological knowledge

Modeling

- Decision making models
- Trajectory models
- Information management models
- Chemical behaviour models
- Oil spill behaviour models
- Databases

Oil response chemicals

- Dispersants
- Bioremediation products
- Other response chemicals

Observation/measurement

- Oil detection
- Remote Sensing techniques
- Water sampling
- Satellite data
- Ecological monitoring and information systems

Oil response vessels

- Oil recovery vessel
- Pollution control vessels
- Salvage/emergency response vessels

Services

- Salvage
- Disposal
- Oil spill response at sea
- Coastal clean-up
- Heli flights
- Aerial surveillance
- Laboratory analysis
- Underwater surveying
- Storage facilities
- Towing / working boats
- Pumping equipment
- Transport by road

Spill Response Equipment

- Booms
- Skimmers
- Adsorbents
- Sweeping systems
- Pumps
- Power packs
- Absorbents
- Emergency kits
- Nautical electronics
- Spraying units
- Beach cleaners
- Stem cleaners
- Safety equipment
- Separation techniques

Training

- Oil spill response courses
- Chemical spill response courses
- Vessel crew training
- Remote sensing courses
- Practical trainings (use equipment)
- Firefighting courses

The Spill Response Group Holland Association represents Dutch companies and organizations supplying equipment, services and expertise for all aspects of marine, inland waters and coastal pollution control worldwide.

Our aims and objectives

- 1** To represent Dutch Companies supplying equipment, services and expertise for all aspects of marine and coastal pollution control worldwide
- 2** Through the SRGH-brochure and SRGH-website to give worldwide users information and immediate access to the facilities/expertise of SRGH Members
- 3** To promote and organize exhibitions, conferences, training and other activities as required by the Members
- 4** To promote exchange of information between SRGH Members in the field of oil and chemical spill response
- 5** To provide optimal services in case of a real spill or worldwide request for assistance

THE BOARD OF THE SRGH



Edwin Stolk
chairman SRGH
voorzitter@srgh.nl
of ASCC



Tom Achterberg
secretariat SRGH
secretaris@srgh.nl
of KOSEQ

Members are:

- Manufacturers of response equipment and materials
- Response organizations
- Oil disposal contractors
- Research organizations
- Consultancy companies
- Universities, technical institutes
- Training providers
- Salvage companies
- Shipbuilding companies
- Central, regional and local Governmental organizations
- Oil Recovery vessel operators

Associated Members include:

Rijkswaterstaat is the department within the Ministry of Infrastructure and the Environment in the Netherlands and is responsible for preparedness and response to accidental spills on inland waters, the coast and the North Sea. Rijkswaterstaat exchanges and shares information on experience and developments with the SRGH members.

The Port of Rotterdam, together with the SRGH and the Port Authority ensure a safe and clean port. The policy of the Port Authority is to minimise danger, nuisance and economic damage to port users and the environment.



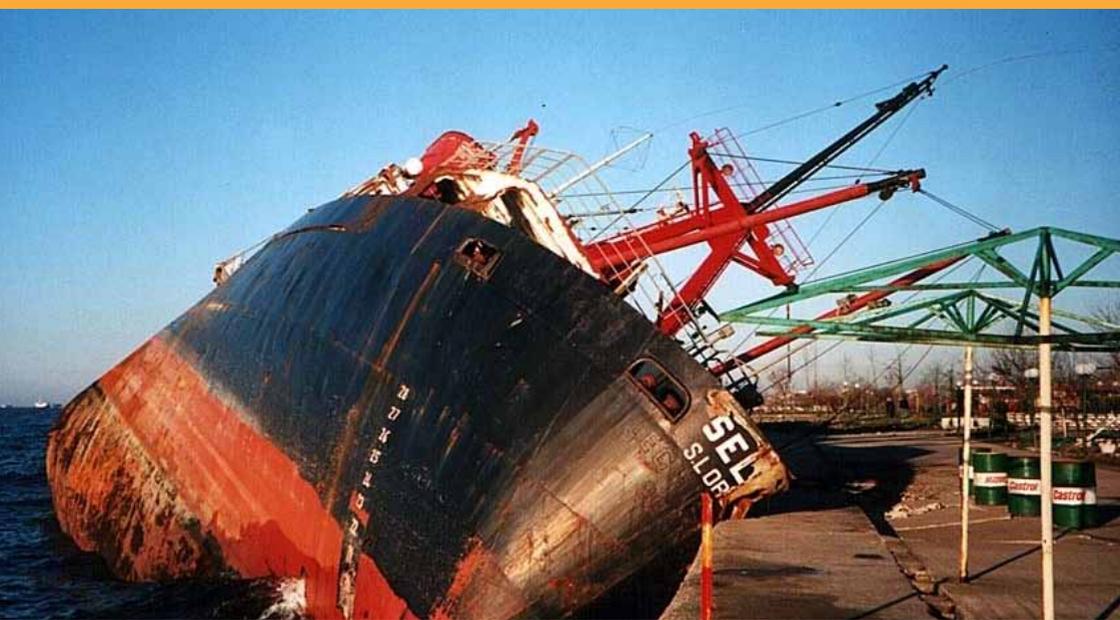
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Mark van der Meer
member SRGH council
info@srgh.nl
of HEBO Maritimeservice B.V.



Frank Kleissen
member SRGH council
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of Deltares



SPECIALIST IN RISK AND CRISIS MANAGEMENT

For more than 30 years AdviSafe supports organisations in achieving a safe and healthy work environment. From our experience we have learned that improving safety and health at work will contribute to the quality and productivity of your organisation. Consciously focusing on that, as well as fully including Crisis Management in your company processes, will not only prevent incidents and damage, but will enable you to work on your business objectives.

Our strength lies in our ability to integrate all disciplines into practical solutions making them easy to implement at the different levels of your organisation. We offer our services worldwide. Reliability, quality and flexibility are the core values of AdviSafe. You can count on us as your partner in Risk and Crisis Management.

Emergency Response

Every company fundamentally does what it can to prevent incidents. However, in case an incident does occur, the organisation should be able to respond adequately. It is important that your companies' Emergency Response organisation is documented in a plan that complies with policies and legislation. Depending on the type of organisation various plans are available such as Contingency plans, Emergency Response plans, Crisis Communications Plans, Oil Spill Contingency Plans etc. The response organisation should be in place, trained and competent in order to control the outcome and minimise escalation.

AdviSafe provides assistance for developing, training and improving your Emergency Response organisation, in the public sector as well as the private sector. Our consultants and trainers have practical knowledge and expertise regarding Emergency Response due to various projects in the field of oil pollution, equipment tests, development of emergency organisations and plans, extensive training and oil combating exercises on a local, national and international level.

AdviSafe delivers Quick-Scans, workshops and tailor-made trainings and exercises. We deliver these services on an operational, tactical and strategic level. Participants are given coaching and guidance to ensure they are optimally prepared for their role and tasks in the Emergency Response organisation of your company. During exercises participants improve their competences in a safe learning environment where an incident is simulated. Participants will be challenged to use their experience and recently gained knowledge and skills to a realistic scenario. Our training services are ISO and CRKBO Certified.

We deliver our services globally through the following disciplines:

- HSEQ Management
- Safety Culture and Behaviour
- Incident Management
- Crisis Management and Emergency Response
- Competence Management
- Operations Support

**For more information, please contact: Joost Michelhoff via +31 (0)223 - 540000
Joost.Michelhoff@advisafe.com (Coordinator Crisis Management).**



SAFETY AND SUPPORT AT SEA

Since 1833, Ardent has provided safety and support at sea. With 4,000 employees, a fleet of more than 450 vessels and operations all over the world, we are the global market leader within towage and emergency response.

With a worldwide track record of over 350+ successful emergency response and wreck removal cases over the last 15 years, Ardent is able to serve the maritime industry with unparalleled emergency response coverage, including dedicated Ardent salvage professionals stationed in over ten countries worldwide. Our key salvage hubs are located in the U.S., the Netherlands, Brazil, South Africa, Singapore and Australia. Additionally, being part of the Maersk group gives Svitzer access to a global network of over 115,000 colleagues and offices in over 130 countries.

The Right Experience and Coverage

Ardent's more than 180 years of experience, emergency response track record and fully dedicated Preparedness, Wreck Removal and decommissioning departments make us unparalleled in the variety services we are able to offer. Our current clients include governments, the shipping industries biggest names, various ports and terminals and many major off-shore oil and gas companies. Our portfolio also includes operating Emergency Towing Vessels (ETV) and standby tug services through Emergency Tow Contracts (ETC) with various governments around the world.

Safety through Preparedness

Ardent Global believes in preventative safety. We believe in preserving the safety and well-being of all maritime personnel, quality of the environment, value of property and the reputation of our industry. We offer innovative solutions to salvage situations and a proactive approach of partnering up with the industry before a casualty happens.

Ardent Global aims to be the maritime industry's long-term loss mitigation partner. Partnering will save time, reduce cost and mitigate the environmental impact of marine incidents. With new trends and the risk of marine operations varying greatly in different regions of the world, taking a proactive approach and being prepared for a casualty situation should now be at the forefront of the shipping community's mind. The trend of increasing ship sizes presents a new and uncertain risk to the industry in the form of increased insurance costs, increased risk and concerns over safety and new challenges to salvage situations. With capacities greatly increasing and insured values rising equally, it is vital for the international shipping community to get ahead of the curve and proactively prepare for a maritime incident. Engaging with a salvor before an incident will allow for familiarity with your vessels and operating procedures which will mitigate some of the risks associated with operations. Pro-actively partnering with **Ardent** will create clarity in the services we provide and allow for an instant quality emergency will result in a much shorter response time and contract duration thus minimizing the impact of a marine incident.

Would you like to get in touch with us immediately, please contact Ardent at +31 255 56 26 66 or via email at response@ardentglobal.com. Our team is at your disposal - 24/7!



SPILL RESPONSE -IN CONTROL WITH ASCC-

ASCC is an independent consultancy firm specialised in the field of spill response on inland waters, coastline and at sea. ASCC provides the skills as well as the tools to help you to prevent spills, to be prepared to react to spills, and to assist in case of spills instantly when they occur in an efficient and user friendly but sophisticated manner.

Since 1989, ASCC Group specialized in spill prevention, preparedness, and response in the oil and gas industry. With an international focus we serve clients in production and transport of oil, chemicals, and liquefied natural gas (LNG), and governmental and supra national organisations (e.g. EMSA, REMPEC, UNEP).

Research, development and consultancy

ASCC covers research, development and consultancy in the fields of modelling, training and impact assessment, and spill response technologies. ASCC has extensive experience in the field of response and crisis management to oil spills and the effect of spills in the marine environment and has contributed significantly to the knowledge (contingency plans) and methodologies (tools and software) regarding the whole area of spill control. ASCC represents a high level of technical and scientific expertise and has been involved in many major oil spills.

Information and management system

ASCC has developed sophisticated decision and operational support tools and software to advise and support our clients. These tools are very useful in training courses as well as real accidents on oil spill response. Our software product is a SaaS web-based modular product called METIS. This system is next to a database, an information management system and a decision support system for industry and government agencies in the field of oil and chemical spill control. It consists of the following modules:

- Resources - Database with Oil Spill treatment equipment with full details and location, output in geographical maps.
- Tracksheet - Predict the track of oil spilled and take effective and efficient counter measures, output in Google maps.
- Oilsheet - Easily calculate amount of oil spilled, basis dimension and/or Bonn Agreement. Based on the large database with type and characteristics of oil predict fate like spreading and dispersion.
- Chemsheet - User friendly aid in the process of translating a hazard assessment into orderly information for decision making.

Training

ASCC provides in-company and group training, with a focus on strengthening the knowledge and competences of all actors and people involved in spill response. Depending type, extensiveness of courses, and client demands, courses focus on strategic, tactical or operational level in accordance with IMO standards.

For more information contact Mrs. S. Luijendijk directly at +31 (0) 6 1229 2303, or email simoneluijendijk@ascgroup.com.



HIGH PERFORMANCE THROUGH FLEXIBLE SERVICE AND INNOVATION

Braveheart Marine, a maritime company based in Urk, The Netherlands, is specialized in hydrographical studies, bottom surveys, crew transfers and offshore windmill inspections, using drones and sub sea oil spill detection services.

The range of services of Braveheart Marine have extendend over the years.

Survey and Control for the Port of Rotterdam

In 2005, the Port of Rotterdam NV, awarded Braveheart Marine a contract to survey and control all their dredging and sand suppletion works for the extension of the Europort harbor, its additional 2000 hectares, "Maasvlakte 2" project, near Rotterdam, The Netherlands.

Due to the professionalism of Braveheart Marine, the use of state of the art survey and hydrographical equipment, the type of survey vessels chosen for this land reclamation project in the North Sea and the seamanship of the crew has been recognized very satisfactory by the Port of Rotterdam.

National and International marine services

Braveheart Marine is proud to provide marine services to a large number of nationally and internationally well-known dredging and offshore companies and our vessels are working now worldwide in places like, Mumbai (India), Kara Sea (Russia), Caspian Sea, Grimsby (UK), Suez Canal (Egypt) The North Sea, the Dutch Waddenzee and the IJsselmeer.

Expanding the scope of work even further, Braveheart Marine established with our USA based company Braveheart Marine USA, Inc. a joint venture with T&T Marine Salvage Inc., of Galveston, Texas, USA, T&T Braveheart LLC, for its offshore and salvage work surveys and sub sea oil spill detection operations.

BP USA commissioned a project to T&T Braveheart LLC. The project consisted of detection oil with hydrographic survey equipment. Due to the oil spill by BP in the Gulf of Mexico in 2010 with Deep Horizon oil rig.

Wind Farm support division

Because of the increasing requirements for dedicated crew transfer vessels to support the activities of offshore Wind Farms, Braveheart Marine established the dedicated Wind Farm support division, based at our offices in Urk and Eemshaven to serve the Wind Farm Industry even better and more efficiently.

Get in touch with our headoffice in Urk by phone +31 (0)527 683 839, or email info@braveheartmarine.com. Contact the Crew Tender Service Eemshaven, at +31 (0) 596 768 110, or email eemshaven@braveheartshipping.com



"Damen Oil Recovery Vessel 8313 Arca. Photo courtesy of Rijkswaterstaat Zee & Delta."

WE OFFER YOU A BROAD RANGE OF PROVEN POLLUTION CONTROL VESSELS

Damen is an international shipyard group with a leading position in shipbuilding. Damen employs more than 6,000 employees and has a presence in 35 countries. Damen is a multinational company that has never lost its family values or its deep respect for its maritime heritage.

Track record

Since 1969 Damen has delivered more than 5,000 vessels. On average we deliver around 150 vessels a year and we always keep more than 150 hulls in stock to ensure a short delivery time. Each year we complete more than 1,000 repair jobs.

Concept

Damen's unique shipbuilding concept is based on what our customers want: the best quality, proven designs, short delivery time, low maintenance and excellent resale value. The result is a work method with the perfect balance between standardisation and custom-built vessels. And of course we offer a broad range of customer services.

Shipbuilding activities

Damen's shipbuilding activities include a wide range of products, such as:

- Pollution control vessels (oil containment, oil recovery, debris collection) and fire-fighting vessels.
- Workboats needed for the wide variety of tasks in ports and harbours, such as tugs and pilot boats.
- Offshore vessels, including salvage tugs, buoy laying vessels and safety standby vessels.
- Dredging equipment and dredging vessels, together with a range of dredging support vessels.

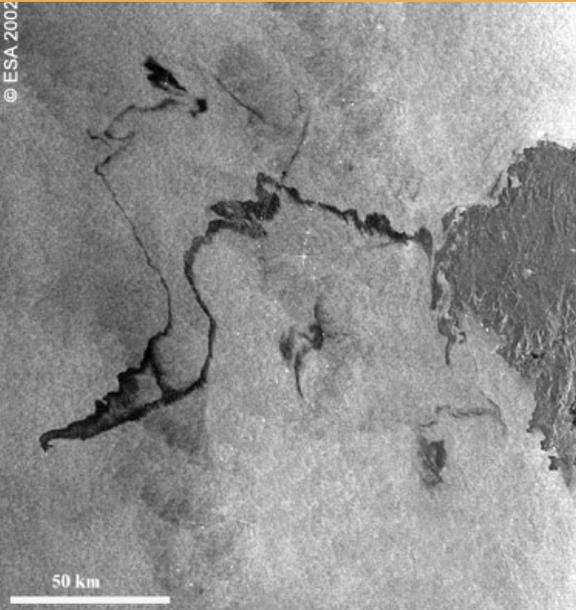
Most of our vessels can be adapted to support environmental protection and clean-up operations by fitting specialized equipment.

Shipbuilding kits

One of our services is Damen Technical Cooperation, which enables our customers to build their Damen vessel locally, anywhere in the world. We provide our clients with a prefabricated shipbuilding kit and can, on request, combine this with expert assistance, training and backup.

For more information on our company, capabilities, products & services please visit our website www.damen.com or contact Mr. L. van Os directly, workboats@damen.com, +31 (0) 183 639 119.

© ESA 2002



Prestige oil spill, ESA's Envisat Satellite Radar Image(17-11-2002 10h45m UTC), (left),model prediction, 24 hours after satellite image (right).

UNIQUE COMBINATION OF KNOWLEDGE AND EXPERIENCE

Deltares is an independent institute for applied research in the field of water, subsurface and infrastructure. Throughout the world, we work on smart solutions, innovations and applications for people, environment and society. Our main focus is on deltas, coastal regions and river basins. Managing these densely populated and vulnerable areas is complex, which is why we work closely with governments, businesses, other research institutes and universities at home and abroad. For Deltares the quality of our expertise and advice is foremost. Knowledge is our core business. Deltares employs over 800 people and is based in Delft and Utrecht.

Development of modelling tools

Since the early 80s, we have been active in the field of oil research by carrying out laboratory experiments and state-of-the-art numerical modelling. The acquired knowledge about the behaviour of oil has been incorporated into mathematical modelling tools that can be used for the prediction of the spreading and fate of oil spills (see, for example, the figure) under the effect of currents, wind and waves. Improving the knowledge that is embedded in our tools is an on-going process.

Recently, we have extended the oil module of our Delft3D modelling framework with a stochastic mode for generation of spatial risk, which are a combination of stochastic simulations with ecological vulnerability maps to assist the development of contingency plans. Our oil model can also be operated in our FEWS real-time operational forecasting system, providing the means to respond efficiently to spill incidents. We have also established a link between the oil spill model and our general water quality model, providing the means to investigate long term effects of oil spills.

Specialised advice related to oil and chemical spills

The following is a listing of the specialised advice related to oil and chemical spills that can be carried out by Deltares:

- Detailed and advanced modelling of 3-dimensional hydrodynamics;
- Spill modelling, modelling the fate of spilled oil/chemicals;
- Stochastic modelling techniques for the development of risk maps;
- Modelling support for search and rescue operations;
- Potential environmental impacts on sensitive areas and habitats;
- Reverse modelling techniques to support the identification of (illegal/accidental) spill locations;
- Linking maritime safety assessment with marine environmental assessment.
- Operational forecasting;
- Applied research into (long term) effects of oil spills.

Would you like to get in touch with us immediately? Please contact Mr. Frank Kleissen at +31 (0)883 358 273 or email Frank.kleissen@deltares.nl.



IS THE OFFSHORE OIL INDUSTRY READY FOR CHANGE? - WE ARE!

Foru Solution B.V. is located in Harlingen, The Netherlands. Foru Solution wants to develop preventive measures against pollution of our oceans worldwide and subsequent damage to our maritime flora en fauna.

A key change in oil risk management

The FORU (Floating Oil Recovery Unit) is an oil recovery device, based on the latest technical developments. It is not a skimmer but an adjustable down-draught system that performs skimming activities. Its shape makes it become one with the waves, ready to function under rough offshore circumstances.

Working at high speed the FORU takes in up to 340 m³ per hour of the oil/water mixture (approx. 90,000 US gallons). The recovered oil will be pumped into a storage facility such as an oil tanker, barge or bladder. The FORU acts at the epicenter of an oil spill rather than at the end, when oil reaches beaches and estuaries causing maximum damage. It can handle various types of oil.

In short, the FORU is a unique device, highly flexible, capable of recovering massive quantities of oil in record time, even under adverse weather conditions. Operated by only two persons it is capable of working continuously without any maintenance for longer periods of time. The FORU technology has been patented in July 2013.

FORU facts:

- Capacity: recovers 40,000 – 45,000 barrels of oil per 24 hours
- The FORU has an oil recovery ratio of > 75%
- Highly flexible: immediate deployment when oil spill occurs
- Inlet opening of 360 degrees and floating on its own
- Stabilising itself at water surface level
- Functions in rough water: waves of ≤ 8,2 feet (< 2,5 m)
- Adjustable down-draught system for a broad spectrum of oil substances
- Fits in a 20 feet container, including power pack
- Easy to lift and transport
- Easy to operate with a remote control: low operational costs
- Built for industrial use: low maintenance costs
- Tested at the Pollution Control Authority in Horten/Norway and at Ohmsett, Leonardo/USA

Curious about how the FORU can improve your operational excellence, please call us at +31 (0) 208 943 984. Or send an email to info@foru-solution.com.



AN OIL SPILL? HEBO MARITIEMSERVICE WILL HANDLE IT!

HEBO Maritiemservice is widely known to be a professional and reliable oil spill response company. Our well-trained 'Oil Spill Response Teams' make use of the best equipment and have a real hands-on mentality. And even more important: they are always prepared to tackle even the biggest oil spills.

Reliable & stand-by 24/7

HEBO's professionals are ready around the clock , 365 days year. In order to be able to act quickly, expertly and situation-specifically, the HEBO teams have followed several courses and trainings in the field of oil spill response. HEBO also attaches great importance to safety and cost efficiency. In combination with short lines, this makes HEBO a reliable partner that is ready to respond to calamities in no time.

Only the best material Equipment

As a real expert, HEBO Maritiemservice is in the possession of the most professional oil combating vessels. These innovative ships are equipped with cutting-edge technology, allowing them to separate and remove any hazardous materials. Furthermore, the Oil Spill Response Teams make use of the most advanced absorption materials and specialised spill control products such as oil retaining screens and skimmers. As a result, HEBO Maritiemservice is able to provide their customers only the best solutions.

The whole package

Most of the times, an oil spill implies a serious range of related problems. HEBO Maritiemservice can handle all of them. That means salvaging sunken ships, detecting and salvaging lost cargo, refloating stranded ships, removing wrecks or obstacles in the waterways and providing a wide range of emergency response services. It's not without reason that HEBO Maritiemservice is called a maritime service provider in the broadest sense of the word!

**Do you require the assistance of a professional Oil Spill Response company?
If so, please get in touch with us immediately via +31 (0)38 386 81 80.
Our team is at your disposal - 24/7!**



IHC Slicktrail Vessel, a trailing suction hopper dredger and oil recovery vessel.

IHC DESIGNS, BUILDS AND MAINTAINS INNOVATIVE EQUIPMENT AND VESSELS

Royal IHC (IHC) designs, builds and maintains innovative equipment and vessels for maritime service providers operating from sea level to ocean floor. It is the global market leader for efficient dredging and mining equipment and vessels – with vast experience accumulated over decades – and a reliable supplier of innovative ships and tools for offshore construction.

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

Development of the IHC Slicktrail

In collaboration with the Directorate-General for Public Works and Water Management and a Dutch dredging contractor, IHC has been involved with the development of the IHC Slicktrail since its initial design stages.

This innovative ship combines the role of a oil recovery vessel, operating on successfully proven design principles, with that of a modern trailing suction hopper dredger (TSHD), for use in the maintenance of coastal waters and harbour access channels.

The major benefit of this combination is that it provides the availability of a large recovery capacity with a vessel not expressly built for pollution-control purposes. While carrying out dredging operations close to its assigned oil combat area, the IHC Slicktrail is also on standby to deal with potential large oil spillages.

Since its introduction, the IHC Slicktrail has been built in a variety of different configurations, from TSHD's with a self-supporting and removable oil recovery installation to TSHD's with a complete integrated oil recovery installation to serve as a first-line vessel.

IHC Products & Services

IHC provides the following product and services:

- Response vessels
- Hydraulic systems and equipment
- Oil recovery dragheads
- Booms
- Pumps
- Pollution recovery accessories
- Spill response training accreditation
- Research and development agency

For more information, please contact Mr. S. Ooijens at Royal IHC by telephone +31 (0)88 015 25 35 or via email, sc.ooijens@royalihc.com. We'd be happy to hear from you.



WHERE THE SEA MEETS LAND IS OUR PLAYING FIELD

The JARO Group was founded 10 years ago by the current owner/director Mr. J.H.J. Hameeteman. By being flexible and at the same time professional, the JARO Group is a reliable partner in case of combating calamities. The company excels in being able to mobilise significant personnel and equipment to deploy at any time in any circumstances.

Soil and Waterworks

Originally, the JARO Group acts as contractor in soil- and waterworks and has an extensive fleet of soil moving equipment. Through many activities at chemical plants, JARO staff also developed a highly efficient working method combined with thorough safety procedures and environmental awareness.

JARO's services are often called upon national and internationally for:

- Landscape maintenance
- Ditch and dike maintenance
- Paving activities
- All types of demolition work
- Development of infrastructure and construction
- Combating water and storm calamities
- Subcontractor for ground foundations (wind farms)
- Beach cleaning and maintenance

Quality is a high priority at JARO and guaranteed by certification and investing in people and material.

Beach Cleaning

Together with the municipality of Goeree-Overflakkee, we have been responsible for the cleanest beaches in the province and are second runner up nationally. To achieve this, the JARO Group developed a special devolved mobile beach cleaning sieve.

Are you in need of professional support or earthmoving equipment, please contact Mr. J.H.J. Hameeteman by phone +31 (0)187 683 890 or via email, jan@jarogroup.com.



Various types of Koseq rigid sweeping arm systems.

DUTCH INNOVATION IN COMBATING OIL POLLUTION

The development of the rigid sweeping arm system started over forty years ago in cooperation with Rijkswaterstaat (part of Dutch Ministry of Infrastructure and the Environment). This unique sweeping arm technology proved to be the most effective recovery method in big offshore oil spills. Not only the Dutch Coast Guard uses Koseq sweeping arms, but for example the Spanish and German Coast Guards and EMSA equally deploy vessels equipped with our rigid sweeping arms. Based on the same technology Koseq has developed The Compact 502 and VOS system.

Koseq is a developer, manufacturer and worldwide supplier of unique mechanical oil spill recovery equipment and customized solutions.

Koseq Rigid sweeping arm systems

Koseq is the inventor of the Rigid Sweeping Arm System, a dynamic method to respond to oil spill incidents offshore with proven results worldwide like the Erika, Prestige and Macondo oil spills. Where other methods fail in open seas due to hard winds or high waves, the sweeping arms of our systems continue to recover large quantities of oil. Vessels equipped with sweeping arms can work alone: no support vessels are required. Based on the same concept Koseq developed several other types of equipment:

- Koseq Compact 502 - containerized all-in-one system
- Koseq Victory Oil Sweeper® (VOS) - adjustable V-shaped sweeping arm system

Koseq Compact 502 containerized oil recovery system

The modular innovative patented all-in-one Koseq Compact 502 containerized system is easy transportable, easy to install and very quickly operable. The unit has the dimensions of a 20ft ISO container and comprises a 5 meter Compact Rigid Sweeping Arm, a hydraulic marine knuckle boom crane, a diesel driven hydraulic power pack and an operator console. Only a tank to store the recovered oil is needed.

The compactness enables the oil spill responder to have either this system on board or transport the Compact 502 to the Vessel of Opportunity to deploy and start operations immediately

Koseq Victory Oil Sweeper® (VOS) adjustable V-shaped sweeping arm

Continuous research and design improvements based on practical experiences resulted in a new system. The patented Koseq Victory Oil Sweeper® (VOS) consists of two angle adjustable arms with the oil collection chamber in between and has all the advantages of the existing Koseq rigid sweeping arm systems. The VOS is a multifunctional unit, as it can also be equipped with a conveyor belt for debris clean-up.

Do you want more information about our equipment? Contact Tom Achterberg directly by telephone +31 (0)180 487 893 or email design@koseq.com.



EMERGENCY RESPONSE SALVAGE

Multraship Towage & Salvage is a leading Dutch towage and salvage company which has built an international reputation for quality and safety in the maritime industry. It is part of the Muller Maritime Group, a private company owned jointly by the Muller family of Terneuzen and Hamburg based Fairplay Towage. The Muller family has been engaged in the shipping industry for more than 230 years, specializing in towage and salvage since 1911. Today, the management of the company is under the reliable control of the fourth generation of the Muller family, all of whom have hands-on experience. Practical knowledge and experience go hand-in-hand with the dynamic enthusiasm and ambitions of a young generation of entrepreneurs determined and committed to expand the company's activities and drive it forward.

Making the difference

Multraship aims to provide the best possible service, taking pride in its commitment to respond - rapidly and competitively - to the needs of its clients. The company's core activities are harbour & terminal towage, salvage, sea towage, offshore services and port services. Reliability, flexibility, professionalism and the personal touch are the cornerstones of its services.

Salvage & Wreck Removal

Multraship handles many dry and wet salvage operations each year, involving all types of vessels, including casualties which require environmental care services. Multraship's salvage team consists of experienced salvage masters and crews who have been responsible for the safe recovery of vessels and cargoes worth millions of dollars and for extensive action to safeguard the marine environment.

Multraship operates a large fleet tugs, floating sheerlegs, multi-purpose vessels and rescue tenders, equipped with modern salvage and fire-fighting equipment. A range of salvage equipment, including fixed and transportable pumps, hoses, firefighting apparatus, patching equipment, hydraulic cranes etc. is held both on board and in store. Multraship has a large network of suppliers of additional equipment and services that may be required for any kind of salvage operation, such as oil spill responders, divers, (STS) discharge capacity and HazMat experts. Multraship is a dedicated member of the International Salvage Union (ISU).

Emergency Response Salvage

Multraship is very much committed to Emergency Response Salvage, maintaining dedicated stations and holding a standby agreement with the Zeeland Safety Region for the provision of fire-fighting tugs along the River Scheldt. The company is also contracted to the Dutch Government for ten years for the provision of Emergency Towing Services with ETV 'Guardian' based in Den Helder. When wind conditions reach Beaufort 5 and above the ship will put to sea and make herself available to provide emergency assistance to drifting vessels or ships in distress, and to provide life-saving services as a platform for Search and Rescue (SAR) operations.

Would you like to get in contact with Multraship Salvage directly? Please contact Multraship by telephone at +31 115 645000 (24/7) or by email salvage@multraship.com.



A sweeping arm in operation during an oil spill, view at the Oil Spill Simulator at Terschelling, Netherlands.

CONTRIBUTE TO THE SAFETY OF MARITIME SECTORS AND COASTAL REGIONS

On December 1st 2008, the NHL University of Applied Science started the research group Maritime, Marine, Environment & Safety Management (MMES). The MMES research group is led by Dr. Wierd Koops and is primarily intended as an (inter) nationally recognizable portal for governments and maritime industries that seek professional support in solving problems concerning disasters on the water.

The MMES research group has a social mission to contribute to the safety of maritime sectors and coastal regions, and is committed to the sustainable use of the seas and oceans. Within this mission, the activities focus on response to spills and other calamities on water. The growing awareness for the protection of the maritime environment, in particular the North Sea and Wadden Sea, have triggered requests for the development of new oil spill response tools.

Main task of the research group

The research group's main task is conducting practical research & development and publishing the results arising from that research. Both within and parallel to these projects, a lot of research projects for students are initiated, also in cooperation with different companies. Additionally, the research group organizes symposia and courses. Some examples of research and development projects executed by the research group and/or our students:

- Development of a method for Environmentally Safe Salvage of Containers and Packaging
- Chempion: an app with information about the most transported chemicals, such as hazard profiles
- Design of a remote controlled vessel for measurements in (potentially) hazardous conditions
- A decision tree for detection of lost packages on the sea floor
- An Oil Spill Response manual and a Chemical Spill Response manual

Oil & Chemical Spill Response course and Oil Spill Simulator

The research group offers a number of courses, the central themes are oil and chemical pollution at sea. Our main course is a five-day course Oil & Chemical Spill Response, for external parties, students, and lecturers. But we also have two-day courses about oil behavior in water and regulations and liability. A special course for crew members of oil spill response and support vessels has been developed. Contact us for up-to-date information on the annual courses as well as the possibility of following this course or a modified version 'in-house'.

The Dutch Simulator Centre, located at Terschelling at the "Maritime Institute Willem Barentsz", part of NHL University of applied science, is the oldest and most comprehensive facility in the NW Continental European region. In cooperation with "The association of Dutch 'wet' construction companies" and the Norwegian company Kongsberg Maritime, the simulator was extended with an extra tool. The existing trailing-suction dredger simulator was redeveloped and modernized for cleaning oil spills. With this new oil spill simulator, multi-disciplinary oil spill response exercises can be accomplished in a realistic setting.

Visit our website www.nhl.nl/mmes for more recent information or contact Ms. M. Zeinstra or Ms. S. Heins at +31 (0) 628 303 692, email mmes@nhl.nl.



**ENVIRONMENTAL MONITORING RADAR
OIL SPILL DETECTION AND HYDROGRAFY**

Oil Spill Detection Radar SeaDarQ

The Nortek SeaDarQ radar is a complete product to automatically detect oil spills on the sea surface. The SeaDarQ is used on Oil Spill Recovery Vessels and Supply Vessels but also on land based installations. The SeaDarQ system uses radar processing technology to extract hydrographic, oceanographic and environmental information from radar waves. The SeaDarQ radar advantages are :

- Fully automated and simple user interface
- Delivering real time information of the slick movement
- Automatic detection with spill outline, area determination, trajectory tracking
- Exceptional sensitivity for challenging environments
- Smart image processing techniques sensitive to small signal differences allows detection of small size spills at long ranges
- Low false alarm rate
- Recognition from NOFO and EMSA. One of the main suppliers to the European Maritime Safety Agency fleet of OSRVs

Remote online solution

Remote view and alarming of your SeaDarQ radar systems is now possible with our new SeaDarQ Online software solutions. The illustration of the notebook screen on the previous page shows a possible display of two SeaDarQ systems including wind info and details of ships in the area.

Would you like more information about the Nortek SeaDarQ radar?

Please contact Sicco Kamminga via +31 (0)206 543 600, or email sicco.kamminga@nortek-bv.nl.



A SOLUTION FOR EVERY POLLUTION

Oil Control Systems is a dynamic company specialized in delivery of a complete programme of Oil- and Chemical pollution clean-up equipment & services.

We are a small & hard-working company who represent brandnames like Desmi Ro-Clean, Elastec American Marine, Brady SPC, Fastank, Imbiber Beads, Oil Gator, Enpac, Eccotarp and many others.

Website - Online Shop

Our website is an online shop and we sell too much products to mention, below an indication of the productgroups from which you can choose multiple products:

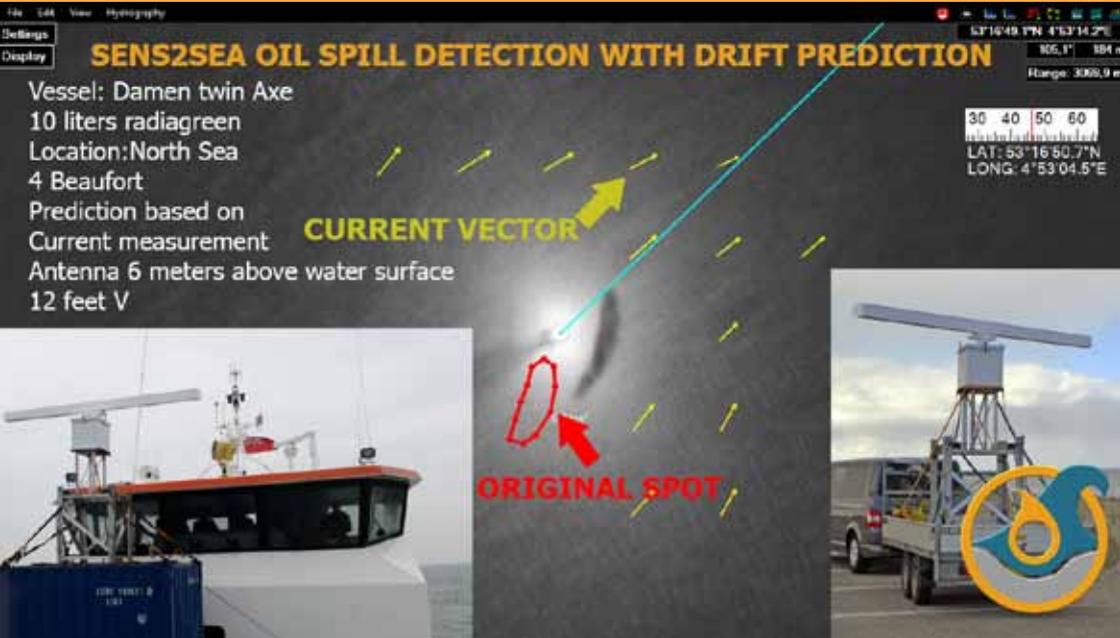
- aDsorbents & aBsorbers (do you know the difference ?? – we do !!)
- Biodegradable Cleansers
- In Situ Soil Bioremediation
- Oilbooms
- Oilskimmers
- Oil / Water detection
- Filtration Systems
- Safety cabinets
- Drip pans
- Silt Screen Systems
- Floaters for hose/pipe/cable

You should see for yourself and check our website www.oilcontrolsystems.com.

Chemical spills

Oil Control Systems has a solution for combating many types of Chemical spills by using specialized aBsorbition products (with or without the use of Oil Booms or our fabricated Silt Screen Systems) to pick up and filter the polluted waterarea. This combination of using different kind of products enables us to be more successful in this field than before.

Please visit our website to learn more about our products. Would you like to get in touch with us immediately? We speak Dutch, English and German. Please contact Mr. D.A. van der Mout by telephone via +31 (0)174 281 675 or email info@oilcontrolsystems.com.



File Edit View Hydrography

Settings Display

SENS2SEA OIL SPILL DETECTION WITH DRIFT PREDICTION

Vessel: Damen twin Axe
10 liters radiagreen
Location: North Sea
4 Beaufort
Prediction based on Current measurement
Antenna 6 meters above water surface
12 feet V

CURRENT VECTOR

ORIGINAL SPOT

30 40 50 60
LAT: 53°16'50.7"N
LONG: 4°53'04.5"E

MONITORING THE SEAS SURFACE

Sens2Sea is a privately owned company established in July 2013. Our team combines decades of experience in radar signal processing based on the original mathematics (since 1984) for analysis of water-waves through radar reflection. Our newly designed Sens2Sea system is based on state of the art electronics, resulting in an improved image quality, higher spatial resolution and a wider area for data collection. Sens2Sea is located in Hendrik Ido Ambacht in the Netherlands.

Monitoring the sea surface

Radar waves reflected from the sea surface are a valuable source of information. They are governed by the sea surface roughness, which, in turn, is determined by the wind, waves, oil-slick contamination, and even by topographic features of the sea bottom.

The Sens2Sea system is connected to a radar sensor and so extracting this information. With Sens2Sea, it is possible to conduct continuous surveillance, producing time-series of images. Sens2Sea can be operated where types of continuous surveillance are not feasible or too costly. Time series of an area are particularly useful for feature tracking and monitoring. For example, tracking the movement of small vessels.

Time series also contain valuable information about the statistical properties of the sea surface, making it possible to enhance the detection capability for small targets in the clutter dominated environment in the vicinity of the Radar.

Small objects, such as rubber boats, buoys, floating debris can be detected and tracked even in a high sea state.

Oil spill detection

High resolution images are available from the Sens2Sea system.

Only three litres of oil at the wave surface is enough to be detected by the Sens2Sea oil spill detection system, allowing for a quick response.

Several fit for purpose options exist, please contact us for more information by telephone via +31 (0) 78 681 5511 or email info@sens2sea.com.



SALVAGE SOLUTIONS

SMIT Salvage is synonymous with total commitment in the challenging field of sustainable marine emergency responses, oil removal operations and wreck removals. The company has been established for over 170 years and has a track record in marine salvage and wreck removal operation which is second to none. Our solutions have earned the respect and credibility from the maritime industry of which we are extremely proud and this is foremost in our approach every project. The extensive track record shows that the company is capable of managing complex projects, capable of mitigating risks and to simplify execution to achieve optimal and reliable solutions.

However straightforward or complex the Salvage Operation – SMIT Salvage tailors an innovative, sustainable and effective solution.

Salvage Personnel and Equipment

The company keeps its dedicated and highly trained salvage professionals and specialized equipment in a state of round-the-clock readiness to respond instantly to incidents anywhere in the world. In order to achieve this high-level of readiness the company employs over 200 experts worldwide; Salvage Masters, Salvage Supervisors, Naval Architects, Divers, Riggers, Logistics Experts etc. In addition, the company can rely on the on the commitment of a wide range of specialists available globally within parent company Royal Boskalis Westminster, a leading global dredging and marine expert. Specialist personnel such as civil & marine engineers, workability analysts, environmental & marine biology specialists, unexploded ordnance disposal teams, dredging specialists, heavy lifting & transport specialists etc. can be added to our project teams if required. Furthermore through affiliated companies additional services, assets and/or vessels for heavy lifting, heavy marine transport and towage can be provided. The Boskalis fleet consists in total of over 1.100 versatile vessels, strategically distributed around the globe.

SMIT Salvage has five strategic emergency response warehouses on strategic locations worldwide where specialist salvage equipment are prepared for immediate mobilization. This equipment is packed in containers suitable for air transportation. The company constantly invests in the new-/replacement of salvage equipment and in the development of new salvage tools and appliances.

Services Provided by SMIT Salvage

- Marine Emergency Response (incl. OPA90)
- Wreck Removal
- Prevention & Preparedness

Global Coverage

SMIT Salvage makes use of an extensive network of partners and agents worldwide plus Boskalis offices and affiliates, such as Dockwise, Keppel-Smit Towage and Saam-Smit Lamnalco. In this way all ports and major traffic routes can be covered.

Would you like to get in contact with SMIT Salvage directly? Please contact SMIT Salvage by telephone +31 (0)10 4549911, or email salvage@smit.com.



**I HEAR AND I FORGET
I SEE AND I REMEMBER
I DO AND I UNDERSTAND**

STC B.V. is a full subsidiary of the STC-Group, the most specialized training and knowledge institute for shipping, transport and port related industries. The organization has a number of branches in the Netherlands (headquarters in mainport Rotterdam), Vietnam, South Africa, the Philippines, Brazil and Oman and operates worldwide in Kazakhstan, Colombia, Indonesia and Abu Dhabi.

STC B.V. has a worldwide reputation for high quality training for operational and managerial functions in the maritime, logistics and multi-modal transport sector. Companies and their employees who are active in storage and warehousing, shipping, offshore, dredging, intermodal transport, ports and logistics find a serious training partner in STC B.V.

STC

STC B.V. contributes to optimization of human capital and increases the reliability, efficiency, safety and profitability of the sectors stated above. STC B.V. provides standard courses as well as tailor-made courses to meet the specific requirements of the customer. STC B.V. is also worldwide experienced in consultancy and operational research within the fields mentioned. The STC-Group utilizes state-of-the-art simulators and highly skilled and experienced staff. The simulator complex consists of, for example, a 360° full mission bridge simulator (unique in the world!), the Transport Chain Simulator, an engine room, Vessel traffic services, an offshore crane, a process plant and simulators for ECDIS, DP and ROV.

Safety Training Centre

"I hear and I forget. I see and I remember. I do and I understand." With this approach, learning by doing, STC B.V. differentiates from other training institutes. With its simulators STC B.V. creates an interactive and safe environment for actual practice simulation. STC B.V. disposes for example of the Safety Training Centre where participants learn to deal with a variety of dangerous situations in a controlled, environmentally-friendly manner. Practical learning raises the motivation level and increases the efficiency of the training. The premises has the following practical facilities:

- STCW trainings unit
- Inland waterway tanker segment
- Emergency tank container
- Tank truck
- Breathing apparatus practice area
- In-house emergency and first aid training unit.

The Safety Training Centre has been approved by the Transport, Public Works and Water Management Inspectorate / Shipping Division for providing STCW training courses such as Basic Safety and Advanced Fire Fighting.

For more information, please contact Mr. Edwin Schepers at STC B.V. by telephone +31 (0)10 28 32 300 or email info@stc-bv.nl.



CLEANING CHEMICALS: OUR PASSION YOUR SOLUTION

The TriStar Group develops, manufactures and delivers responsible and environmentally friendly industrial cleaning products to the European markets.

Our current customer base includes local authorities, the Directorate General for Public Works, Water Management, cleaning and the chemical industry.

Reliable & stand-by 24/7

Economic, commercial and especially ecological risks require an immediate solution. Thanks to our expertise in cleaning chemicals TriStar is able to deliver the products and emergency support needed to solve and prevent ecological disasters. This includes soot clean-up and spills due to accidents and spills on land and water.

Products for the shipping industry

Especially for the shipping industry, TriStar has compiled a product range which is approved by the International Maritime Organisation (IMO). These products can be used for On-shore and Off-shore applications.

IMO approved products

- TriStar Super Cleaner Y-SP 2
- TriStar Steamer 130 HD en Steamer 140 HD
- TriStar AC Clean 1 JT
- TriStar AC Clean 24
- TriStar Liquid 35 NF
- Air-O-Gone 1

CEFAS certified products

- Eco Rig Wash HD-E
- Eco Well Clean LF

These products are also registered with the Danish and Norwegian authorities. They are hallmarked as entirely harmless to the environment.

EMERGENCY SERVICE

- 365 days a year
- 7 days a week
- 24 hours a day

Would you like to get in touch with us immediately? Call +31 (0)88 588 01 00 or email us at info@tristargroup.nl, our team is at your disposal - 24/7!



YOUR INNOVATIVE AND DURABLE PARTNER CONCERNING INDUSTRIAL CLEANING

Van Gansewinkel Industrial Services is your innovative partner for industrial cleaning, oil spill response and calamity services, operating in a nation wide network of branches. Speed and flexibility are our greatest strengths. We use the latest equipment and have various pumps, skimmers, oil booms and oil absorbents available in stock. Our highly qualified, experienced workforce and specialised equipment guarantee a safe and environmental-friendly solution.

Van Gansewinkel Industrial Services is at home in practically every industrial sector. With a broad and flexible package of activities, nationwide coverage and 24/7 contactability.

Industrial services

Van Gansewinkel Industrial Services offers a unique range of efficient services at industrial sites throughout the Netherlands. With our many years of experience, high-level knowledge, advanced technologies and sustainable processes we guarantee you minimal interruption to production and maximum safety. Whether it's about the industrial cleaning of installations, pipes or tanks, detonative cleaning, ice spraying, waste management or direct assistance with emergencies, van Gansewinkel Industrial Services delivers the customised work that you are looking for. Wherever, whenever. Van Gansewinkel Industrial Services is part of the van Gansewinkel Group, the waste services provider, and supplier of raw materials and energy. Our customised work goes beyond industrial cleaning. We look after the whole refuse chain for you – from refuse to raw material. We prevent waste and recycle where possible reducing our and your ecological footprint. Cradle to Cradle is our motto. No waste, that's our creed.

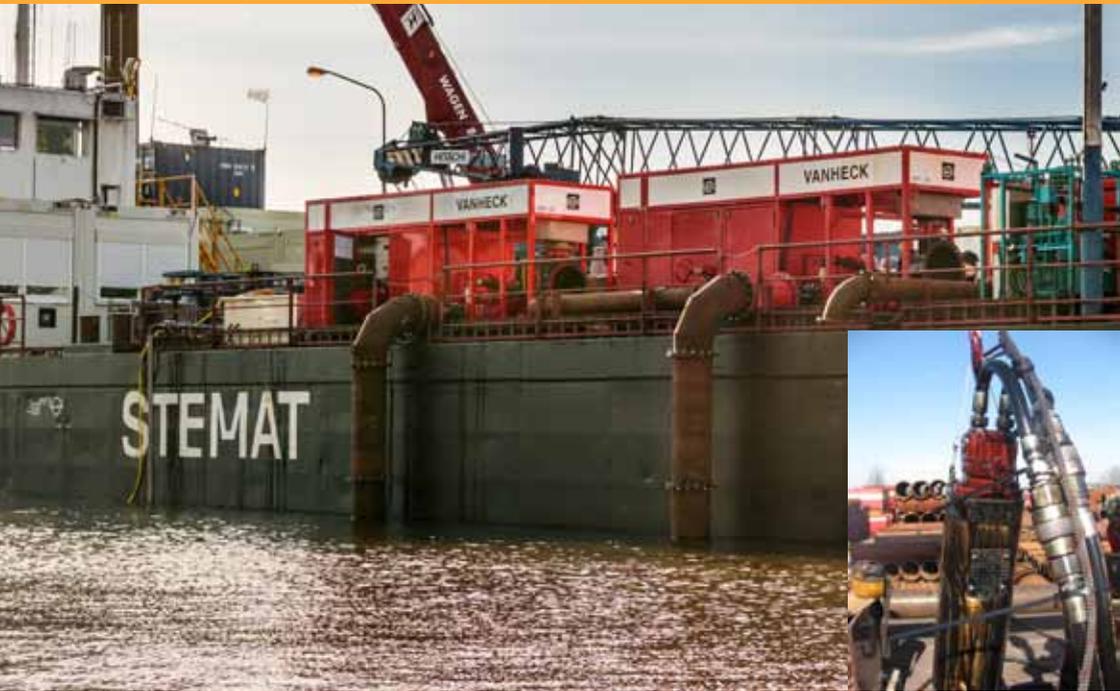
We are specialist in:

- Ship and tanker cleaning;
- Industrial vacuum cleaning;
- Oil spill response;
- Hydroblasting;
- Cleaning of (underground) storage tanks ;
- Removal, transport and processing of (hazardous) waste;
- Port reception facility for safe berth and calamity control;
- Calamity Services

We offer:

- 40 years national and international experience;
- 24 hours a day 7 days a week services;
- One stop shopping cleaning and waste processing;
- Qualified and experienced staff;
- Specialised equipment;
- ISO 9001, ISO 14001, OHSAS 18001, VCA Petrochemie, Kiwa Certificates.

For more information about Van Gansewinkel Industrial Services please contact Mr. R. Lippens by telephone +31 (0)20 - 6145679 or by email rob.lippens@vangansewinkel.com.



Sea Trophy fast oil recovery pump

MOVING WATER ANY WAY YOU WANT IT

Van Heck operates on an international level in the field of watermanagement and movement. With its diversity in pump units, Van Heck operates from dredging, salvage and offshore operations to sewer renovation and cool water applications. Every operation can be customized to meet the wishes of the client and the project's demands.

Van Heck is active in the offshore and maritime industry and constantly innovating and developing its fleet. Van Heck's equipment is designed and built on their own premises. Van Heck operates world-wide from the Netherlands and Singapore.

Equipment for ballast operations

Van Heck's ballast equipment is specifically designed for load-outs and float-overs, and ideally suited for salvage operations. The completely autonomous ballast and deballast system can be entirely controlled from a central point and has a total capacity of over 40,000 tons per hour.

Van Heck's capabilities in this field:

Load-out:

Supply a complete ballast system, including (ballast) engineering and operation, to load a construction from the shore onto a barge.

Float-over/mating:

Supply a complete ballast system, including engineering and operation, to install a platform on the offshore location.

Jet trenching:

Supply pumps to jet in cables on the ocean floor.

For less complicated operations a mini ballast and/or manually controlled system can be supplied.

Green and easy oil recovery, the Sea Trophy

In 2012, Van Heck started to use its proven expertise in water pumps to develop a new, innovative system for "green and easy oil recovery", the Sea Trophy. This oil pump enables fast oil recovery out of fuel or cargo tanks if a ship is in distress or when incorrect fueling has taken place. The aim of the Sea Trophy is to provide the ship with the ability to recover the fuel or cargo tank's content in case of an emergency, when no other on-board equipment can help. An emergency response kit has been assembled consisting of a complete set of tools and accessories including the Sea Trophy hydraulically driven pump, capable of pumping oil with a flow of 70 m³/h.

For more information about Van Heck, please visit www.vanheckgroup.com or www.seatrophy.com or contact Van Heck by telephone +31 (0) 561 431 739 or by email info@vanheckgroup.com.



MULTIDISCIPLINARY CONSULTANCY AND ENGINEERING PROJECTS

Witteveen+Bos is an employee owned, fully independent Dutch firm of engineering consultants. Established in 1946, the firm gradually expanded to a professional staff of approximately 1.000, working in interdisciplinary teams in countries world-wide. The many successfully completed projects over the years show that we are able to keep abreast with changes in society and thus with the wishes of clients by our continuing to be creative and innovative in combination with cost-effective solutions. Our expertise is not confined to engineering and technological issues only, but also extends to economic, social and organisational aspects, which, in our view, is essential for undertaking complex technical and engineering projects.

General activities and services

Our activities are supported by a wide range of general services, like chemical, physical, (hydro)biological and odour analysis, social, economic and legal consultancy, project management, process engineering, automation, institutional strengthening, human resources development, training, computer services, field surveys, pilot plant investigations, information and documentation.

Witteveen+Bos has comprehensive knowledge and experience with all stages of project development in environmental management, from policy development, feasibility studies (technical, financial and socio-economic) and impact assessments to project implementation and supervision. Projects often include elements like training, public awareness, institutional capacity building, organisation and finance, and managementsupport, which can all be performed by our own specialist groups.

Spill Response related services

• Implementation of Water Framework Directive and other related international regulations	• Emission inventories
• Institutional capacity building	• Abatement studies
• Training	• Port development
• Strategic Environmental Assessments	• Project management
• Environmental Impact Assessments	• Public participation

International operations, branch offices and cooperation

As one of the leading consulting engineering firms in the Netherlands, our knowledge and expertise is also frequently called upon from abroad. In order to keep short lines of communication with these international clients and to keep in touch with local and regional conditions Witteveen+Bos has a number of branch or project offices in a.o. Kazakhstan, Russia, Latvia, Vietnam, Indonesia, Bangladesh and Ghana. Cooperation with local consultants is actively sought in the countries where we work, because we recognise the complimentary knowledge of local and international firms as well as the importance of exchange of know-how for a sustainable project implementation.

For more information, please contact Mr. André van Kuijk MSc by telephone +31 (0)570 697 933 or email andre.van.kuijk@witteveenbos.com.



IMARES, RESEARCH FOR STRATEGIC AND APPLIED MARINE ECOLOGY

IMARES (Institute for Marine Resources and Ecosystem Studies) is the Netherlands research institute established to provide the scientific support that is essential for developing policies and innovation in respect of the marine environment, fishery activities, aquaculture and the maritime sector. IMARES Wageningen UR (University & Research centre) conducts research with the aim of acquiring knowledge and offering advice on the sustainable management and use of marine and coastal areas.

Identifying, prioritising and mitigating ecological and environmental impacts is the essence of our work.

Ecology and Maritime Technology

We test and assess sustainable technologies, together with businesses, to provide an overview of the impact on ecosystems. In the search for sustainability, IMARES focuses on innovations and builds an international network. The institute has an established reputation in risk assessment and sensitivity studies. By making use of extensive databases, predictive behaviour models and specific methods we quantify the environmental risks of accidental spills of oil and chemicals in terms of the probability and extent of spills and their subsequent ecological effects. Based on extended ecological knowledge and geophysical characteristics we assess the ecological sensitivity of areas to oil pollution. Additionally, social and economic areas can be defined and classified on the basis of their sensitivity for oil pollution. Other expertise further includes the development and evaluation of contingency plans, and evaluation of oil spill combatment methods. IMARES has unique experimental facilities including outdoor marine and fresh water basins and indoor climate rooms to test chemicals such as demulsifiers, dispersants, gelling agents, etc. A chemical lab is dedicated to the analysis of organic compounds in water, sediment and biota. Biological and chemical field monitoring is applied to predict and evaluate the ecological and economical damage of spills and combatment methods.

Research

In relation to oil spills and combatment IMARES conducts research in the following areas:

- Prevention (Risk assessment, Sensitivity studies)
- Preparation (Contingency planning, Strategy studies, Oil spill response equipment evaluation, Chemical testing)
- Response (Spill control advice, Hazard assessment, Response evaluation, Impact studies, Chemical analysis)

Network

We collaborate with fellow research specialists from partner institutes in the Netherlands and abroad. As part of Wageningen UR, IMARES has also close ties with Wageningen University.

Would you like to get in contact with IMARES directly?

Please contact Mr. Robbert Jak by telephone +31 (0)317 - 48 63 74.



RIJKSWATERSTAAT, CLEAN WATER AND SAFE WATERWAYS IN THE NETHERLANDS

Rijkswaterstaat is part of the Dutch Ministry of Infrastructure and the Environment and responsible for the execution of safe and clean watermanagement. The Ministry is committed to improving quality of life, access and mobility in a clean, safe and sustainable environment. The Ministry strives to create an efficient network of roads, railways, waterways and airways, effective water management to protect against flooding, and improved air and water quality.

Rijkswaterstaat is part of the Dutch Ministry of Infrastructure and the Environment and responsible for the design, construction, management and maintenance of the main infrastructure facilities in the Netherlands. This includes the highway network, the waterway network and the main water system. Dry feet, sufficient clean water and reliable and useful information for the main water system is what integrated water management means to Rijkswaterstaat. Smooth and safe transport by water are other ways of using water. The Dutch waterways are the densest for inland shipping in Europe. About 6000 kilometres of rivers and canals, many of the latter serving drainage as well as navigation, form a complex system serving all parts of the country. Also the Dutch part of the North Sea is one of the densest seas with shipping, offshore en wind energy in the world.

Every day, many ships, including tankers, sail on Dutch waters. These ships and tankers transport a range of products, which include mineral oils, vegetable oils and chemicals. As a consequence of accidents during transport, bunker operations and transhipment of cargo in ports, large quantities of these products can pollute the surface water. This contamination can result in serious ecological and/or economical damage and must be contained and recovered, as rapidly as possible, when necessary. The largest proportion of floating pollution registered on Dutch waters is made up of mineral oils. Every year some 1000 spills (ranging between liters and tons) are reported of which 90 spills must be contained with (absorbent) booms and/or recovered by skimmers or sweeping systems.

The responsibility and execution for accidental oil and chemical pollution on Dutch waters comes under Rijkswaterstaat. Based on risks and effects, Rijkswaterstaat has prepared itself by plans, organisation and resources (ships, planes, booms, skimmers, absorbents etc.) to deal with this pollution. As national organisation Rijkswaterstaat can scale-up with resources and organisation to deal with small and large spills within the country. Rijkswaterstaat uses own resources and resources of private contractors. Preparation and operations are organised in close corporation with police, fire brigades, ambulance organisation, communities, port authorities, water boards and the coastguard organisation.

Rijkswaterstaat is an associated member of the Spill Response Group Holland.



Photo: courtesy Freek van Arkel

MULTIPURPOSE, SUSTAINABLE, SAFE AND ATTRACTIVE PORT

The Port of Rotterdam Authority is manager, operator and developer of Rotterdam's port and industrial area. The aim of the Port of Rotterdam Authority is to enhance the port of Rotterdam's competitive position as a logistics hub and world-class industrial complex.

Port of Rotterdam Authority

The objective of the Port of Rotterdam Authority is to enhance the port's competitive position as a logistics hub and world-class industrial complex. Not only in terms of size, but also with regard to quality. The core tasks of the Port Authority are to develop, manage and exploit the port in a sustainable way and to render speedy and safe services for shipping.

We manage, operate and develop the Rotterdam port and industrial area. Therefore, we invest in the development of the existing port area, new port sites (Maasvlakte 2), public infrastructure and the handling of shipping. Together with our partners we aim towards a multipurpose, sustainable, safe and attractive port that meets the high demands of society.

Spill Response Group Holland

One of these partners is the Spill Response Group Holland (SRGH). The SRGH represents a wide selection of Dutch companies and organizations active in the maritime sector with a focus on spill prevention and control at sea, on the coast and on inland waters. Together we ensure a safe and clean port. The Port Authority applies preventive measures to prevent incidents and/or spills.

Policy of the Port Authority is to limit danger, nuisance and economic damage to port users and the environment. All spills will be addressed, regardless the cause and will be handled quickly and effectively.

Facts and figures for the Port Authority and the Port of Rotterdam:

Port Authority: 1,100 employees, turnover approx. € 600 million.

Port area: 12,500 ha port area (land & water, of which ca. 6,000 ha industrial sites).

The length of the port area is over 40 km.

Employment: 150,000 jobs.

Goods throughput: approx. 450 million tonnes of goods per annum.

Shipping: approx. 30,000 ocean-going vessels and 110,000 inland vessels per annum.

The Port of Rotterdam is an associated member of the Spill Response Group Holland.

ADDRESSES MEMBERS SRGH

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ASCC Group

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Braveheart Marine B.V.

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