



**QUALITY, HEALTH,
SAFETY & ENVIRONMENT
PERFORMANCE REPORT**

2020



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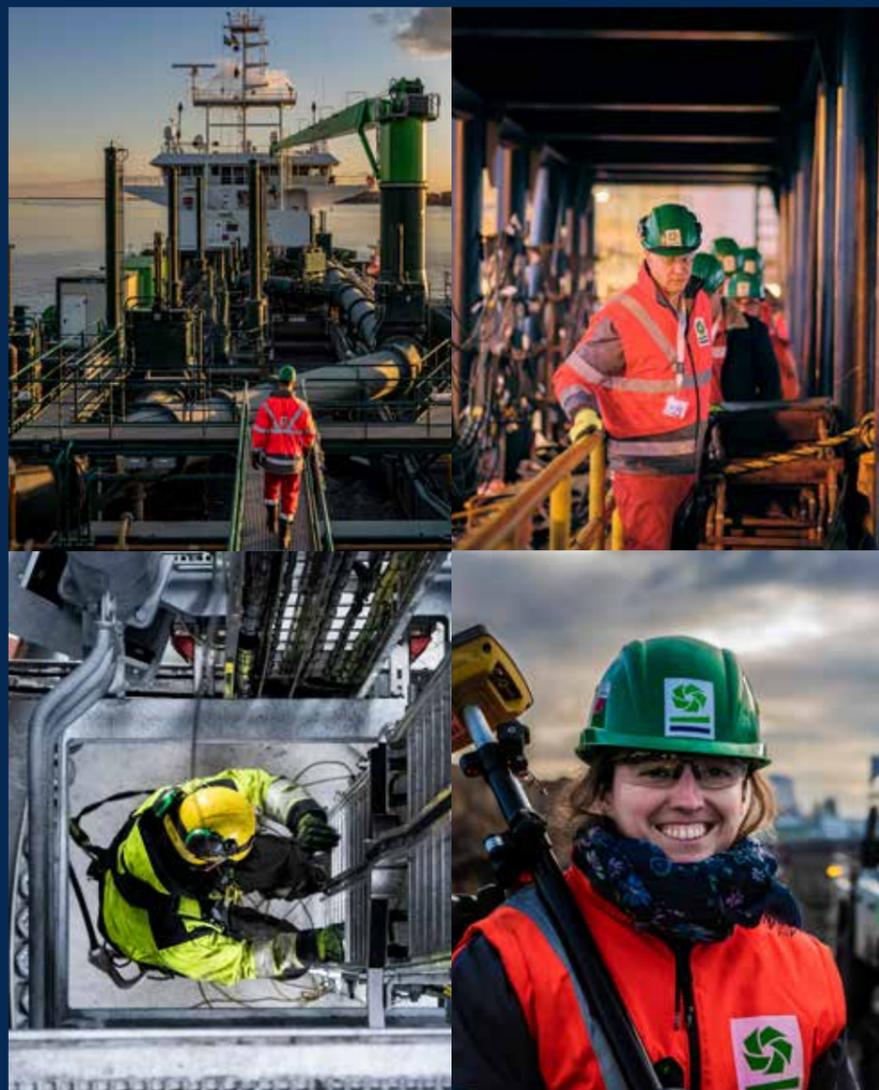
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MESSAGE FROM THE CEO



A green future starts with Green Initiatives. A Green Initiative starts with you.

I am very proud to present our third edition of the DEME QHSE performance report. With it, DEME would like to give you an insight into the way we take care of each and every individual involved in our operational activities, the responsibility we all share for the environment we operate in, and our belief that the quality of our work is essential to servicing our clients.

Last year, we were confronted with a worldwide COVID-19 challenge. The way DEME has reacted to this pandemic demonstrates how dynamic and resilient we are when a serious crisis occurs. Although at the start of 2020 none of us could have imagined that our health could be threatened so suddenly, we were able to continue our work, by being rigorous, inventive, caring, preventative and reactive when necessary. The fact that risk management regarding Health & Safety is absolutely key within DEME is the reason why we are performing at today's level.

DEME's core values are summarised in the STRIVE acronym: Safety, Technical Leadership, Respect & Integrity, Innovation, Value creation and Environment. These values offer guidance to DEME employees as they navigate the large range of Quality, Health, Safety and Environment (QHSE) aspects linked to our organisation and the activities we execute.

We are constantly adapting our organisation to a fast-evolving world. Sometimes we are faced with difficult circumstances like the COVID-19 pandemic or the breakdown of the crane of the 'Orion'. However, our flexibility and resilience on the one hand, and a good organisation and structure on the other, ensures a thorough approach to the major risks and opportunities of our diverse global projects.

We have put a lot of effort into weaving a structured internal web of process owners who are specialists in the operational and organisational processes within DEME. They facilitate and guard the continuous improvement of our QHSE performance.

The multiple actions, campaigns and initiatives are expressions of our desire to maintain high standards and improve wherever possible. We never stop encouraging risk and opportunity-based thinking at every level within the organisation.

We want you to know about our main QHSE achievements. We are proud to highlight some of the projects and teams that are performing well. New initiatives that focus on the success stories, on 'what's going right', have brought a whole new dynamic and positive attitude to our organisation.

Please take your time to browse through and read this report. We hope that it shows you what DEME does and is capable of. Our aim is for this report to be engaging, and to convince all our stakeholders to invest, together with DEME, in reducing risks and managing opportunities to continuously improve our individual and collective QHSE performance.

Luc Vandenbulcke
CEO DEME Group

CONTENT IN BRIEF

Measuring the QHSE performance level is very challenging. Since the launch of Apprise, our in-house QHSE tool, new dashboards focus on many different levels within our organisation.

DEME believes that we need to balance our efforts and QHSE resources between the things that go right, the things that could have gone seriously wrong, and the things that effectively went wrong. An equilibrium between these three elements ensures a successful QHSE risk management.

DEME has put significant effort into certifying our entities according to the CO2 performance ladder and the Safety Culture Ladder management systems.

Green Initiatives, Safety Success Stories and the 'Safety Moment Day' shine the light on what's going right. The safety week at company level, and the safety leadership sessions for senior management, are dealing with what could have gone wrong or did go wrong.

This year we organised the second part of our environmental campaign, which focuses on the environmental aspects of our operational activities.

Sometimes things can go seriously wrong, that's why emergency preparedness should always be prioritised. By organising emergency drills, people better understand the importance of work preparation, risk analyses and preventive measures.

We invite you to look at the QR-codes in this report. These codes link to films and activities that we developed last year. We believe they help us to continuously improve our performance. Please share them.

For DEME, our projects are at the centre of our universe... that's why we want to put them in the spotlight.

A Safety Success Story stimulates other teams to perform at the same or an even higher safety level.

POLICIES AND ACTIONS

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MISSION, VISION AND VALUES

DEME's core values reflect our unshakable belief in the quest to deliver excellence. They serve as a compass that guides the way we work with our business partners, within communities, and with each other. Detailed information regarding our core values

(STRIVE) is expressed in DEME's mission, vision and values statement.



POLICIES

DEME's mission, vision and values statement is put into practice by different policies. It is everyone's responsibility to adhere to these policies in line with STRIVE.

specific QHSE policy, in line with the sector, activities and industry standards.

In addition, some of our projects develop project-specific policies in collaboration with their clients and (joint venture) partners.

Our four activity lines – Dredging & land reclamation, Offshore, Environmental and Infra marine - have a more

QHSE-S	HUMAN RESOURCES	COMPLIANCE
QHSE	Sustainability	Code of Ethics & Business Integrity
Security	Drugs & Alcohol	Anti-Corruption
Energy & GHG	Smoking at work	Anti-Trust
	Social Media	Outgoing payments
		Compliance charter
BISS	LEGAL	PURCHASES & LOGISTICS
ICT Monitoring	Contract management charter	Procurement

MISSION, VISION AND VALUES STATEMENT

Our Mission
We aim to be a sustainable, safe and excellent world-wide dredging, environmental and marine engineering solution provider for the benefit of our customers and stakeholders.

Our Vision
We aim to create land and perform services for a sustainable future through the various activities of the DEME Group.

Our Core Values - STRIVE
We have established a set of standards applicable to our business units and subsidiaries worldwide. They are the centre of our commitment to consistently deliver excellence to our customers and value to our company. We also expect suppliers, subcontractors and partners to work to these standards.

SAFETY
The personal safety and health of employees and stakeholders is our greatest responsibility. Everyone has the right to work in a safe environment free of risk and injury at all times.

TECHNICAL LEADERSHIP
With an open mind and the right team spirit, we continue to improve all aspects of our work process and find trailblazing solutions to respond to the needs and challenges of our customers.

RESPECT & INTEGRITY
Our employees are trained and motivated to meet the challenges ahead. Individuality and diversity will be valued and performance is recognised. Our relationships with suppliers, subcontractors and partners reflect respect, understanding and sound business practice. We observe all applicable laws and regulations of the countries in which we are active. We respect human rights and prohibit unlawful discrimination.

INNOVATION
Innovation is the cornerstone of our achievements. We continuously push our boundaries by developing new, value-adding services and solutions.

VALUE CREATION
We make result driven decisions in order to ensure long-term growth for the benefit of employees, customers and shareholders, including financial discipline to keep our company healthy.

ENVIRONMENT
We protect the environment and the communities in which we do business by limiting our impact and exploring opportunities for sustainable value creation together with our stakeholders.

This STRIVE statement is the basis for the more detailed policies developed by the DEME Supporting Services and Activity Lines. These Supporting Services and Activity Lines provide internal communication and follow-up, as well as regular review of the policies.

Luc Vandenbulcke
Chief Executive Officer
DEME Group of Companies

DEME-MGT-STM-001
REV. 2021-02-02

QUALITY, HEALTH, SAFETY AND ENVIRONMENT POLICY

Mission, Vision & Core Values - STRIVE
This policy is based on DEME's STRIVE statement. In this statement we describe what we want to be, what we want to achieve and what we believe in. This QHSE policy states how DEME manages QHSE aspects with regard to design, procurement, construction, installation and maintenance of dredging and marine engineering projects.

Objectives - What we aim for
We constantly strive for an even higher execution level in the field of QHSE, based on the standards that apply in the industry and branches. The principle behind the slogan 'Zero accidents and zero environmental incidents' is the target of our organization. All possible must be done and all necessary resources provided in order to achieve this target.

Strategy - How we will do it
Each employee has the right and the obligation to stop any activity that he/she estimates involves unacceptable risks. We believe that consultation between employers, employees and their representatives is crucial for the organization of the work.

Scorecards - How we will measure it
DEME uses various KPIs (SHOC, incidents, green initiatives etc.) that are subject to a periodic follow-up, and adjusted when necessary.

Plans & Actions - What we have to do
On each level within the organization (e.g. on board of vessels, at project management team level and process owner level) action lists are used, of which action items can be transferred. The action items are clearly monitored. The use of action lists enables us to continuously adjust our processes and our organization.

Karel Huybrechts
QHSE-S Manager
DEME

Koen Vanderbeke
Deputy Operating Officer
DEME

DI-QHSES-POL-002
REV. 2021-02-02

ACTION PLANS

DEME has an overall Global QHSE-S Action Plan, a five-year plan that expresses the long-term goals. This plan is translated into activity line specific Year Action Plans.

All these plans are updated at least once a year and evaluated during the management reviews of DEME and the activity lines.

The Year Action Plans are filled with dozens of SMART actions, including responsibilities and priorities.

2019-2023
QHSE-S
DEME

GLOBAL ACTION PLAN

For Quality, Health, Safety, Environment and Security

- These five topics are further elaborated in year action plans and followed up through action lists.
- The Activity Lines and entities develop year action plans and provide internal communication and follow-up.
- The evaluation is done during the Activity Line Management Reviews.

Karel Huybrechts
QHSE-S Manager
DEME

Koen Vanderbeke
Deputy Operating Officer
DEME

DEME-QHSES-GAP
REV. 2021-02-02



2019-2020
QHSE-S

YEAR ACTION PLAN

For Quality, Health, Safety, Environment and Security

- 1. Quality - Do it right the first time**
 - 1.1 Digitization of induction
 - 1.2 Quick scan system for project audits
 - 1.3 Technical Department Shepard and Subcontractor QHSES Management
- 2. Health - A sound mind in a sound body**
 - 2.1 DEME on the move
 - 2.2 Health topic communication
- 3. Safety - Safety from the start is your best friend**
 - 3.1 Lifting management 2.0
 - 3.2 Transfer of People - on land, at sea and in the air
 - 3.3 Personal and use of gloves
 - 3.4 Leadership by management
- 4. Environment - A better environment starts with yourself**
 - 4.1 Taking Green Initiatives to the next level
 - 4.2 Set up data collection system of fuel consumption
- 5. Security - Security is not complete without U**
 - 5.1 Integration of other security aspect in the VMS
 - 5.2 Information processing guidance
 - 5.3 Digitizing ISPS control

Eric Tancas
Managing Director
DEME Dredging & Land Reclamation

Philip Hermans
Managing Director
DEME Dredging & Land Reclamation

DE-QHSES-YAP
REV. 2019-04-04

2019-2020
QHSE-S

YEAR ACTION PLAN

For Quality, Health, Safety, Environment and Security

- 1. Quality - Do it right the first time**
 - 1.1 Digitization of induction
 - 1.2 Inspection and test plans during (de)mobilitations
 - 1.3 Project document control standardisation
 - 1.4 Alignment of subcontractor & supplier selection and management
- 2. Health - A sound mind in a sound body**
 - 2.1 DEME on the move
 - 2.2 Health topic communication
 - 2.3 Healthy food campaign
 - 2.4 Working in cold environments
- 3. Safety - Safety from the start is your best friend**
 - 3.1 Lifting management 2.0
 - 3.2 Transfer of People - on land, at sea and in the air
 - 3.3 Working at heights
 - 3.4 Hot works awareness and guidelines
 - 3.5 Dynamic positioning operations program
- 4. Environment - A better environment starts with yourself**
 - 4.1 Taking Green Initiatives to the next level
 - 4.2 Hydraulic rescue equipment
 - 4.3 New chain analysis for CO₂ performance
- 5. Security - Security is not complete without U**
 - 5.1 Digitizing ISPS control
 - 5.2 Information processing guidance

Hugo Bouvy
Managing Director
DEME Offshore

DE-QHSES-YAP
REV. 2019-04-04

2019-2020
QHSE-S

YEAR ACTION PLAN

For Quality, Health, Safety, Environment and Security

- 1. Quality - Do it right the first time**
 - 1.1 Implementation Capex/Opex Center
 - 1.2 ARIAAN tool for QHSE for projects
 - 1.3 Standardisation of inspection and test plans
- 2. Health - A sound mind in a sound body**
 - 2.1 Follow-up of the survey and campaign around Stress and Burnout
 - 2.2 Health topic communication
- 3. Safety - Safety from the start is your best friend**
 - 3.1 Implementation of the "Centre for Product"
 - 3.2 Housekeeping and accessibility
 - 3.3 Working at heights
 - 3.4 Transfer of people on land, at sea and in the air
 - 3.5 Leadership by management
- 4. Environment - A better environment starts with yourself**
 - 4.1 Set up data collection system of fuel consumption
 - 4.2 Taking Green Initiatives to the next level
- 5. Security - Security is not complete without U**
 - 5.1 Manage access rights of the DMCO Server and the New Navigator
 - 5.2 Information processing guidance

Eric Tancas
Managing Director
DEME Hra Marine

DE-QHSES-YAP
REV. 2019-10-01

2019-2020
QHSE-S

YEAR ACTION PLAN

For Quality, Health, Safety, Environment and Security

- 1. Quality - Do it right the first time**
 - 1.1 Launch of the new portal for the IMS (Integrated Management System)
- 2. Health - A sound mind in a sound body**
 - 2.1 Field testing of exoskeletons
 - 2.2 DEME on the move
- 3. Safety - Safety from the start is your best friend**
 - 3.1 Campaign on the importance of work preparation
- 4. Environment - A better environment starts with yourself**
 - 4.1 Feasibility check of using renewable energy sources for the recycling centres
 - 4.2 Organizing training for staff regarding relevant legislation changes
- 5. Security - Security is not complete without U**
 - 5.1 Information processing guidance
 - 5.2 Integration of other security aspect in the VMS (Vessel Management System)

Dirk Pappas
Managing Director
DEME Environmental

DE-QHSES-YAP
REV. 2019-04-04

QHSE PERFORMANCE



14 13 16 77 78 79 80

14



KEY PERFORMANCE INDICATORS

Key Performance Indicators (KPIs) are in place at all levels of our organisation: activity lines, business units, projects, sites and vessels. The QHSE-S KPIs include both leading (Green Initiatives, observations, inspections, timely closed actions, toolbox participations, timely reported incidents, incident investigations) and lagging indicators (safety thermometer) concerning QHSE.

The High Potential (HIPO) overview shows incidents that have a High Potential for damage to people, assets, quality, environment and reputation. In other words, it gives an indication of the activities that could cause harm to DEME. The performance of our subcontractors and suppliers is included in this HIPO overview, as well as the other KPIs (except the Safety Thermometer).

The status of the DEME QHSE-S KPIs is published in a dashboard and communicated to all employees on a quarterly basis. The KPI performance is also discussed on a regular basis during the relevant management teams where, if necessary, specific actions and initiatives are identified.

The overall QHSE performance evaluation, including KPI results, is managed by yearly management reviews. During these management reviews, QHSE-S KPIs and definitions are revised. Also the QHSE policy, objectives and Year Action Plans are drafted taking into account the KPI results.

INCIDENT MANAGEMENT

Within DEME we apply a broad definition for incidents: an incident is a dangerous situation, near miss or incident with damage. An incident can be related to people, assets, quality, environment or reputation.

In recent years, DEME has put increasing emphasis on High Potential incidents (HIPO). A HIPO is an incident that could have had severe consequences for people, assets, quality, the environment or reputation. Meaning, we focus on the potential consequences and severity of an incident, instead of what actually went wrong.

Each quarter, we carry out an extensive HIPO trend analysis for the entire DEME. Based on the findings of the analysis, we set up specific action plans and campaigns.

In 2020 several initiatives and campaigns were developed based on this trend analysis:

- Safety Week "HIPO Top 5"
- Safety Moment Day "Working at Height"
- Use of Scaffolding: review of DEME Scaffolding training
- Optimize HIPO Communication
- Manual of (un)loading goods

- Safe Mooring operations
- Manual Handling campaign
- Roll out Lifting 2.0
- Review of bow connection process

DEME also continued with the roll out of a customised internal **incident investigation training**. In 2020 additional sessions were organised for members of DEME's **senior management**. They stated that the training was very practical and down-to-earth, and a real eye opener to look into the causes of an incident.

Throughout the year the Management Teams of DEME and the different activity lines also organised **Safety Leadership Sessions**. With these sessions, we increase management involvement, improve the quality of the incident investigations, and verify if appropriate actions are taken. The ultimate purpose is to keep our major risks under control, based on a better knowledge of our incidents.

- What happened
- What went wrong (= results of the investigation and root cause analysis)
- Which actions have been taken



GREEN INITIATIVES

In 2018 we introduced the Green Initiatives (GI) to all DEME employees, projects, vessels and offices. "A Green Initiative is any initiative, change or modification to a process, equipment or setup that reduces the environmental impact of the project." At the end of the year we reached our KPI target. In 2019 we set "taking Green Initiatives to the next level" as one of our targets in our Year Action Plan. The target here was to further improve the quality of the Green Initiatives and to further raise awareness. The minimum target is still one Green Initiative per active project (>3 months in operation) a year. If we compare the quantities between 2018, 2019 and 2020, we still see that approved GIs are increasing in 2020.

This year we introduced our Green Initiative Power BI Dashboard. Once again, our KPI target for 2020 was met. We received very interesting and innovative GIs and we now see that projects are getting more creative and that the quality of our GIs is getting better and better. That is also why we launched a scoring system to set the bar higher and only approve GIs when the positive impact on the environment is high and the explanation in the Apprise registration form is clear and logical. Every activity line has its own approver and knows their project really well and can immediately assess if the impact is high.

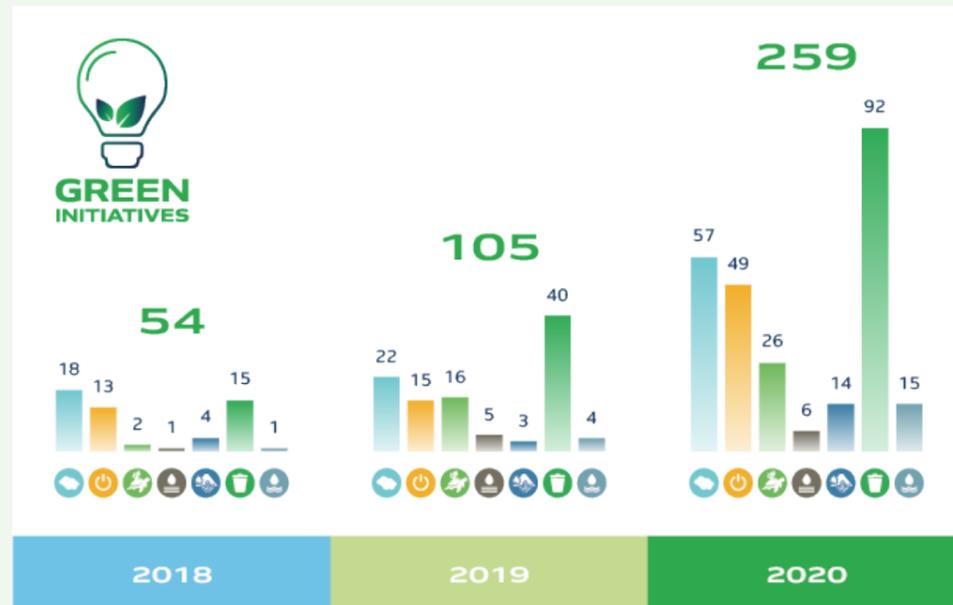


4256
participants

423
toolboxes

198
projects, offices,
vessels, other sites

37
countries



WHAT IS GOING RIGHT

For the last 2 years, DEME is approaching QHSE from 3 sides.

In 2020 we put a lot of effort in the green approach:

What's going right?

The results are encouraging:

- The number of green Initiatives has increased significantly
- DEME has finally found a whole new way to focus on safety in a positive way... by means of safety success stories.

STRUCTURE

DEME's management system consists of:

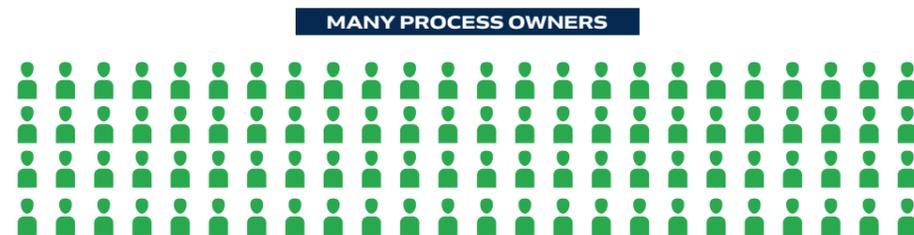
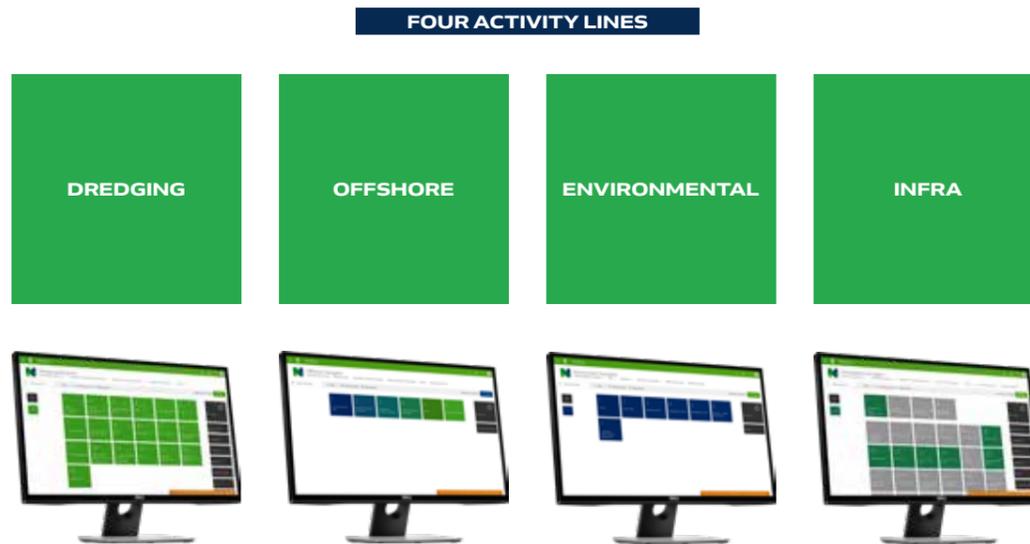
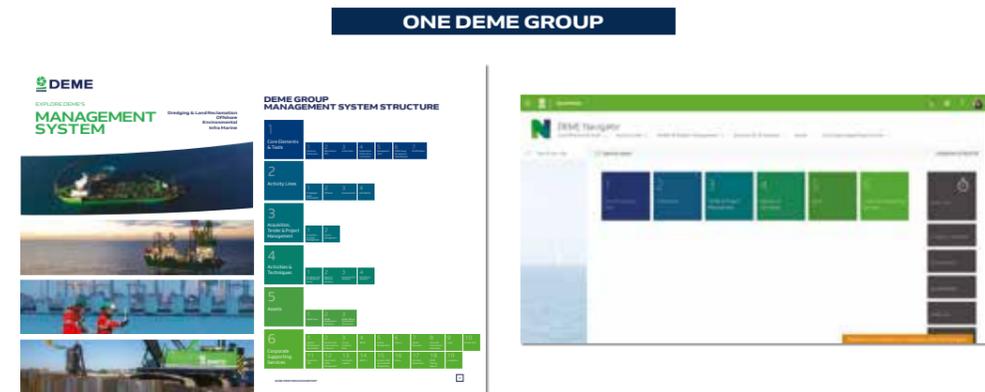
- One DEME structure
- Four activity lines
- Many process owners

The whole DEME Management System is based on a six-block structure; this is a recurring theme that makes it easy to find the information needed. We strive for maximum transparency in the way our products and services are realised, internally for our own organisation, as well as for our clients and stakeholders.

Each activity line has its own management system. On the one hand, this reflects the diversity of activities, industries and clients that DEME works with. On the other hand, by building on the common DEME structure, it reflects our united approach when managing projects that contain a mixture of activities.

To keep the system efficient and effective, we have established different processes; each process is owned by a dedicated process owner.

An overview of the DEME Management System and how we are organised can be found in our management system leaflet.



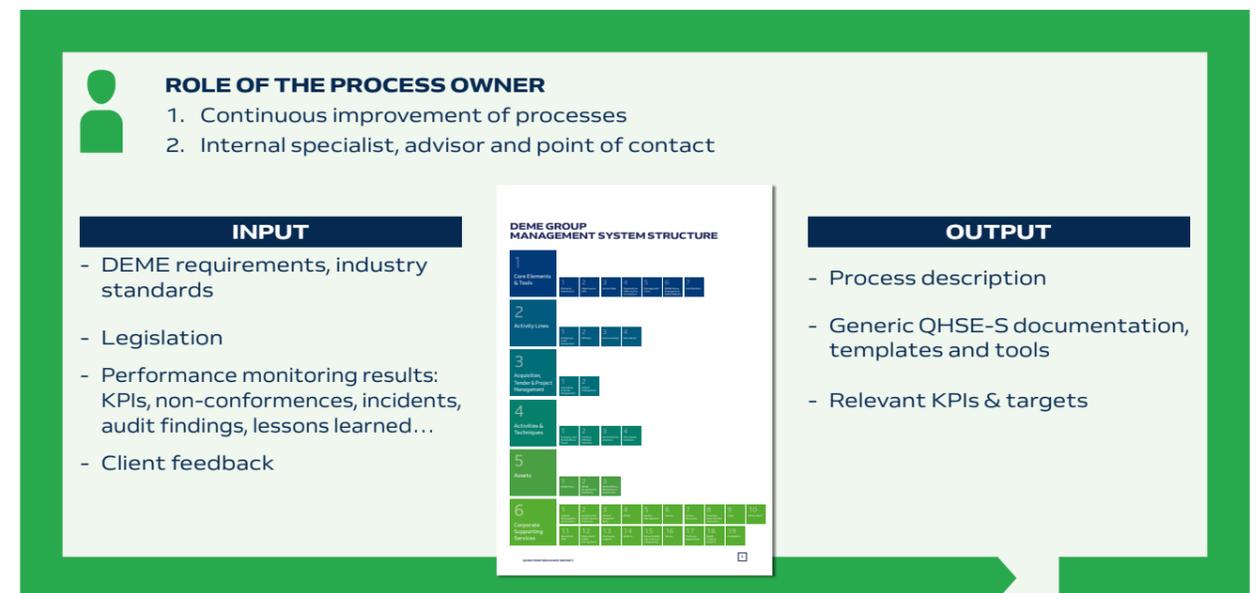
PROCESS OWNERS

DEME has introduced 'process owners' within the entire group, for all relevant processes of the supporting services, operational activities or production processes, and high-risk tasks. Today over 100 process owners function as a 'single point of contact' for their process(es).

Process owners are crucial for our organisation. They are the driving force behind the continuous improvement process. They focus on knowledge sharing within the company and provide a service to all stakeholders. As specialists in their domain, they can give advice to all hierarchical levels within the organisation.

Their role is to set up and maintain process descriptions, generic risk assessments, work instructions and procedures, other useful documentation and tools. They also keep track of actions, and help to identify KPIs and targets. They can accept or reject changes to their process, and, if necessary, manage exceptions.

The process owners improve their processes by following internal and external requirements, industry standards and best practices. Other input that is taken into account are results from non-conformities, incidents, audit findings, lessons learned, and client feedback.



CERTIFICATES

DEME meets international legal and other local mandatory QHSE requirements.

Additional certificates are obtained to ensure that the DEME QHSE standard is higher than the requirements.

DEME holds an ISO group certificate including over 50 operational and commercial entities.

All certified entities have an integrated ISO scope covering DEME's operational activities and are compliant with the following standards:

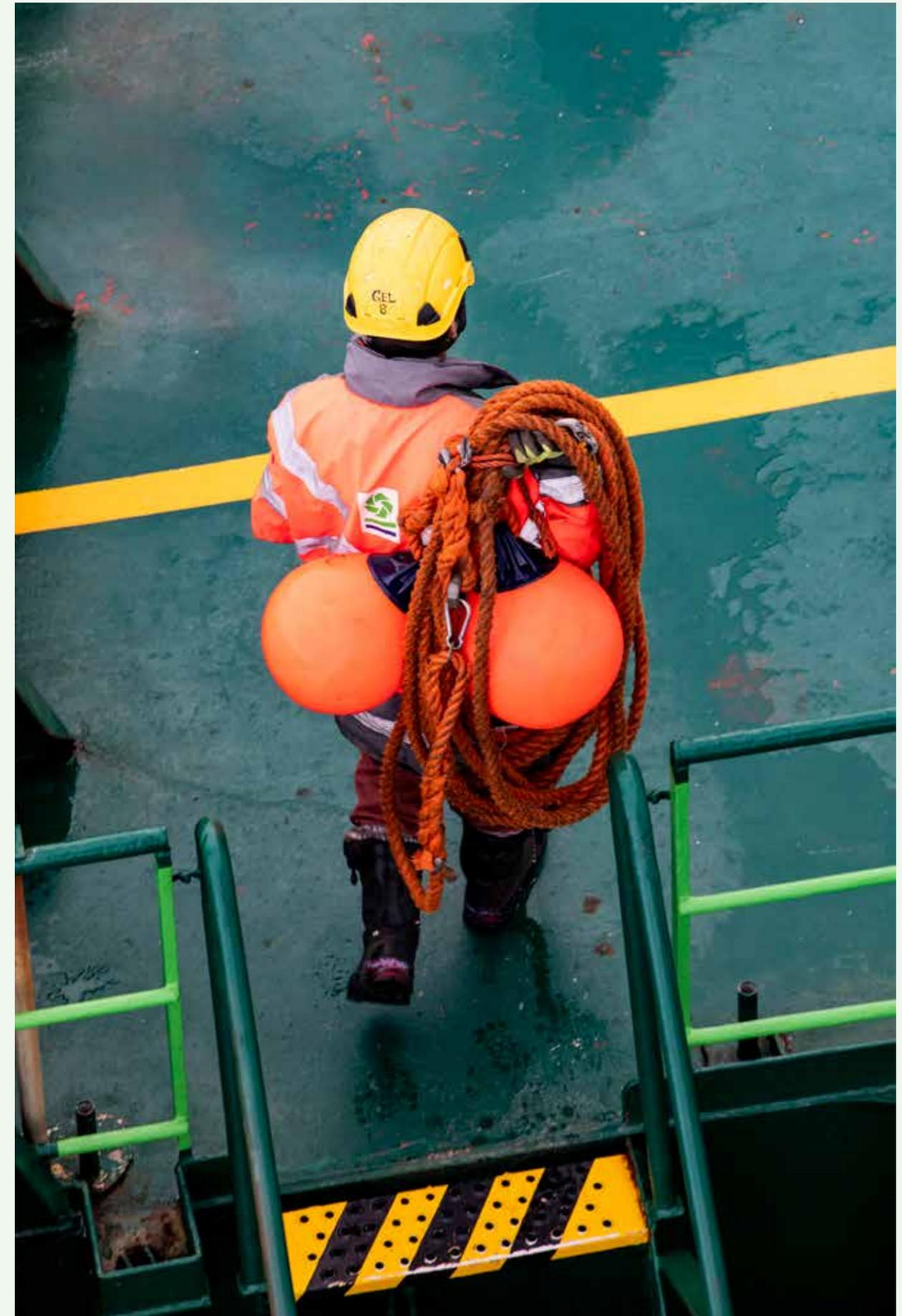
- ISO 9001 - Quality Management Systems
- ISO 14001 - Environmental Management Systems
- ISO 45001 - Health and Safety Management Systems

Additionally the DEME QHSE Management System is compliant to other specific standards for example:

- Safety Culture Ladder (SCL); assessment method for measuring safety awareness and behavior to enhance the Safety Culture
- CO2 Performance Ladder; Management System to reduce the CO2 emissions
- SCC** or SCCP; SHE Checklist for Contractors
- Safety Schemes in Procurement (SSIP) e.g. Achilles/FPAL, Accredia RT05...



Working together to cut CO₂



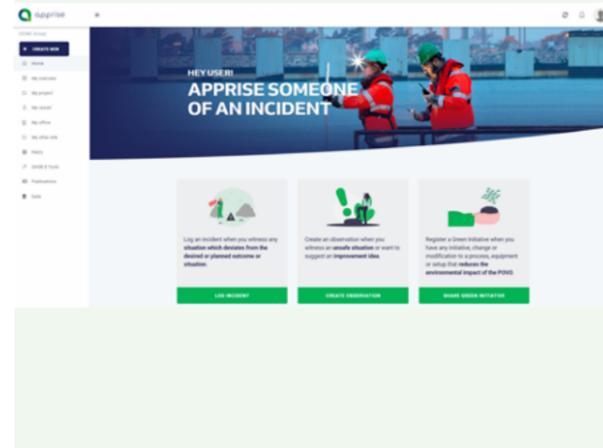
N NAVIGATOR

The Navigator is a platform used for communication, knowledge and information sharing. Modelled on the same structure as the DEME Group Management System, the Navigator includes six blocks on the home page – these make up the content directory for the entire platform.

Every activity line has a specific site that includes the underlying business units, companies and areas. These are based on the same six blocks thereby making them easily visually recognisable. In this way, everyone has a specific content file.

Thanks to the different Navigators, it is easy to find and share all kinds of information and documentation in a structured and user-friendly way. Links to other DEME internal or external systems can be integrated into the Navigator's structure. As a result, data and documents only need to be present in one location.

A very important function has been given to process owners with respect to supporting services, operational activities and High Risk Tasks. They are personally responsible for the documentation and information on their navigator page. Not only do they ensure the supply of information and keep it up-to-date, they also decide what content is relevant and what type of documents are needed to support their process.



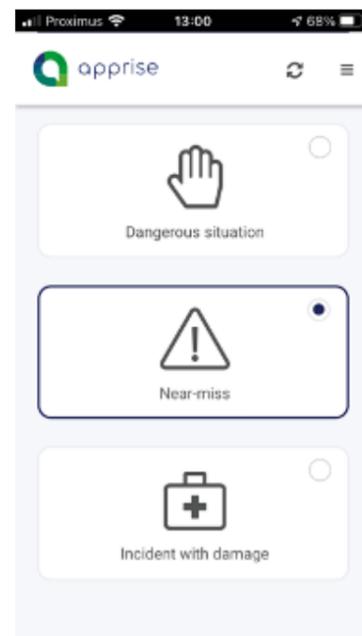
Q APPRISE

Apprise means 'to tell someone about something' and this is what we want to do: create an interactive, operational and above all, highly flexible QHSE-S reporting tool for all projects, offices, vessels and sites.

By designing digital processes (forms and flows) we aim to contribute to a paperless environment. Think of digital attendance sheets, an ad hoc inspection tool, digitalised inductions, etc. By keeping the user interface of the tool simple, mobile and flexible to project or vessel specific requirements, we believe that everyone working on our projects and vessels will be more involved when carrying out inspections. This will lead to an increase of useful inspections and observations and finally, a more proactive approach to QHSE-S.

As an additional layer to Apprise, advanced reporting possibilities are foreseen as all reports produced by QHSE-S are made available in one reporting app.

- Mobile functionality
- Modern reporting functionalities
- Flexible inhouse modifications
- Open to external parties
- Offline availability
- Simple user interface



CAMPAIGNS

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NEW YEAR'S RESOLUTION

In 2020 we launched our New Year's Resolution campaign in the beginning of January.

The campaign stresses the importance of the self-check and control of life jackets and helmets.

A video manual was published showing the required steps and issues to pay attention to when checking our life jackets. Extra emphasis was put on the introduction of the "License to Stop" induction.

DEME SAFETY WEEK – TOP 5 HIPOS

Based on the HIPO trend analysis, 5 high risk tasks were at the top of the list:

- Lifting operations
- Use of machinery and equipment
- Loading and unloading/securing for road transport
- Marine operations/mooring
- Earth moving machinery

The variety in these tasks reflects the diversity of our activities and working environments.

This year's Safety Week was kicked-off by our Strategic Operations Director Koen Vanderbeke.

For each of these five tasks we selected a HIPO case, where one of our colleagues explained in an animated video firstly what happened, then what went wrong, and finally what we learnt. Additionally, supporting documentation from the management system was published on the dedicated Apprise page.



qhse.link/Safety-Week-2020



ENVIRONMENTAL ASPECTS

To further highlight DEME's focus on environmental aspects, water emissions and the use of natural resources were detailed in two campaigns in 2020.

The different topics were supported by interesting videos, which featured ongoing activities within the activity lines related to the subject.

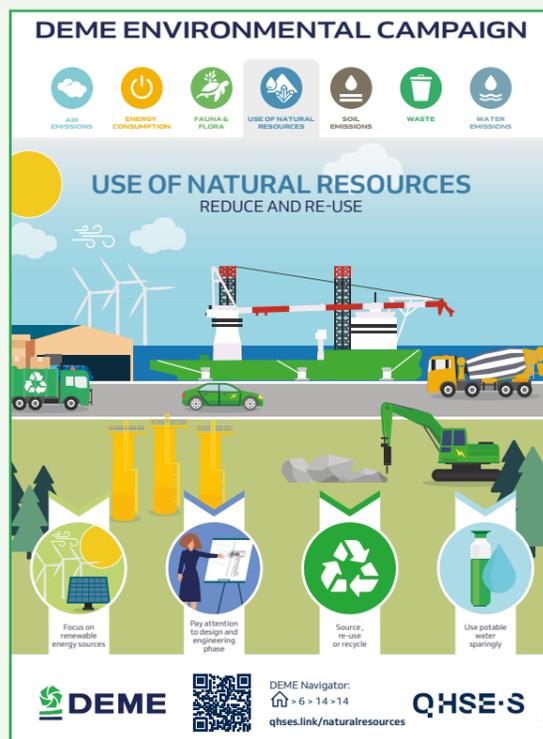
All projects, offices, vessels and other sites were invited to follow the campaign, watch the videos and discuss the

topics. Almost all offices participated in the environmental aspects campaigns in 2020.

At the end of 2020 we were proud to announce that as a result of our Environmental Campaign 2019 we had won the Silver Management Award at the European Commission's 'European Business Awards for the Environment (EBAE)'.



According to the EC, the EBAE's Silver Management Award recognises a successful organisation with the strategic vision and management focus that enable it to continuously improve its environmental performances. The EBAE added that this award acknowledges businesses that produce maximum economic value with minimum environmental impact and congratulated DEME on its outstanding performance.



qhs.link/natural-resources



qhs.link/water-emissions

SAFETY SUCCESS STORIES AND SAFETY MOMENT DAY – WORKING AT HEIGHT

The 2020 Safety Moment Day campaign started in September when a complete site dedicated to Working at Height was published on Apprise. Not only was the early start different from previous years, but also the strategy of the campaign was new: rather than focusing on near misses, lost time and high potential incidents, it focused instead on the positive and what went well – your Safety Success Stories.

'Working at Height' was chosen as the focus of the new campaign because this is a high-risk task, which is present in all four activity lines, as well as in our daily lives at home.

A dedicated page on Apprise was published in the very beginning of the campaign compiling all documentation related to working at height detailed in:

- General working at height
- Fixed platforms and railings
- Scaffolding
- Mobile elevated platforms
- Lifting of persons and man riding
- Ladders
- Rope access

- Use of personal fall protection
- Dropped objects

All activity lines were working together to get to a "One DEME approach" and to align all the procedures. Rather than issuing reams of documentation, there has been a big emphasis on making all the new communication material more accessible - bright posters that can easily be used on vessels and project sites, for example.

We were delighted that so many teams participated in the campaign, with around 200 Safety Success Stories received from vessels, project sites and offices worldwide. And these inspirational stories showed that brilliant ideas don't have to cost the earth. They were highlighted at the Safety Moment Day in December when the best ideas were awarded.



qhs.link/Safety-Moment-Day





MENTAL HEALTH SUPPORT AND ENERGY@DEME

In addition to dealing with the practical logistics matters, DEME recognised that the COVID-19 pandemic could potentially have a big impact on mental health. Several wellbeing training and development courses were set up, whereby the team could support people remotely wherever they were in the world. DEME also offered this support to family members as well.

As well as keeping mentally healthy, there were also sports initiatives to help people keep in good shape, such

as a global competition inspired by the Tour de France. The Energy@DEME sports and wellbeing programme keeps on attracting more and more employees to participate in events, even during a year the events were taking place virtually.

As the world faced the second wave of the pandemic in the latter months of 2020, DEME will do whatever it can to continue supporting employees.

WORLD CLEANUP DAY

In our activities we are at the frontline of seeing the impact of pollution, both ashore and at sea. Hence the reason why waste and resource management, including our goal to tackle plastic pollution, is one of our eight core sustainability themes.

Although the coronavirus pandemic did have an impact on the number of initiatives launched this year, we saw some excellent efforts from our teams in Buenaventura,

Colombia who organised a beach cleaning event, and then in Belgium, our Area Americas team performed a clean-up along the banks of the River Scheldt. Additionally our colleagues from Ecoterres did a clean-up at Fresnes-sur-Escaut in France and in Scotland, DEME volunteers collected 30 kg of waste, which largely consisted of plastic and ropes.



SAFETY DIFFERENTLY

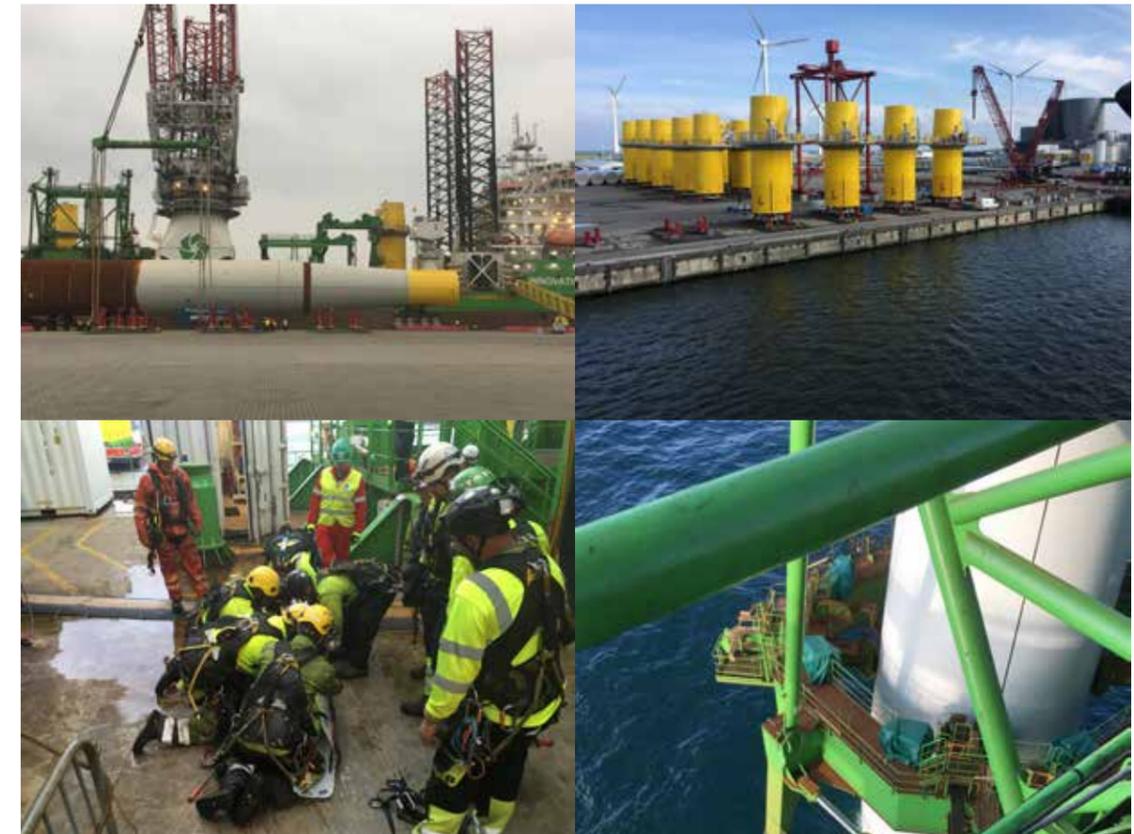
As part of the Hornsea II Offshore Wind Farm Project – DEME Offshore has been piloting a Safety Culture Programme – ‘Safety Differently’. This programme has been developed jointly with Culture Effect (an Australian based organisation). The campaign was initiated with an initial interview of 14 managers / supervisors and 14 workers on DEME sites to get their input and opinions on various safety topics and how they are currently managed. It is based on this feedback that the campaign was developed and adapted to the project.

The ultimate goal of the campaign is to shift the mentality of people towards safety by approaching it in a positive manner, and empowering people to make the

change. This is achieved by a combination of theoretical and interactive classroom sessions, and the introduction of operational ‘tools’ that can be used on site.

Topics covered throughout the training include:

- Hazards vs Risks and controlling these
- Routine and its role in safety
- Addressing people
- Safety leadership 2.0 (managing tensions)



INITIATIVES



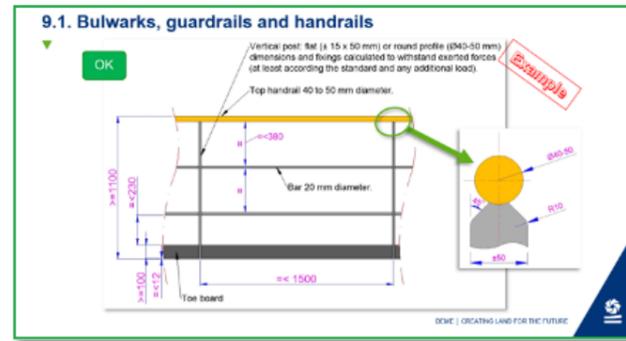
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SAFETY BY DESIGN GUIDE

Since its introduction the Safety by Design Guide has been constantly expanded with new topics.

The fact that the Safety by Design guide is now systematically added to new build and conversion contracts, meaning the requirements are no longer optional, is reflected in the safer design of recent ships and installations. Some examples of projects, completed or ongoing, are the 'Bonny River', 'Meuse River' and the Gripper XL for the 'Innovation'.

The guide is increasingly appreciated on existing vessels and installations. This is noticeable in the number of inquiries our QHSE-S Technical Department receives from captains and their crew, as well as from vessel and project managers.



QHSE 4 SPECIALISTS

Every year QHSE organises an in-company seminar for the four activity lines called QHSE 4 Specialists. The COVID-19 situation resulted in a digital version of the event.

Four live events were spread over two days and about 120 QHSE colleagues participated.

In general sessions several topics were presented: such as Vision, management system, Technical Services, Communication and the CHILD initiative. The System & Tools team talked about the status of the newly introduced application Apprise, and a session was dedicated to the topical subject Energy and Environment.

In the breakout sessions more activity line specific topics were discussed: such as performance, core elements, Year Action Plans and special projects.



INNOVATION DIVER – ACHIEVED INITIATIVES

Throughout its history DEME has been renowned for its pioneering spirit and innovative ideas. Every couple of years DEME organises a DIVER campaign, to look for both fully realised initiatives and completely new ideas. The best ideas are being awarded and new ideas are put into practice.

These initiatives and ideas are linked to categories, one of which deals specifically with Health & Safety.

A SNAPSHOT OF AWARDED IDEAS.



Use of Dry Break Couplings during bunkering

When transferring a bunker hose from a bunker barge to a vessel, there is a potential for spills. To connect the hose to the manifold, flanges have to be bolted, which takes time and additional effort.

By using dry break couplings, both problems are solved. When the hose has to be transferred, the hose is completely closed and there is virtually no chance of accidental fuel spills. The coupling is also quickly (dis)connected by simply rotating the hose unit on the tank unit.



Combi wall sheet pile safety guide

On the Sassevaart project, a simple but effective tool was implemented to enable a safer installation of a sheet pile in a CB combiwall. To avoid injuries while manoeuvring the

sheet piles into interlocks, a frame was developed which stops the sheet pile from making large movements in cases where it may come out of an interlock.



Retro Fit Guard Rails to Excavator Engine Bays

On the JIWE project in Singapore we identified that excavators were not equipped with guardrails to prevent falls when accessing the engine bay for routine pre-operational checks and maintenance.

The project team with the support of its subcontractors, designed and installed cost-effective guard rails on existing excavators. With this simple design, manufactured on site, we achieved success.

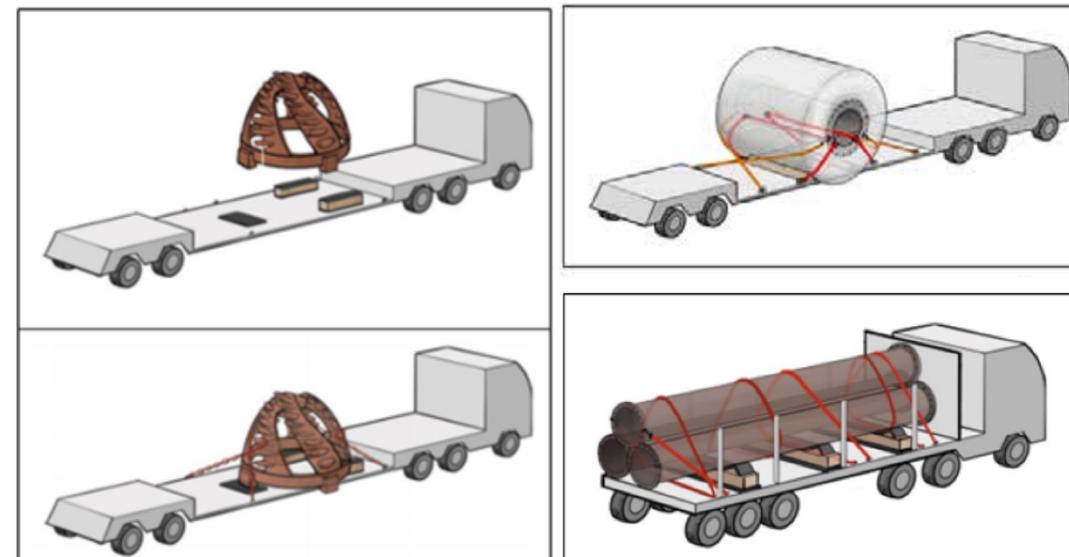
After installing the guard rail on one machine, all other contractors were able to see the benefits, and the principal of the guard rails was extended to other excavator mounted machines, such as PVD rigs, drill rigs and piling machines.

CARGO SECURING MANUAL

Incorrect securing of loads can have a severe impact. The Cargo Securing Manual is set up to indicate the minimum requirements for cargo securing of heavy dredge equipment that is regularly transported.

Transport is mostly outsourced by DEME. However, DEME — as the entity performing the loading and/or acting as instructor of the transport — as well as the transport company itself, have a joint responsibility in performing the safe transport of equipment.

The manual discusses all materials that can or have to be used, and describes, amongst others: friction factors, load spreading requirements, and factors that dictate the type of lashings to be used for pipes - such as type of truck, availability of stanchions, and number of pipes to be loaded.



This easy to read manual is a must read for all involved in transporting ALD mission equipment in order to do this in a safe way.

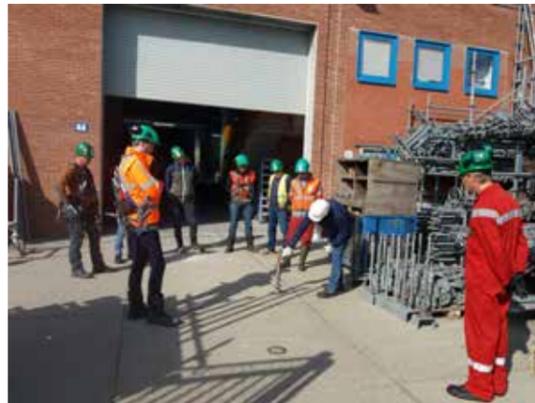
SCAFFOLDING TRAINING

During maintenance and repair works on vessels, tasks at height must be carried out, often in hard-to-reach places. Belgian legislation clearly states that ladders can only be used as a means of access and not as a working platform.

A tailor-made scaffolding training course was developed. The theoretical part has been developed in-house and adapted to the specific safety needs on our vessels.

The course is limited to the safe construction, inspection, use and dismantling of scaffolding up to 6 m working height. For all suspended scaffolding, power scaffolding and constructions higher than 6 m working height, we continue to rely on professional firms.

The course also includes a handy pocket-sized checklist card and an inspection card (scafftag) with accompanying card holder.



qhses.link/Scaffolding-intro

RISK ASSESSMENT TOOL

The Technical Department at DEME Environmental Contractors (DEC) is developing a simplified and user-friendly risk assessment tool in order to quickly generate Job Safety Analyses (JSA). This system is currently being tested on DEC project sites.

When requesting repair or maintenance, and after entering required basic information, the tool generates a JSA which is specific to the task to be performed. This JSA is produced together with the work order and handed to the technician or engineer assigned to the job.

The tool is the result of an extensive exercise where risks and preventive mitigation measures are defined for predefined activities, locations, equipment, tools, etc. and are combined in a matrix.

The outcome is a work order which includes a task-specific risk assessment. The automated tool improves the overall efficiency of the risk assessment process. It reduces time and administrative bureaucracy whilst providing a good and up-to-date matrix of task-specific risks and controls to be performed by the technician or engineer.



HYBRID SOIL WASHING PROCESS

In a very significant step we have developed an innovative, hybrid soil washing process. This is particularly important for the Netherlands, which in 2019 introduced strict regulations for PFAS (a collective name for poly- and perfluoroalkyl substances), which is leading to severe delays for many infrastructure and construction projects.

We joined forces with a consulting and engineering firm to bring to the Dutch market this cost-efficient and sustainable cleaning technique for PFAS-contaminated soil. With one fixed and three mobile soil wash installations, and four locations in the Netherlands where we can take in contaminated PFAS soils, we now offer customers a total solution in the field of PFAS sandy soil cleaning and granulate construction materials.

The special soil washing process achieves an impressive cleaning yield of more than 99%. The innovative method is a hybrid version of the wet extractive cleaning process, which, in addition to fraction separation, focuses on purifying the wash water.

PFAS (a collective name for poly- and perfluoroalkyl substances) is found in many household products that we use on a daily basis to make sure they are water-repellent, dirt-repellent, heat-resistant and even fire-resistant.

Due to their wide use PFAS (a collective name for poly- and perfluoroalkyl substances) are present in soil and present a significant environmental hazard.

As the only company in the Netherlands currently offering this hybrid soil washing capability, we are proud to start the shift to cleaning and recycling soil and sediments rather than dumping them.



SAVING CO2 EMISSIONS BY USING WATERWAYS

With our subsidiary Ecoterres we install our treatment centres alongside waterways and we encourage the transport of polluted and/or treated soils or sediments by water. By favouring transport by boat, rather than by road, we have saved 784.523 kg CO2(*). Apart from being a less pollutant solution, it is also more efficient and, by significantly reducing the number of heavy transport vehicles on the roads, considerably safer.

In 2020, we will have managed or treated around 310,000 tons of polluted soils and sediments at our centres and transported 161,624 tons by waterways. Owning two Senebogen 835 machines and various barges allows us to offer an integrated service using waterways.



On our various sites in the province of Liège we transported 82.569 tons by boat, both entering and leaving our sites. Also transported by boat were 43.352 tons at the Vraimont Treatment Site and another 35.703 tons at the Vraimont Treatment Site, which belongs to the SPW and is operated by us.

(*) For an average distance of 60 km and according to figures from ADEME:

- Road transport : 107g/Co2/T/Km
- Transport by boat : 26,1g/CO2/Km

ZERO EMISSION NETWORK INFRA

Three market parties, DEME (de Vries & van de Wiel), GMB and Heijmans have set up the Emission-free Infrastructure Network (ENI) to accelerate energy transition in the infrastructure sector by four years. In their policy Rijkswaterstaat and the water boards express the ambition to be climate neutral and circular by 2030. The aim of ENI is to enable construction with zero-emission equipment as early as 2026.

It is important to accelerate zero-emission working. The social challenge is considerable, based on, among other things, the threats that the sector faces (climate change, particulate matter and nitrogen emissions). Companies need an approach that actually leads to a reduction in the Total Costs of Ownership (TCO) to create a realistic investment environment for new zero-emission equipment.

The core of ENI's scope lies in moving and rolling equipment with a weight greater than 20 tons including tracked equipment such as cranes, bulldozers and piling racks, as well as mobile equipment such as trucks, shovels, mobile cranes, dumpers and tractors. Equipment smaller than 20 tonnes is already increasingly available

with electric drives, among other things. Zero-emission work and transport vessels are also part of the scope. A number of contractors/water builders are already exploring the possibilities of working with significantly less emissions, for example with LNG, methanol or biofuels. In addition, floating equipment takes up a real share of the total emissions of the work for earthmoving and hydraulic engineering.

Goals:

- Accelerate (from 2030 to 2026) the development of zero emission construction equipment for an acceptable TCO based on uniform standards
- Organize and facilitate demand and knowledge bundling
- Creating a new ecosystem throughout the chain to enable the transition to zero-emission work.



SET UP LIFE CYCLE ANALYSIS TO REDUCE ENVIRONMENTAL IMPACT

With the aim of increasing the knowledge of the environmental impact of de Vries & van de Wiel ships, Vito has drawn up life cycle analyses (LCAs). DEME has chosen the ships 'Piet Hein' and 'Zeeland' in combination with the use of different fuels when drawing up the LCA's. These ship/fuel-specific environmental profiles reflect the environmental impact per ton of fuel.

For each fuel examined, the most likely production profile has been established for fuels offered on the Dutch market. The environmental profiles are calculated using an LCA based on the SBK (dutch foundation for construction quality/stichting bouw kwaliteit) Determination Method.

In general, most emissions from a product are not made at a production plant, but across the entire supply chain,

which can be measured by performing an LCA. Because the environmental data come from many different sources. Therefore we measure in different impact categories. The numbers are difficult to compare. This is where the environmental cost indicator (ECI) comes into play: as a single-score indicator it simplifies and unites different environmental data points displayed in euros. The higher the ECI value, the greater the environmental impact.

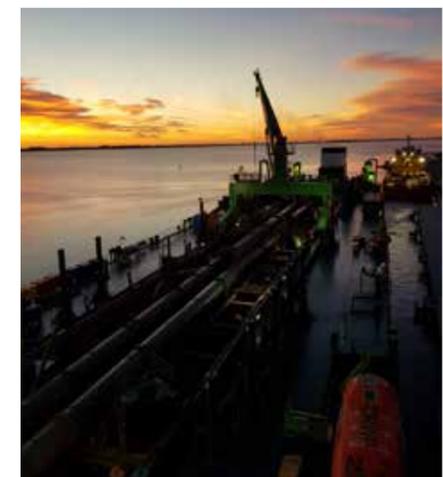
The ECI value ensures that the environmental performance of different contractors can be objectively compared. In addition, the various components of the LCA show where the environmental impact of the ship (marine) fuel combination can be reduced.



BOOSTING SAFETY ON MEXICAN ROCK PLACEMENT PROJECTS

Working abroad in locations like Mexico often means that only one supplier can perform the required project scope. This leads to a QHSE standard which could be best described as "it is what it is". However, the Project Team should never accept this and must team up with the suppliers and subcontractors to boost safety standards to the high levels DEME sets.

On Mexican Rock Placement Projects this was an immense challenge. It was due to the dedicated efforts of the project team that all supplier employees at the yard were safety inducted, safety trained and made safety aware. As a result, a safety culture arose among the personnel at the yard. Furthermore, they fully embraced all safety rules and executed them at their own initiative in the next campaign.



PROJECTS IN THE SPOTLIGHT



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DREDGING

SAFETY AWARD FOR SEABIRD PROJECT

The Seabird project in India is happy to share the Safety Award received by the joint venture from the "National Safety Council of India" in recognition of "appreciable achievement in occupational safety & health".

This achievement could not have been possible without the dedicated efforts of our QHSE team in particular, and the entire site team in general, in maintaining DEME's safety standards, along with the support of our Management.



SAFETY AND HEALTH AWARD RECOGNITION for Projects (SHARP) JIWE project awarded

This award recognises large-scale projects or worksites that have a good safety and health performance, and workplace safety and health management systems. Examples of winning projects in this award include shipyard projects, construction worksites and large projects within an organisation.

SHARP is awarded every year by the Workplace Safety and Health Council, Ministry of Manpower Singapore. A range of criteria must be met in order to apply for the award:

- Project should not have received a fine from the local authority in the previous year;
- No reportable accident for the full previous year;
- An excellent ConSASS audit score in all bands;
- A good CultureSAFE Evidence based survey score, which is a behavioural based safety component;
- Implementation records of total Workplace Safety and Health checklist as recommended by WSH Council in the project site.



JTC CONSTRUCTION Safety Performance Award 2020 for JIWE and AMP2 project

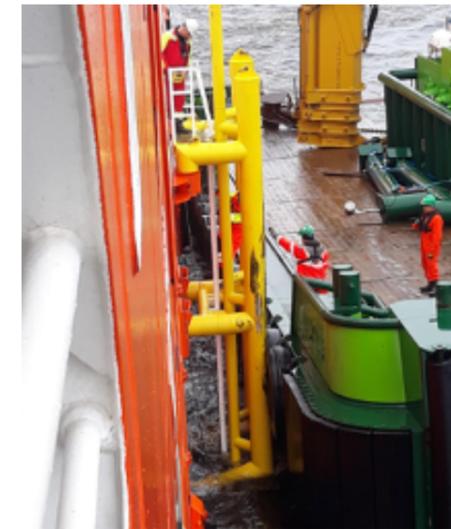
Every year our client Jurong Town Corporation in Singapore presents the above award to the contractors who have performed very well with regards to HSE.



SAFETY DAY on Sea Channel project on board of accommodation vessel 'Normand Jarl'

Transfers offshore may not be termed 'work at height', but there is a substantial difference between the deck level of a tender boat and the accommodation vessel: a climb height of approx. 5 m.

To reduce risks during sea transfer at height, the project team used a safety harness with a self-retracting lifeline, and always made two sets of harness available to reduce the transfer waiting time.



COVID-19 RESTRICTIONS on the Sea Channel Project

In order to prevent possible spreading of the COVID-19 virus among the project fleet engaged in the Sea Channel Project, the "Project COVID-19 management plan" was implemented.

Considering that the project fleet consisted of 14 vessels, our main goal was to prevent possible spreading of the virus from one vessel to another during contacts with third parties, crew changes or vessels visits. In order to reach this goal, all vessels were divided into three colour categories – red, yellow, green.

A vessel is indicated as "Red" where there are contacts with an individual who hasn't passed a COVID-19 test or somebody from the crew has a fever or cold symptoms. This vessel becomes isolated from the fleet, with no visits or other contacts allowed.

A vessel is indicated as "Yellow" after a crew change or

visits of individuals who had negative COVID-19 tests and quarantined for 14 days prior to arrival. This vessel carries a strong recommendation to bar visits during the first 12 days, after which, if no symptoms of COVID-19 are detected among the crew, the vessel becomes "Green".

A vessel indicated as "Green" is when all crew members have negative results on COVID-19 tests and have spent 12 days symptom free, as well as having had no contacts with individuals from any vessels apart of "Green" ones. A "Green" vessel guarantees a COVID-19 free environment (project bubble).

The tracking register oversees the current state of the vessels and provides prompt updates to the project personnel on a daily basis. Rigorous adherence to this simple procedure restricted the spread of COVID-19 among the project fleet.

EMERGENCY RESPONSE

on the modernisation of the Świnoujście–Szczecin fairway project

Part of the scope for the modernisation of Świnoujście–Szczecin fairway in Poland is to build two artificial islands and construct rock protection coatings around them. These works were risk assessed and then reviewed from an emergency response point of view.

Despite a national emergency response network in place which meets European response time standards, the distance of the islands to the closest safe port posed a risk. Neither the search and rescue (SAR) boats or helicopters, nor our high-speed boats would be fast enough to sufficiently treat serious injuries, and with only first aid persons available on the islands, the project management team agreed that the level of risk was too high.

Wodne Ochotnicze Pogotowie Ratunkowe (WOPR), a local Voluntary Water Rescue Service and a member of the International Life Saving Federation (ILS), was therefore contracted to provide emergency response support. WOPR has direct VHF radio contact to the national emergency network in the TETRA system on the Ratunek channel, ensuring the fastest communication response for all emergency scenarios.

They provide rescue personnel with all the equipment required for trauma stabilisation and transport of injured persons, as well as shallow draft rescue boats which can be used to reach shallow, remote areas of our project. In addition we have access to direct first aid training on location with the potential to have all staff trained in first aid.

We are proud to have pro-actively engaged with the local community on this project, something which has resulted in mutual benefits: we have emergency response on site, and they gain knowledge of DEME's activities and risks.

INNOVATIVE SOLUTIONS FOR DREDGING ACTIVITIES

on the 'New Lock Terneuzen' project

For the excavation of the future lock heads up to 25m below ground level and the gravel installation of the lock head floors, DEME built two innovative custom-made pontoons and applied remote controlled survey equipment.

1. Design of two modular pontoons

The dredge pontoon 'DDP Impérieuse' consists of two cable cranes which excavate simultaneously to a depth of -22mNAP. The buckets with excavated soil are emptied in one of the two funnels. Afterwards, the soil is crushed and transported via conveyor belts to the mixing unit, followed by hydraulic transport, generated by the pump under the mixing, to the required location (reclamation area or split hopper).

Once the construction pit was dredged to the design depth, a gravel layer was installed by gravel pontoon 'Pebbles'. The design of the modular gravel pontoon was a cost effective and qualitative solution for the project, and its simplicity makes the pontoon resistant to technical downtime.

In the design phase of the two pontoons, the multidisciplinary team paid a lot of attention to safety. In addition, frequent site visits during building works meant adjustments could be made and the safety by design pocket guide assisted the build in meeting DEME standards. An external company was involved to ensure

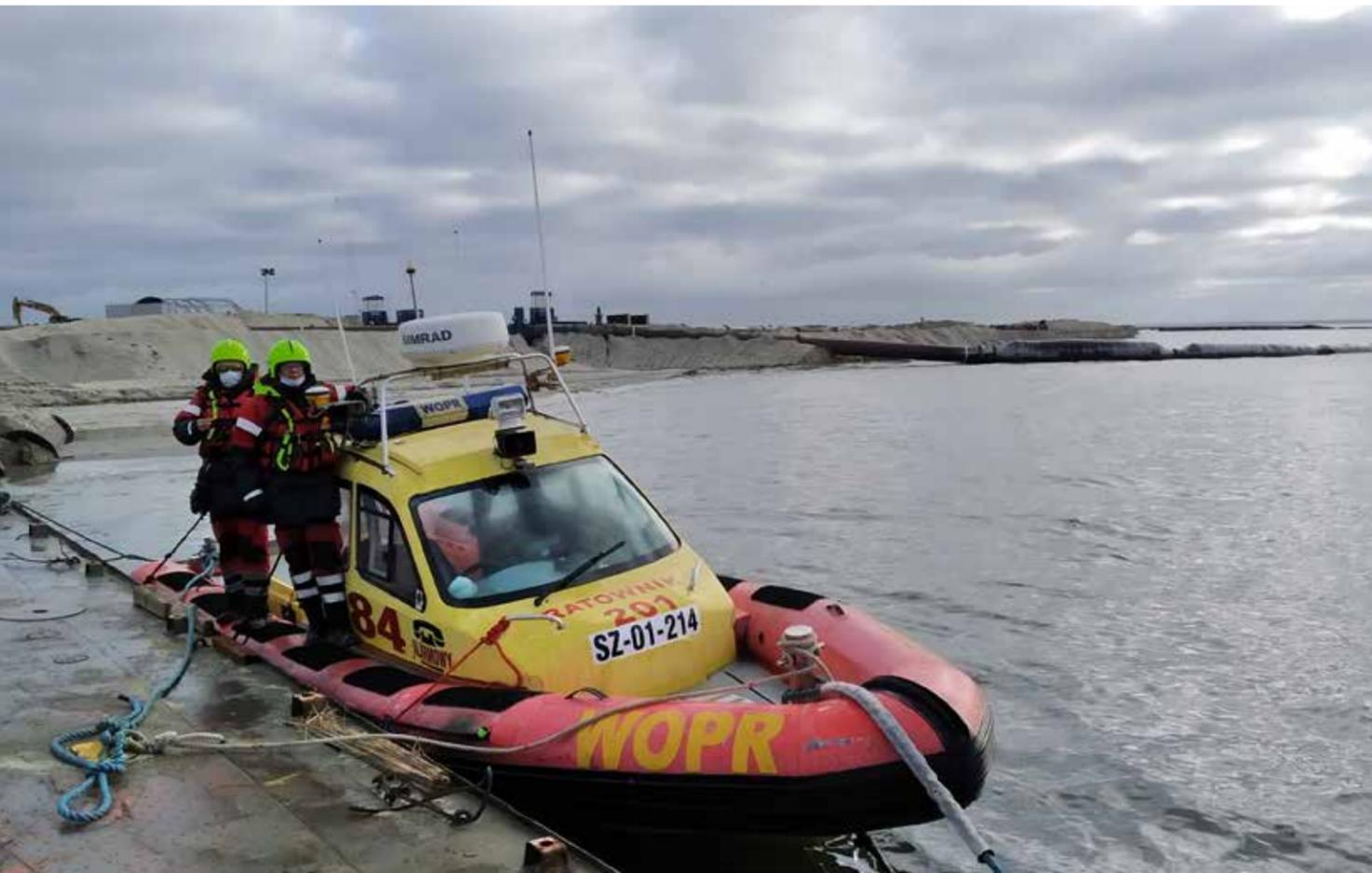
compliance with the regulations of the machinery directive 2006/42/EC and EMC RICHTLIJN 2014/30/EC.

The modular design allowed for easy assembly and disassembly of the pontoon during the multiple phases of the project. After the first phase, a lessons-learned and improvement document was set up which led to several technical and safety improvements when the pontoons were shifted from the outer lock head to the inner lock head.

2. Remote controlled survey vessel

The unmanned and remote-controlled survey vessel was used to survey during all the phases, with several benefits:

- Safety:
 - > Reduced simultaneous operations during ongoing diving works;
 - > By installing a manual lifting aid, deploying the vessel was safe and easy;
 - > No rented mobile crane required for lifting a survey vessel in the water.
- Environment: No fueling of the vessel as it runs on rechargeable batteries



OFFSHORE

SAFETY IN DESIGN on the Saint-Nazaire project

The Saint-Nazaire Offshore Wind Farm is located in France, in the department of Loire Atlantique, approximately 15 km west of the town of Saint-Nazaire and at a short distance of 12 km from the coast. The wind farm area is approximately 78 km² and water depths at the site vary between approximately 10.5m and 24.0m LAT. The wind farm, which will comprise up to 80 wind turbines with a capacity of 6.0 MW each, will have a maximum capacity of 480 MW.

The specific soil conditions related to the area brought lifting challenges and pushed the project preparation team to use innovative lifting tools. One of these is a Quick Connecting Tool, allowing us to safely connect and disconnect the main crane from the rigging without any human intervention, and allows safe access in normally unreachable areas (e.g. at height). The tool's package includes receptacles specifically designed to fit

equipment (such as bolted flange on a lifted item). On each receptacle, guide cones will ease the (un-)docking and a camera, placed on the centre of the tool, assists the lifting supervisor and crane operator in finding the receptacles.

This 2000 mt lifting tool is not only lightweight and compact, but will also save hours of manual handling on board of our vessels. Safety features include remote operation, keeping crew and staff at a safe distance, and the assurance that equipment cannot be released during lifting operations. In addition, investment in this tool will give future projects the opportunity to benefit from its safe lifting features.



SAFE TRANSFER on the Seamade WTG project

For the installation of the wind turbines at the SeaMade Offshore Wind Farm using the vessel 'Apollo', the jack-up platform was required to jack up 19 m above the WTG foundation top platform.

The challenge we encountered was to develop a safe transfer to/from the deck of the jack-up offshore installation vessel 'Apollo' to the top-platform of the foundation. This meant taking into account all elements affecting the safe transfer of a stretcher in emergencies, such as gangway angles, walkway widths and landing areas.

Solutions found included installing a staircase to DEMA safety standards on the side of 'Apollo' with a davit arm extension for lifting a stretcher from the turntable. We also had to ensure optimal dimensions of the turntable and the closed certified gangway, as well as the latter's angle. Rescue drills organised with WTG installation teams during mobilisation of 'Apollo' prepared everyone for the successful execution of safe transfers.

ARTIFICIAL REEF on the Borssele 1&2 Offshore Wind Farm

The Borssele 1 & 2 wind farm covers a total surface area of 112 km², approximately the equivalent of 15,000 football pitches. In this area, our client Ørsted is testing a new concept aimed at reinforcing biodiversity. The concept consists of installing four artificial reefs, an initiative that was completed in July by our DP2 jack-up offshore installation vessel 'Thor'. Each reef is made up of 45 massive concrete pipes that have been installed on the seabed, in a circular pattern.

These formations create hollows and hiding places where cod and other large fish species can seek shelter and from which they can feed on smaller fish and crabs. The aim of the research is to help develop knowledge and experience for future nature development projects in wind farms on the North Sea.



ENVIRONMENTAL

SAFETY AWARD ON THE PROJECT in the Port of Ghent project

"Thanks for being Safety Champions and for your commitment to HSSE!"

DEC team showed a very proactive and thorough safety mentality during the setup of the remediation project (administratively and on site). Their good approach to safety continued during the execution phase of excavating the source area, with time pressure for the construction of a new road and very challenging site conditions (Unexploded ordnance suspicious site, big old foundations, very high benzene levels in soil and ambient air)."

With these words, and a safety award, our client, one of the largest petrochemical companies in the world, valued the effort made by the DEC project team during a challenging project in the port of Ghent.

DEC was contracted to execute ground remediation of a former petrochemical installation. The site was highly contaminated with benzene and it was considered a high-risk area for WW-II Unexploded Ordnances; therefore, all excavations were made under strict UXO (Unexploded Ordnance) expertise supervision.

Alongside the Health and Safety challenges, the client established a tight schedule for completion in order to avoid delays on another infrastructure works project planned on site.

Confronted with these challenges, the project team listened to the client's concerns, evaluated the health & safety issues and acted efficiently to manage the risks. Together with the QHSE department, work protocols were developed to link measured benzene emissions to controls that ranged from the use of Respiratory Protective Equipment, to a detailed site evacuation plan. These protocols allowed the project team to adjust the excavation according to the gas emission and complete the remediation with minimal down time and a high level of safety awareness.



A CHALLENGE TO KEEP EMISSIONS WITHIN LEGAL STANDARDS on the CAT project

In June 2020, the activity line Environmental was awarded the remediation of the CAT site in Vilvoorde. The project involves the excavation of 200,000 tonnes of polluted soil and deposit material with maximum reuse of on-site remediated soil.

As one of the main pollutants is benzene, a carcinogenic and very volatile element, a well substantiated emission-reduction plan was developed in collaboration with the R&D department. The resulting system correlates measurable concentrations of benzene in part per million (PPM) at the excavation zone, and to the site border where emissions have to meet even stricter legal standard in parts per billion (PPB).

This new system consists of an app, which takes into account the meteorological circumstances (wind, clouds, rain) and the distance to the site perimeter. It calculates the maximum value of benzene at the excavation zone in measurable part per million (PPM) so that the legal values at the site border aren't exceeded.

Together with emission reducing actions such as water atomisation, air extraction, personal protection by personal measuring devices and half face masks, we are confident our efforts will lead to a successful project execution.



GOOD PREPARATION, KEY FOR A SUCCESSFUL EXECUTION of the TOTAL Wandre project

At the TOTAL Wandre project, we faced the challenging task to decommission and dismantle an old oil pipe-rack over a busy highway. To minimise traffic disruption the work had to be done during the night and during the weekend, whilst strictly following COVID-19 preventive measures.

To successfully complete the job within the narrow timeframe, preparation was essential. Working with all stakeholders, we conducted an extensive operational risk analysis in which all main works were described in a minute-by-minute sequence, including precise descriptions and details of materials and personnel required. It highlighted the risks and all the resulting risk reduction measures.

In close collaboration with our client, TOTAL Retia, we detailed a precise and well-timed operating methodology, which was key to a safe project execution.



EXAMPLE OF EMISSION-FREE DYKE REINFORCING at the Lekdijk project

A unique collaboration for sustainable dyke reinforcement has launched in the Netherlands. The Lekdijk will be reinforced over the next few years from Amerongen to Schoonhoven, a distance of 55 km. The massive scale of the project and the ambitious goals set by De Stichtse Rijnlanden Water Board mean that innovation is crucial for success. The Dutch Water Board therefore opted for an 'Innovation Partnership' approach when tendering, which involves close collaboration with three Innovation Partners: Van Oord, Mourik Infra and the Lek ensemble (Heijmans Infra – GMB Civil – de Vries & van de Wiel).

The centuries-old Lekdijk is of great importance to the Netherlands not least because it protects a large part of the Central and Western Netherlands. A flood prevention programme, the High Water Protection Programme (HWBP), has been set up to ensure the reinforcement of 1,300 kilometres of dyke over the next 30 years. The water board's ambition is for dyke strengthening, which provides opportunities for nature conservation, recreation, cultural history and mobility.

We share the Water Board's sustainability goals of reinforcing the Lek dyke in a smart and emission-free manner. By working very closely together right from the plan development phase, the partners aim to demonstrate that it is possible to work sustainably and develop innovations at scale.

HYDRAULIC TRANSPORT OF SOIL on the RijnlandRoute project

De Vries & van de Wiel provided the hydraulic transport of soil that was excavated during the drilling of the tunnel pipes on the RijnlandRoute project. By transporting the ground hydraulically using the electric ground press 'Terram', approximately 35,000 truck movements were saved and emissions were reduced. Another positive impact is that the vacant drilling ground near the project has been given a new purpose and will be used for the redevelopment of the banks of the Vlietland lakes and recreation area.

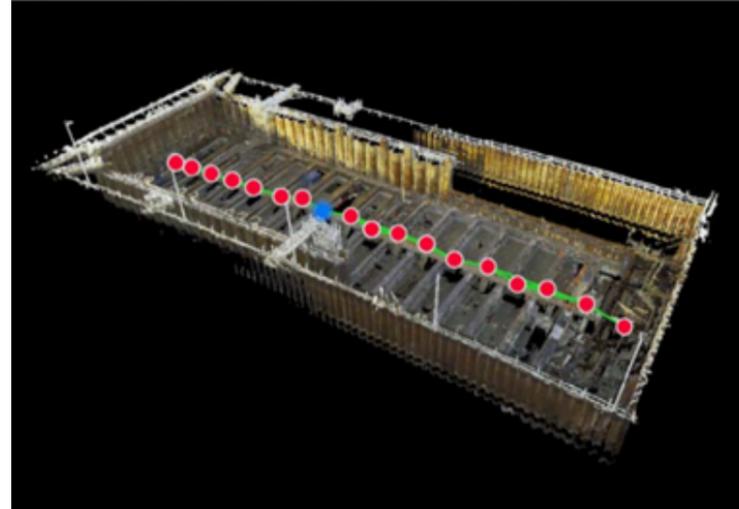
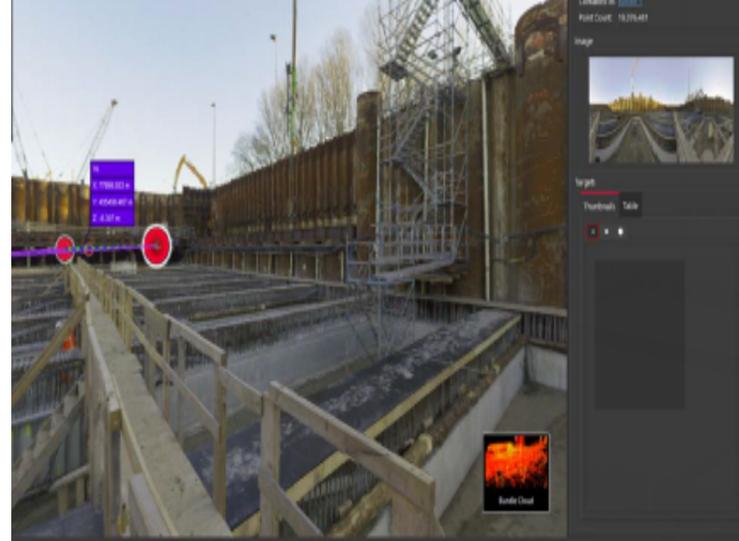
In just over a year, two tunnel pipes of more than 2 kilometres have been drilled. In that time, DEMA has pumped 420,000m³ of soil, with production levels at peak times of about 18,000m³. Despite the tunnel boring machine seeing daylight a month earlier than planned, we were able to keep up with the drill, successfully processing more soil in a shorter time period.



INFRA MARINE

USE OF 3D SOLUTIONS on Blankenburg connection project

The team of the Blankenburg Connection project uses a 3D scanning solution to get an overview of complex construction phases. This solution allows the team to scan local situations and use them to generate 3D models, can help prevent future problems at an earlier, preliminary stage. The team is also able to monitor the progress of the earthworks, measure a construction pit, which is no longer accessible due to being filled with water, and load these models into the excavators to minimize the risk of damage during wet excavation.



SAFETY SUCCESS STORIES

At the 2020 'Safety Moment Day' which was all about working at height, two nominated Infra 'Safety Success Stories' were put in the spotlight:

Working platform at the Jetty Koole Terminal project

To construct the jetty at the Koole Terminal in Rotterdam, a concrete beam needs to be placed on top of the piles and then welded onto the piles. To reach this difficult workplace safely, a platform has been designed. The platform is adjustable so that it can be used for future projects, which might have different conditions. The 3D design will include a VR simulation of (de)mobilisation to mitigate against risks during the hoisting and installation of the platform. Not only does this method introduce a safe workplace, but the frame will also hold the piles in the correct position.

TWIST4LIFT at the Infra Workshop

At the Infra workshop a lot of containers are lifted to transport them to the different projects. Normally the lifting accessories are connected to the upper casting of the container and to reach the upper casting, a stepladder is used. However, to avoid working at height, the team chose the Twist4Lift solution. This easy-to-install system fits in the lower casting of the container, eliminating the need to work at height. As a result, every crane on the project is now equipped with the Twist4Lift system.



**SAFETY
MOMENT DAY**

USE OF NATURAL RESOURCES on Infra Marine projects

One of the 'DEME Environmental Campaigns' was about the use of natural resources throughout the company. The Infra teams are actively working to reduce the amount of non-renewable energy used during its activities, for example:

ETT 5 TANK EXPANSION PROJECT - ROTTERDAM

On the ETT 5 tank expansion project, the on-site team initiated the re-use of debris material from an old concrete foundation as rubble granulate for road pavement foundations and for temporary work roads.

GROOT ONDERHOUD VAARWEGEN 'GOVa' – SOUTHERN OF THE NETHERLANDS

On the GOVa project, the biggest impact on the environment will be the use of natural resources. To lower this impact, the team identified all of the hardwood from the fenders which could be re-used. The outcome is an inspiration for future projects, as most of the hardwood found will be re-used on this project.

REFURBISHMENT OF INLAND SHIPPING MOORING FACILITIES – 'MAASHAVEN' ROTTERDAM

The refurbishment of inland shipping mooring facilities at the Maashaven in Rotterdam has been carried out successfully in a public space. A camera system fully powered by solar energy was installed in cooperation with a security company, to ensure the equipment and tools were secure.



**USE OF NATURAL
RESOURCES**

EMERGENCY RESPONSE at the New Lock Terneuzen project

In case of an emergency, it is of utmost importance that the correct information is available to the emergency services ('Fire Brigade Terneuzen' & 'Rijkswaterstaat Zee & Delta'). Due to the COVID-19 pandemic, the emergency services were not able to carry out a drill on site. Therefore, to ensure that the emergency services had up-to-date facts, the on-site team made an instruction video with the latest information.



USE OF BAMBOO at the GOVa 7C project

For the GOVa 7c project in the Netherlands we are setting up a pilot to use a renewable material in a new fender system, which protects bridge piers and locks. This pilot will use bamboo as an alternative material to traditional tropical hard wood.

Bamboo is one of the fastest growing renewable raw materials in the world. In collaboration with an external party, MOSO International, bamboo will be used in a fender structure. To our knowledge, this is a first-time use in such a function.

MOSO conducted an LCA and carbon footprint study together with Delft University of Technology and INBAR. The report concluded that bamboo products are CO2 negative over their full life cycle. With characteristics equal to, or even better than traditional hardwood, bamboo is the ideal alternative to increasingly scarce tropical hardwood. The following characteristics will continue to be monitored: material thickness, wear resistance, appearance, robustness / hardness, moisture percentage, and cracking.



DOCKINGS AND MAJOR REPAIRS

2020 has been a busy year for our QHSE-TD department. The COVID-19 pandemic brought additional challenges to ensure safety in dockings and repairs. The 'H' of QHSE has certainly gained another dimension this year. Several initiatives have been developed

- DEME Bridging Document: included as a fully-fledged document in contracts concluded with shipyards and contractors.
- Stage Gate Overview Plan: gives a clear overview of the steps to be performed for all major repairs.
- Quality Control System: more easily records the quality of the work performed.

- Incident Investigation Team: works in collaboration with the crew to initiate and complete investigations in the event of remote or on-the-spot incidents.
- Safety by Design: an increase in team size means that, in addition to new-build ships, existing ships will also be adapted to current DEMA safety standards.
- Internal Training: programme on practical scaffolding, in collaboration with VDAB.
- Dedicated QHSE Engineer: start to finish follow up of the daily preparation and supervision of dockings and major repairs for each ship or project.



COVID-19 PREVENTION

During the 15 dockings in 2020 the COVID-19 Mitigation Plan, initially developed in March, was continuously updated and improved.

The plan was required to allow our colleagues to proceed with dockings and major repairs. During these works many people from several different contractors needed to be on board. That's why one of the major elements of the mitigation plan was the creation of different zones on board to avoid, as far as possible, infection and contact between crew and external persons: The red zone is only for our own crew and includes a mess room and accommodation, the green zone is for contractors and visitors who don't stay on board overnight, and the orange zone is the so called conflict zone, which was created to allow small mixed groups of people to work together on required tasks. In this zone the most stringent measures need to be implemented. The conflict zones are dependent on the planned works of the day and are announced in the pre-start meeting.



An aerial photograph showing a dam structure on the left side of a river. The dam is a concrete structure with a spillway. To the right of the dam, there is a large, light-colored, sandy or silty area. In the foreground, there is a paved road and a parking lot with a few cars. The river is dark and flows from the top right towards the bottom right. In the bottom right corner of the river, there are several green and yellow floating barges or rafts, likely used for emergency response or maintenance. The surrounding area is lush with green trees and vegetation.

EMERGENCY
PREPAREDNESS
AND RESPONSE

60

SHIP/SHORE EMERGENCY EXERCISE

In compliance with ISM (International Safety Management) and ISPS (International Ship and Port Facility Security) requirements an annual ship/shore emergency exercise is to be organised. During this exercise communication, coordination, resource availability and response is tested. This year the emergency exercise consisted of three parts.

In June there was a real-life security incident on board trailing suction hopper dredger 'Charlemagne' when two stowaways were found on board while sailing. Extensive communication with local authorities and flag state security authorities was completed to disembark both people.

Secondly, in September an ISPS exercise was initiated with the Luxembourg flag, involving all Luxembourg flagged dredging vessels. The most important issue was to test the security communication between the Luxembourg Maritime Administration and the Company Security Officer.

The third and last part of the annual exercise was an ISM exercise with trailing suction hopper 'Victor Horta' in December in which a grounding incident was simulated. Several departments were involved and communication lines with internal and external parties were tested.

NEW EMERGENCY RESPONSE CARD AND PLATFORM FOR DEME OFFSHORE

All emergency response team members were asked to participate in our internal 'Emergency Response Training' held in September.

While reviewing the Deme Offshore Emergency Response Plan, we recognised that effective communication is by far the most important challenge as we are now, more than ever, spread across the world. Therefore, a new focal point was to avoid multiple phone calls, chat boxes and WhatsApp messages, all of which cost us valuable time.

This is how the new 'Emergency Response Card' came to life, including a QR code that immediately redirects the emergency response team members to the correct closed emergency response group. In addition, a pre-set up cyber meeting environment with all vessel specific data and contact details is continuously available via laptop or mobile.

A real-life unannounced Emergency Drill with an external organisation will be organised soon. This will help us all to get acquainted with the new set-up and train members on how to provide adequate and effective Emergency Response when needed.

INTERVENTION TEAM HEAD OFFICE

Diversity in the Deme intervention team is not only due to an almost 50/50 gender distribution, but also a result of the 21 volunteers coming from several Deme and activity line departments, with 15 members based in the main office building, and 6 new members working across the Head Office Campus.

The expertise of our team is developed through training exercises which are adapted to the hazards and risks in our organisation. An evacuation exercise held in March 2020 at the Head Office Campus resulted in follow-up actions to improve the emergency response in case of fire. In December, two refresher courses were organised to comply with the changing 'code of good practice' with respect to first-aid treatment.

In 2020, only 16 incidents were registered in which the team intervened to treat burns and illnesses. Three of these were more urgent and required the support of the external ambulance service. Interventions on the premises of the Head Office Campus were for spill, fire detection alarms and one lift evacuation.



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