

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

2021



2021

QUALITY, HEALTH,
SAFETY & ENVIRONMENT
PERFORMANCE REPORT

TABLE OF CONTENTS

05

INTRODUCTION

Message from the CEO	6
Content in brief	7

35

INITIATIVES

Safety by Design Guide	36
QHSE 4 Specialists	37
DEME Safe Logistics	38
Scaffolding Training	39
Essential QHSE Training	40
COVID-19 Measures	40
Intervention Team Head Office	41

09

POLICIES & ACTIONS

Mission, vision and values	10
Policies	11
Action plans	12

43

PROJECTS IN THE SPOTLIGHT

Dredging	44
Offshore	54
Environmental	60
Infra	62
Dockings and major repairs	66

15

QHSE PERFORMANCE

Key performance indicators	16
Incident Management	17
CHILD	18
Green Initiatives	20
Energy Management	21
Structure	22
Process Owners	23
Certificates	24
Navigator & Apprise	25

27

CAMPAIGNS

New Year's Resolution	28
Safety Basics First - Toolbox	29
Safety Stand Down	30
In the line of fire	30
Mental Health Support and Energy@DEME	32



INTRODUCTION

10

MESSAGE FROM THE CEO



WE LEARN FROM OUR HIPO'S AND SUCCESSES

With this 4th edition of the QHSE (Quality, Health, Safety & Environment) Performance Report we are keeping up with the tradition of listing our QHSE performances and successes, at the level of the DEME Group and its activity lines.

The past year was key for our QHSE reporting. At the beginning of 2021, we launched our in-house and state-of-the-art Apprise tool. This tool does what its name says 'to tell someone about something'. We introduced this interactive, operational and highly flexible reporting tool on every project, vessel and site. The result was exactly what we hoped for: our colleagues really like to work with it and it has been rolled out in a very smooth way.

With this powerful tool we are able to follow up on our QHSE Key Performance Indicators and manage the actions taken at every level in the company. This resulted in a better score than ever before, thanks to the effort on our projects, vessels, sites, and offices.

CHILD, our corporate programme focussing on behaviour and safety culture has been updated and stands for caring and sharing. We care for each other, and we share our knowledge. At DEME we want to make the difference at the level of employees and supervisors. With the seven safety DNA Grooves we aim to make our safety culture programme very tangible.

The Green Initiatives concept we launched in 2018, has matured in the meantime. The Green Initiatives are now playing a major role in all kinds of different initiatives regarding DEME's strive for sustainability.

In the past year, DEME was certified according to the fifth and highest level of the CO2 performance ladder for Belgium and the Netherlands.

DEME obtained the ISO 50001 certificate for its systematic energy management within the whole Group. This certification structured our activities and methodology and has served its purpose in DEME's roadmap to sustainability.

The 'in the line of fire' campaign gives an appropriate reaction to things that go wrong. At the same time we cherish things that go well, by sharing and replicating information; for example, the Green Initiatives and the Safety Success Stories.

In 2021, DEME did once again put a lot of effort into managing COVID-19. This pandemic has taught us once more the importance of our health and well-being. I sincerely hope that it will no longer have such an impact on our organisation and on every individual.

We believe that our dynamism and resilience enable us to conquer a major crisis. Thanks to everyone's rigour, inventiveness and care we managed to control the COVID pandemic. We continuously improve our individual and collective QHSE performance.

CONTENT IN BRIEF

DEME constantly adapts its mission, vision and values statement to a fast-evolving world. These values offer **guidance** to our DEME employees as they navigate the large range of Quality, Health, Safety and Environment (QHSE) aspects linked to the activities we execute.

The major **building** blocks in our QHSE Performance System are the Key Performance Indicators, the Energy and Greenhouse Gas Management System and the Navigator Document Management System.

We want to focus on our very own **internally** developed Apprise (mobile QHSE tool), our CHILD campaigns and our Incident Management training courses.

The Safety By Design Guide, the yearly 'QHSE 4 Specialists' seminar, the DEME Safe Logistics Manual and the scaffolding training, are just some of our QHSE **realisations**.

In the Projects in The Spotlights, we focus on some of **our best** Safety Success Stories and Green Initiatives.



09 POLICIES AND ACTIONS

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.

DEME'S CORE VALUES

We have established a set of standards applicable to our business units and subsidiaries worldwide. These core values demonstrate our commitment to consistently deliver excellence to our customers and value to our company. We also expect suppliers, subcontractors and partners to adhere to these standards. At DEME, we define our company culture using the acronym STRIVE.

Safety - The personal safety and health of employees and stakeholders is our greatest responsibility. Everyone has the right to work in a safe and risk-free environment 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 develop trailblazing solutions to address the needs and challenges of our customers.

Respect & integrity - Our employees are trained and motivated to meet the challenges ahead. Individuality and diversity are 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 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- and sustainability-driven decisions in order to ensure long-term growth for the benefit of employees, customers and shareholders. This includes 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.



SAFETY



TECHNICAL LEADERSHIP



RESPECT & INTEGRITY



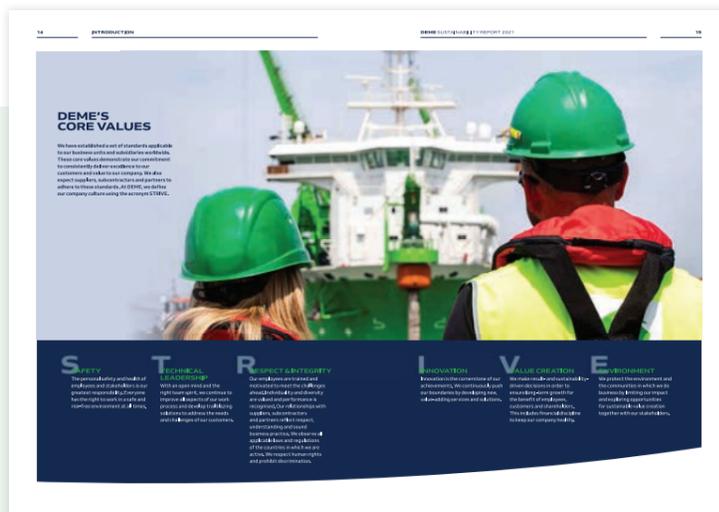
INNOVATION



VALUE CREATION



ENVIRONMENT



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. DEME has a QHSE policy as well as Energy and Green House Gas Emissions policy.

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

Our four activity lines – Dredging, Offshore, Environmental and Infra - have a more specific QHSE policy, in line with the sector, activities and industry standards.

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



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. The Year Action Plans are filled with dozens of SMART actions, including responsibilities and priorities. All these plans are updated at least once a year and evaluated during the management reviews of DEME and the activity lines.



2019-2023 QHSE-S 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

2021-2022 QHSE-S YEAR ACTION PLAN
For Quality, Health, Safety, Environment and Security
Activity Line: Onshoring

- Quality - Do it right the first time**
 - 1.1 Process owners in the spotlight
 - 1.2 Audit readiness
- Health - A sound mind in a sound body**
 - 2.1 Let's reconnect*
 - 2.2 Know your hazardous substances
- Safety - Safety from the start is your best friend**
 - 3.1 Keep out of the line of fire
 - 3.2 Let's learn from our HPIs
 - 3.3 Safety basics at work
 - 3.4 Small workboats, big risks
 - 3.5 Review of loss prevention progress
 - 3.6 Essential safety training for operational personnel
- Environment - A better environment starts with yourself**
 - 4.1 Share Green initiatives*
 - 4.2 Promote a circular economy*
- Security - Sec_urity is not complete without U**
 - 5.1 Align DEME security standards for all offices
 - 5.2 Increase cyber security awareness

Eric Tancor Managing Director DEME Onshoring | *Philip Hermans* Managing Director DEME Onshoring

ALD-QHSES-YAP
REV. 2021-02-25

2021-2022 QHSE-S YEAR ACTION PLAN
For Quality, Health, Safety, Environment and Security
Activity Line: Offshore

- Quality - Do it right the first time**
 - 1.1 Process owners in the spotlight
 - 1.2 ITP Awareness Campaign
 - 1.3 OP simulator training
 - 1.4 Visual Assessment Framework
 - 1.5 Improve our supply chain performance
- Health - A sound mind in a sound body**
 - 2.1 Let's reconnect*
 - 2.2 Know your hazardous substances
- Safety - Safety from the start is your best friend**
 - 3.1 Keep out of the line of fire
 - 3.2 Let's learn from our HPIs
 - 3.3 Safety basics at work
 - 3.4 Small workboats, big risks
 - 3.5 Share project campaigns
 - 3.6 Bring toolboxes to the next level
- Environment - A better environment starts with yourself**
 - 4.1 Share Green initiatives*
 - 4.2 Promote a circular economy*
 - 4.3 Environmental incidents are more than spills
 - 4.4 Digitalization of logbooks
- Security - Sec_urity is not complete without U**
 - 5.1 Align DEME security standards for all offices
 - 5.2 Increase cyber security awareness

Hugo Bouvy Managing Director DEME Offshore

ALO-QHSES-YAP
REV. 2021-02-25

2021-2022 QHSE-S YEAR ACTION PLAN
For Quality, Health, Safety, Environment and Security
Activity Line: Infra

- Quality - Do it right the first time**
 - 1.1 Process owners in the spotlight
 - 1.2 Non-compliance management (product, project related)
 - 1.3 Implementation of new Project Management System
 - 1.4 Safety system engineering
- Health - A sound mind in a sound body**
 - 2.1 Let's reconnect*
 - 2.2 Know your hazardous substances
- Safety - Safety from the start is your best friend**
 - 3.1 Keep out of the line of fire
 - 3.2 Let's learn from our HPIs
 - 3.3 Safety basics at work
 - 3.4 Small workboats, big risks
 - 3.5 Working at height - Ladders
- Environment - A better environment starts with yourself**
 - 4.1 Share Green initiatives*
 - 4.2 Promote a circular economy*
 - 4.3 Equipment management (CO₂ reduction)
 - 4.4 Establishing inventory of hazardous products used within AU (office and projects)
- Security - Sec_urity is not complete without U**
 - 5.1 Align DEME security standards for all offices
 - 5.2 Increase cyber security awareness

Eric Tancor Managing Director DEME Infra | *Romy Steens* General Manager DEME Infra

ALI-QHSES-YAP
REV. 2021-09-31

2021-2022 QHSE-S YEAR ACTION PLAN
For Quality, Health, Safety, Environment and Security
Activity Line: Environmental

- Quality - Do it right the first time**
 - 1.1 Process owners in the spotlight
 - 1.2 Prohibit OHS integration process
 - 1.3 Digitalize management of Documented Information
- Health - A sound mind in a sound body**
 - 2.1 Let's reconnect*
 - 2.2 Know your hazardous substances
 - 2.3 Raising awareness of risks when working with contaminated soil
- Safety - Safety from the start is your best friend**
 - 3.1 Keep out of the line of fire
 - 3.2 Let's learn from our HPIs
 - 3.3 Safety basics at work
 - 3.4 Small workboats, big risks
 - 3.5 Sharing experiences, improving working methods
 - 3.6 Focus on behavioural aspect during observations
- Environment - A better environment starts with yourself**
 - 4.1 Share Green initiatives*
 - 4.2 Promote a circular economy*
 - 4.3 CO₂ performance leader gap analysis at project level
- Security - Sec_urity is not complete without U**
 - 5.1 Align DEME security standards for all offices
 - 5.2 Increase cyber security awareness

Dirk Poppe Managing Director DEME Environmental

ALE-QHSES-YAP
REV. 2021-02-25



15 QHSE PERFORMANCE

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 investigation criteria) 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. This means, 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 group. Based on the findings of the analysis, we set up specific action plans and campaigns.

Throughout the year, the DEME Management Team organises Safety Leadership Sessions. Through these sessions, we increase management involvement, improve the quality of 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. Each responsible manager is assigned an incident, and shares with his colleagues:

What happened

What went wrong (= results of the investigation and root cause analysis)

Which actions have been taken

In 2021 several initiatives and campaigns were developed based on this trend analysis:

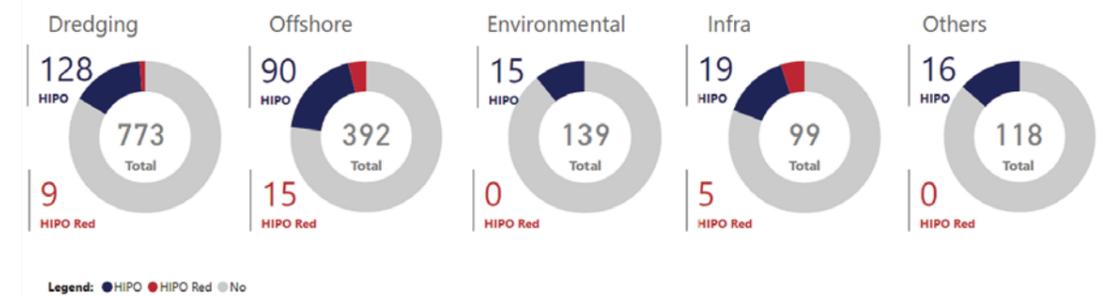
- » Safety Stand Down
- » Safety Week and Safety Moment Day "In the Line of Fire"
- » Let's learn from our HIPO's
- » Safety Basics at Work
- » Small workboats, big risks
- » Review of bow connection process
- » DP simulator training
- » Raising awareness of risks when working with contaminated soil

QHSE-S KPI Performance Dashboard

01 Jan 2021 - 31 Dec 2021



Activity lines HIPO overview for Q1 – Q4 2021



All tables below are displayed for the entire organization or for the selected/filtered organization level:

HIPO	High Risk Tasks	HIPO	Secondary factor	HIPO	Incident Type	HIPO	Activity/Technique
48	Maritime Operations	45	In the line of fire/ Caught Betw	76	Incident with damage: Property	55	Trailing suction hopper dredg
42	Lifting Operations	38	Equipment failure	64	Near-Miss	41	Other activity/task
32	Other activity/task	26	Dropped objects	40	Dangerous Situation	39	HRT specific
20	Working at height	25	Work preparation (RA, PTW, LI	27	Incident with damage: Lost Time	14	Reclamation sites & pipelines
20	Working with dry earth moving	20	(Near) Collision	18	Incident with damage: Medical 1	9	Heavy lifting offshore
17	Working in confined spaces	11	(potential) Fire	11	Incident with damage: Restrict	6	Working with small workboat
14	Hot Works	11	Fall from height	6	Incident with damage: First Aid	6	Cutter suction dredging
13	Transport Operations	8	(potential) Grounding	5	Incident with damage: Environm	5	Chartering of Jack-Up platfor
11	Activity line specific	8	QHSE regulation/requirement	5	Non-work related incident: Illeg	5	Fluvial & Marine aggregate t
5	Pressurized Works	6	Weather conditions	5	_N/A	5	Maritime operations
6	Working with UXO's	5	Wear & Tear	5	Incident with damage: Producti	5	Working with propelled barg
6	Use of Machinery & Equipment	5	Access & egress to work area	5	Incident with damage: Fatality	5	Backhoe and grab dredging

CHILD

CHILD is our corporate program focussing on behaviour and safety culture.

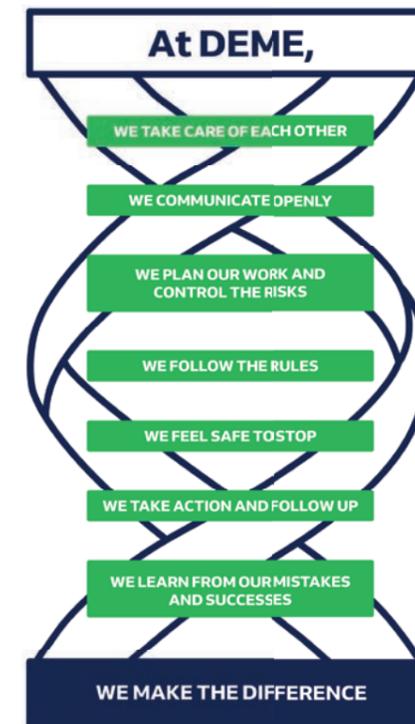
Our vision has been rejuvenated and is captured by 2 key words which are embedded in the safety DNA:

- » caring
- » sharing

Our **care** for each other is without question. Every action we take – or omit – can affect our co-workers. Strengthening this awareness is one of our focus points.



- » We CARE for each other.
- » We SHARE our knowledge.
- » We live up to our SAFETY DNA, every day.



OUR SAFETY DNA

7 grooves (groove: established routine or habit) compose our **Safety DNA**. By living up to this DNA, each and every day, everyone can make a difference.

Each groove has been further clarified to be as tangible as possible for both employees and supervisors. It's our backbone, steering us through the execution of our jobs

CHILD Booster pilots run in 2021:



We support and implement our Safety DNA by **sharing** knowledge on 3 levels:

Corporate – our annual campaigns focus on our HIPO trends during our Safety Week and on our colleagues' safety initiatives and good practices (Safety Success Stories) which inspire others to replicate them during our Safety Moment Day. Check out the chapter "Campaigns" for more details.



Team – we enhance the dynamics of our teams and train them at their work location according to their specific needs: communication, addressing, routine, risk perception, tensions...



Individual – throughout the training journey of our team leaders, we safeguard the development of relevant soft skills.



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." The target is still one Green Initiative per active project (>3 months in operation) a year.

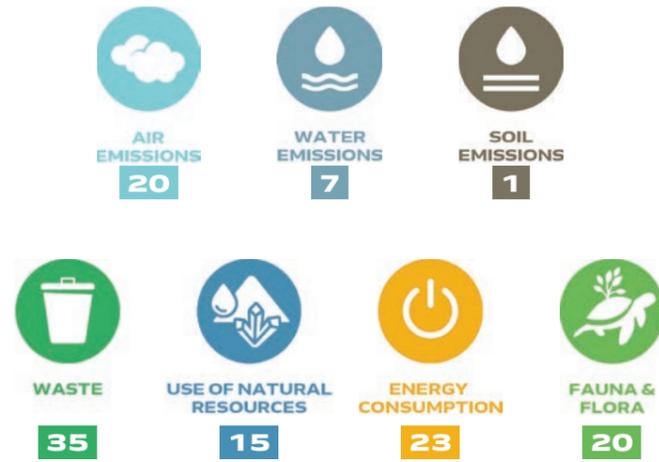
Last year, we introduced our Green Initiative Power BI Dashboard. Monitoring shows that we met our target this year as well. We received very interesting and innovative Green Initiatives. We now see that projects are getting more creative and that the quality of our Green Initiatives is getting better and better. We have noticed that more initiatives were submitted related to air emissions, energy consumption and waste. This shows an overall higher interest in the global warming, energy consumption and waste that is produced on projects worldwide.

"Share Green Initiatives" was also a topic in our Year Action Plan.

This year we started a Green Initiative communication effort to focus more on the quality and the impact of our registered Green Initiatives. Every month, an Activity Line shares their most interesting initiative within the whole group. You can check them out in the chapter "Projects in the Spotlight". The goal is to spread environmental best practices throughout the company and raise awareness. The best initiatives with the highest impact and lowest effort will be put in the spotlight.

The Green Initiatives with the highest score will be presented during our management reviews.

Next to our Green Initiative communication, we started to link Green Initiatives with our Block 4 activities. Every time an interesting Green Initiative is submitted and linked with a Block 4 activity, this Green Initiative can be discussed with the owner of the Block 4 activity and, in the future, can be implemented in all situations linked with the specific Block 4 activity.

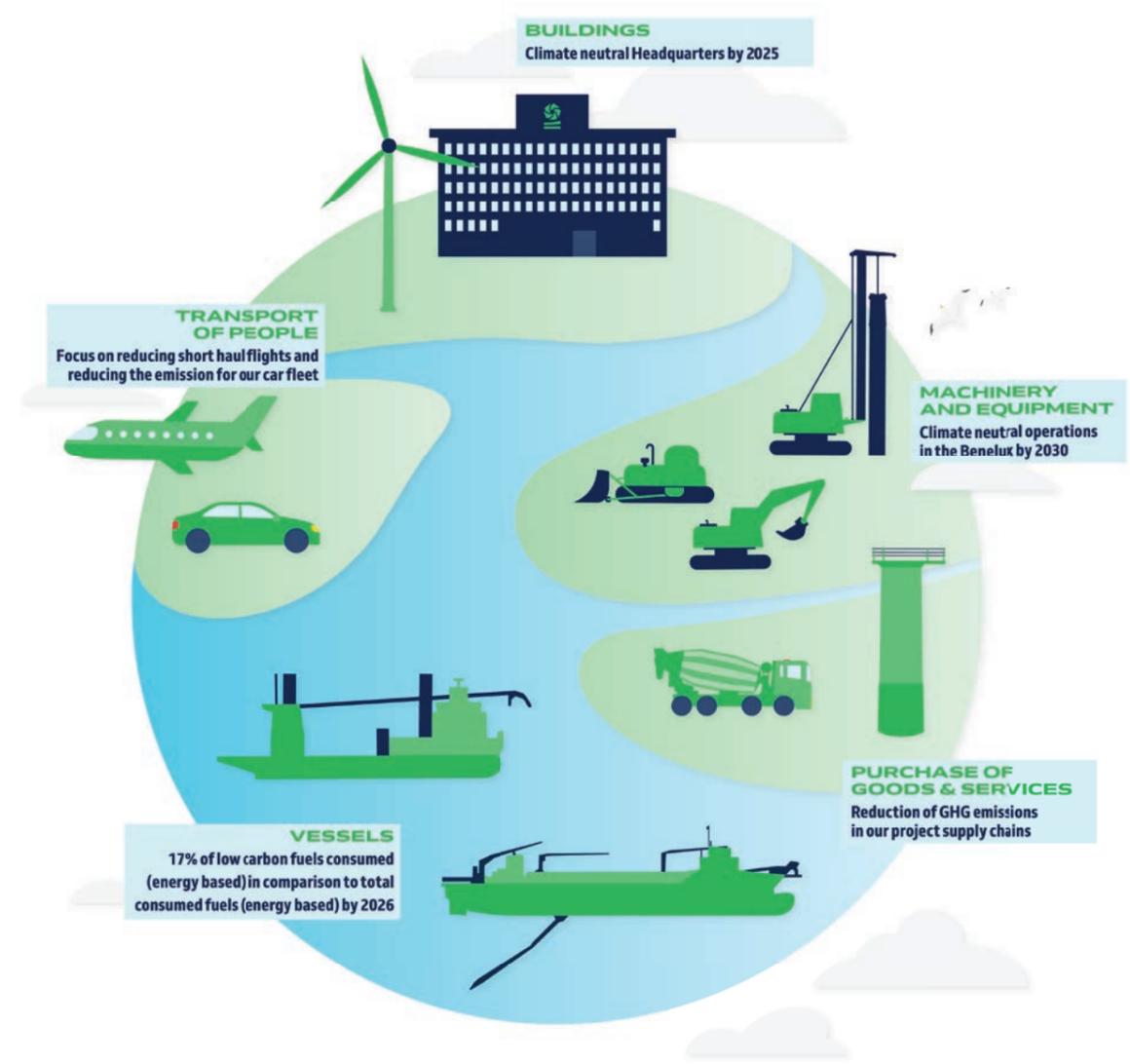


ENERGY & GREENHOUSE GAS MANAGEMENT

DEME is still certified according to the fifth and highest level of the CO₂ performance ladder following V3.1. The scope is only applicable to Belgium and the Netherlands. The reporting of greenhouse gases follows the ISO14064 standard and GHG protocol. The emission inventory for BE-NL is externally verified every 3 years.

The yearly renewal audit took place in 2021 with zero non-conformities by our CI Bureau Veritas.

The action plan for the CO₂ performance ladder was updated to comply with the requirements of the yearly renewal audit and was also integrated in the energy & GHG action plan (overall plan for energy & GHG emissions based on ISO 50001 structure). For the CO₂ performance ladder, it is required that energy data (translated in CO₂ emissions) is reported in our system. Energy consumption like fuel type volumes can be multiplied with a (CO₂-eq) conversion factor which results in an amount of CO₂ or GHG emissions.



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 needed information.

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.



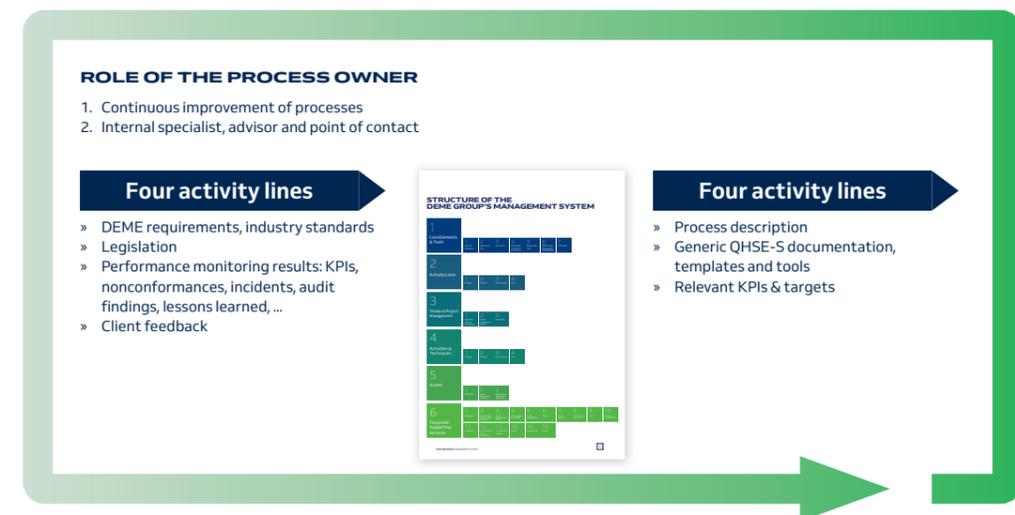
PROCESS OWNERS

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 to 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
- » **ISO 50001** - Management System for improving energy consumption and efficiency

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

- » **Safety Culture Ladder (SCL)**: assessment method for measuring safety awareness and behaviour to enhance the Safety Culture
- » **CO₂ Performance Ladder V3.1**: Management System to reduce CO₂ emissions
- » **SCC** or SCCP (VCA**)**: SHE Checklist for Contractors
- » **Safety Schemes in Procurement (SSIP)** e.g. Achilles/ FPAL, Accredia RT05...



Working together to cut CO₂



NAVIGATOR

The Navigator is a platform used for communication, knowledge and information sharing. Modelled on the same structure as the DEME 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 building blocks, 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.

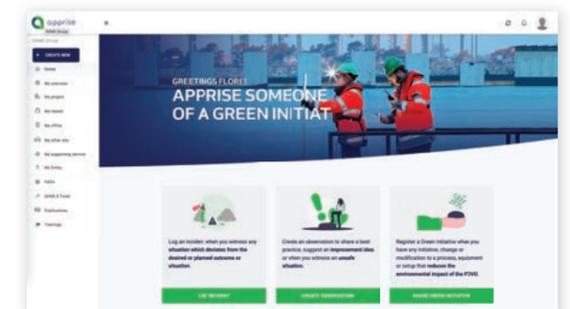


APPRISE

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.





CAMPAIN

1
2

NEW YEAR'S RESOLUTION

In the beginning of January, the New Year's Resolution campaign was re-launched.

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
TOOLBOX

**QHSE-S
NEW YEAR'S
RESOLUTION**

Inspect and check your life jacket and helmet
Check for damages before every use.
Check the expiration date of your helmet.
Do a thorough check of your life jacket each year.

Close the front buckle of your life jacket
and fit the adjustable strap to your size

Wear the crotch strap
when needed and prevent the life jacket from lifting up

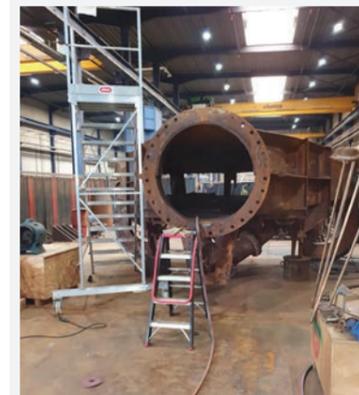
All you need to know about life jackets and helmets

go to Apprise:
qhse.link/newyear

DEME-QHSE-POSTER-048

SAFETY BASICS FIRST - TOOLBOX

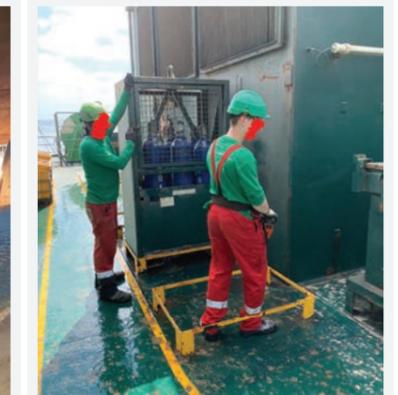
Following four major incidents with injury, a special Toolbox "Safety Basics First" was shared throughout the DEME Group. "Safety Basics First" stresses the importance of two essential QHSE tools: Take Five, our Last Minute Risk Assessment, and License To Stop, our Stop Work Authority. Our Activity Line Operations Managers shared with everyone what happened, what we learned and which actions our colleagues need to take to avoid similar incidents on their site. Beforehand all people managers were invited by our operational managers to plan this Toolbox with their teams.



INC_2021_00925



INC_2021_00925



INC_2021_00956



INC_2021_00969



SAFETY STAND DOWN

This year CHILD kicked off with Safety Stand Down in April. The campaign focussed on both the experiences of employees who were injured and their colleagues who witnessed the incidents.

164 projects, offices, vessels and other sites worldwide took a moment to reflect on their own situation. About 5 000 people participated in the Toolbox. Additionally, more than 500 team leaders and captains attended two live briefing events in the preparation phase.

The two major focal points of the Safety Stand Down were the use of Take Five and the use of our License to Stop.

IN THE LINE OF FIRE

Based on the HIPO trend analysis 'in the line of fire' incidents were published during our yearly **Safety Week** in June.

The campaign was opened with an interesting panel talk by the operations managers from our four activity lines sharing their opinions and insights on safety.

Incidents with the secondary factor of 'in the line of fire' relating to

- » lifting operations
- » pressurized works
- » maritime operations
- » use of hand tools
- » transport operations

were published, and all DEME teams were invited to discuss. The variety in these tasks reflects the diversity of our activities and working environments. This year, it was stressed that each team has to shape their own Safety Week by using recognizable and relevant campaign material. Extra Toolbox material was prepared to start to-the-point conversations relating to 'in the line of fire' situations.

165 projects, offices, vessels and other sites worldwide participated in this year's Safety Week and shared their ideas.

To focus on safety in a positive way, towards the end of the Safety Week Campaign, a second edition of Safety Success Stories was kicked-off. All projects, offices, vessels and other sites using the motto "Sharing is Caring" were invited to share their Safety Success Story with the rest of the company.

Also this year, we were delighted that so many teams participated in the campaign. With more than 220 of our projects, offices, vessels and other sites participating, we topped the results from the previous year. These inspirational stories showed that brilliant ideas don't have to cost much.

The best stories were highlighted during the **Safety Moment Day** in December when 10 stories were picked and presented as short movies enabling people to explain their own story relating to:

- » grating covers manholes
- » blind spot campaign
- » traffic management
- » lifting – push/pull tool
- » mooring tails
- » specific training
- » engagement with third parties
- » elimination of high-risk tasks

During the Safety Moment Day event emphasis was put on:

- » Do these stories inspire you?
- » Do you face similar situations on your site?
- » Can you copy the solution?

During registration, each project, office, vessel and other site had to choose their favorite story.



Most copied Safety Success Story about covering manholes



'Amazone'



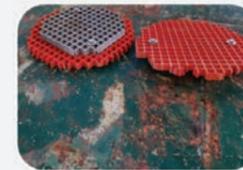
'Antigoon'



'Congo River'



'Marieke'



'Mellina'



'Reynaert'



'Sea Challenger'



'Rollingstone'

Panel Conversation



Safety Stand Down

We involved the shipyard of our JV partner CSBC where the Green Jade is being built.



Safety Week

The Abu Qir (Phase 2) project team organised large size banners to put the campaign extra in the spotlight.



MENTAL HEALTH SUPPORT AND ENERGY@DEME

OUR PEOPLE

Despite the continuing disruption brought about by the pandemic in 2021, DEME had the benefit of many lessons learnt from the early days of the crisis. This meant the company was far better equipped and prepared to tackle the challenges. Our COVID Taskforce led the effort and strict mitigation measures are in place worldwide. But ultimately, even in this context, the commitment and drive of DEME's employees has shone throughout.

24/7 DEDICATION

The resilience and 24/7 dedication of DEME's employees during the pandemic is impressive – and we know that the last two years have been gruelling and that this commitment, flexibility and perseverance cannot be taken for granted. DEME's crews and project teams have sometimes faced weeks of mandatory quarantine, many times a year, which is both mentally and physically challenging. But they have kept going, showing true grit and determination.

The Crew Planning team has also made a tremendous effort to carry out crew changes successfully, although they have been faced with a spider's web of COVID mitigation measures, travel restrictions and visa regulations. This immense, collective effort has enabled all of our operations, throughout the globe, to continue, and this includes some of the largest, most complex projects in DEME's history.

FUTURE-PROOF IT SYSTEM

In May the new HR IT system "Workday" went live, involving an employee self-service approach. All aspects related to HR can now be digitally managed by our employees, with one single source of data, making career development, reporting, and planning much easier.

The new system also improves the recruitment process and contracting procedures due to digital signing functionalities that have been introduced. Everyone can easily get access to the information they need and there is one single source of information in place for the whole DEME population.

TRAINING & DEVELOPMENT

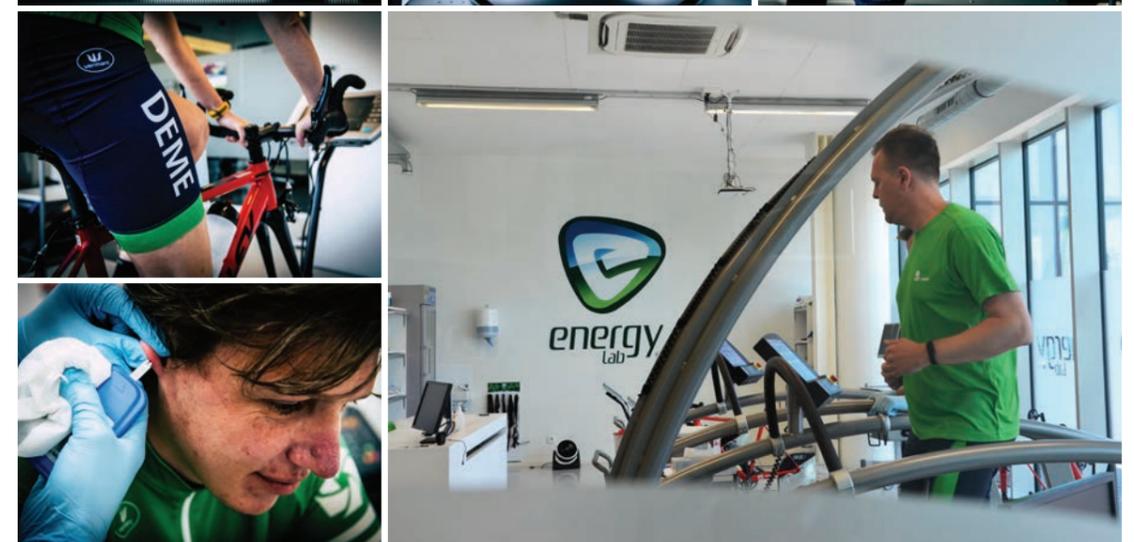
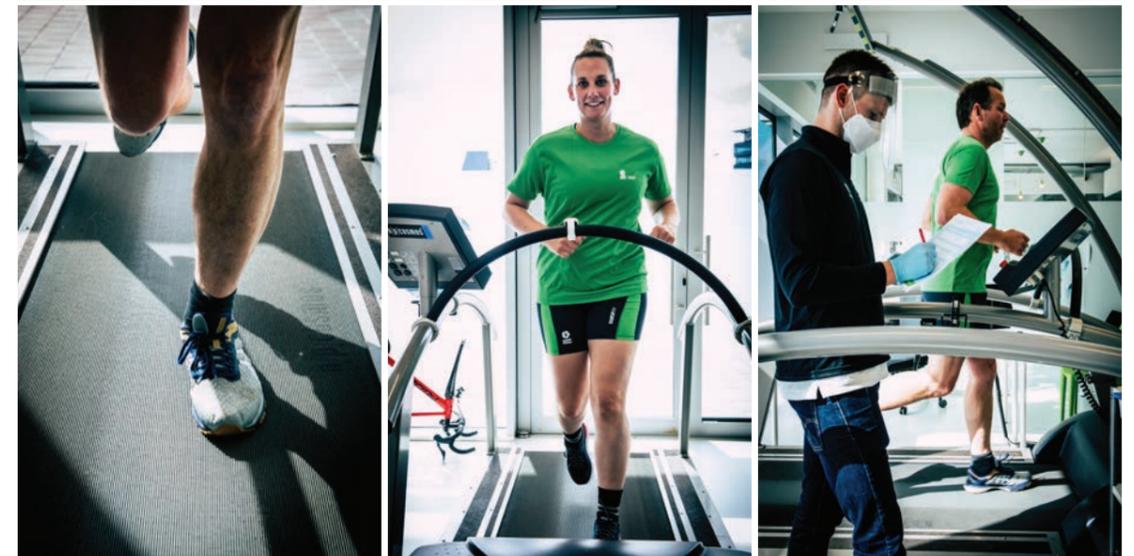
Rapidly adapting to the new 'norm' in relation to social distancing, DEME still offers its extensive range of in-house, tailor-made training and management courses. However, there is now a digital hybrid version of many of them, which combines traditional 'classroom' teaching with remote learning. All of the courses have been updated to include COVID-specific protocols too.

RECRUITMENT

DEME's digital capabilities are also highlighted when it comes to recruitment. Despite the challenges of having to hire people remotely, the recruitment team's innovative approach has enabled the company to attract new talent and people of the right calibre. Onboarding has sometimes been forced to go online, but the 'DEME Welcoming Day' and 'Basics for Starters' courses have been adapted. However, given the company's growth and the many projects coming along, the company is still looking to recruit more people to join the DEME team.

ENERGY@DEME

For the 18th year in a row, the Energy@DEME initiative continued, offering a varied sports and wellbeing programme to employees worldwide. The programme keeps on attracting more and more employees to participate in sports events and virtual sports challenges. We also relaunched the DEME Heroes programme. The Heroes took the challenge to a life changing journey and received medical and nutritional coaching throughout the year. They all successfully completed the Antwerp 10 Miles run or one of the Flanders Classics cycling races.





3 INITIATIVE S

SAFETY BY DESIGN GUIDE

Four years after introduction, we can conclude that the Safety by Design (SBD) documents are becoming more and more common.

Step by step, it is becoming more widely known and also questions are coming in from other activity lines within DEME: questions from projects and management who have understood that well-designed tools and installations substantially promote safety. So, despite the long road ahead, things are moving in the right direction.

We would like to take this opportunity to emphasize once again that it is important to inform shipyards and manufacturers about the DEME SBD requirements during the quotation process, not when ordering. In this way, annoying discussions later on can be avoided.

Every year the Safety by Design guide is expanded with new topics. Existing topics are also updated, improved, or adapted according to the latest insights and lessons learned. To make sure you are always up to date, remember to download the latest version of the SBD documents from the DEME server.

Did you know that there is also a 'full version' of the Safety by Design Guide? It goes into more detail on the various topics and provides background information on why certain requirements are set. However, it should be noted that, unlike the 'pocket version', this version is for DEME internal use only.

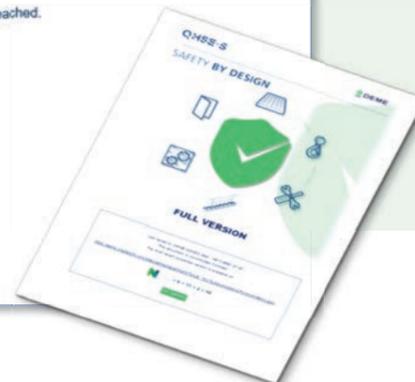
8.2. Flooring

- ❑ The design of the supporting structure of floor elements must be such that even when a floor element is **accidentally loose, it cannot shift and fall off its support.**
- ❑ The design of the supporting structure of removable floor elements must be such that when one or more floor elements have been removed, **the remaining floor elements cannot shift and fall from their support.**

DEME | CREATING LAND FOR THE FUTURE

8. Platforms, flooring and gratings: Related standards

- ❑ Consulted Regulations and standards
 - ISO EN 12.100: Safety of machinery – General principles for design
 - ISO EN 14.122: Safety of machinery – Permanent means of access
 - ISO EN 14.120: Safety of machinery - Guards
 - ISO EN 13.857: Safety of machinery – Safety distances to prevent hazard zones to be reached.
 - ISO EN 15.534: Ergonomic design for the safety of machinery
 - Machine directive 2006/EC (2017 ...)
 - EU guide to directive 2006/42/EC
 - BV guidance note NI 537 DT R00 E
 - SOLAS-Chapter II-2
 - ABS Guide for Ergonomic Notations 2015
 - DNV-OS-A101: Safety principles and arrangements
 - DNV-RU-SHIP Pt.6 Ch.8: Living and working conditions



QHSE 4 SPECIALISTS

Every year QHSE organises an in-company seminar for the four activity lines called QHSE 4 Specialists. Due to the COVID-19 situation, this year's fifth edition was a digital session.

Over 25 colleagues from the different activity lines shared their highlights of the past year, thoughts and views on different topics:

- » Environment & Energy
- » System & Tools
- » Marine Operations
- » Technical Safety Engineering
- » CHILD & QHSE Communication

Our QHSE Activity Line Managers and DEME QHSE-S Manager reflected on the past year, the changes in context and organisation, and the challenges that lie ahead. About 100 colleagues joined our event.



DEME SAFE LOGISTICS

Too often we experience minor incidents with items not secured or lashed properly in containers or on trucks. We see containers arriving with the load not evenly distributed. In all activity lines, we work with pipes of all kinds of weights and sizes. Their circular shape imposes an inherent risk of harm due to the release of kinetic energy when uncontrolled rolling occurs. Safe handling, transportation and storage of these pipes is primordial.

This is why, next to the Cargo Securing Manual that has been launched last year, two more manuals were created in collaboration with operators in the field and with transportation experts in order to mitigate these risks: the Safe Storage Manual and the Safe (Un)Loading Manual.

The Equipment Operator receives guidance on selecting the right equipment for each job item to be loaded. Tools such as drum clamps, wheel loader bucket clamps and the pipe loading tool are proposed for use in specific circumstances, together with a set of golden rules to follow.

The Laydown Supervisor is provided guidance in order to store assets in the correct way, to assess which situations are safe or unsafe and to provide the managers of the laydowns with a framework and guidelines for the operational management of the laydown. Stacking height, conservation and specific considerations for the storage of pipes and cutter teeth bins are considered in the manuals.

These manuals will make it easier to help, plan and organise in advance and will result in safer and more efficient operations.



SCAFFOLDING TRAINING

During maintenance and repair works on vessels, tasks at height must be carried out, often in hard-to-reach places. In the past, ladders were often used to perform these tasks, although 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. VDAB (the public employment service of Flanders) is the perfect partner to implement the practical part of the course where an experienced instructor teaches the tricks of the trade.

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

In addition to a presentation, the course also includes a handy pocket-sized checklist card and an inspection card (scafftag) with accompanying card holder.



ESSENTIAL QHSE TRAINING

To make sure that all our operational staff have the essential QHSE skills before going to a site, we organise the Welcoming Week:

In 1 week you can follow all our essential QHSE trainings.



These are:

- » Basic safety in construction training
- » Risk Management
- » Incident Investigation

DEME continued with the roll out of these trainings in 2021. In 2021 dedicated sessions were organised on our sites to reach as much of our operational colleagues as possible, even in COVID circumstances.



COVID-19 MEASURES

Over the past 1.5 years, the COVID pandemic has demanded a lot, both from each employee and from the company as a whole. Numerous measures and initiatives were taken to help fight the pandemic, while trying to keep operations as active as possible. This resulted in many adjustments and therefore demanded a lot from our people. Crew changes were sometimes difficult, with many PCR tests being conducted and everyone had to be very flexible.

The changing advice and regulations in this regard had to be closely followed at all times. This resulted, for example, in a great deal of telework and strict requirements for travel were imposed. DEME also made self-tests available and followed developments closely. Numerous memos, notes, mitigation plans and leaflets were also produced in

this context. At the start of the pandemic a work group was also set up under the name 'COVID-19 Support Team' (COVID19support@deme-group.com). The mail address was communicated throughout the company and is still widely used. It's a channel where employees can go with a wide variety of questions. Furthermore, within this team a weekly meeting is held with, among others, management, FMD, the quarantine crew change task force, HR, Communications, QHSE, ... to discuss the developments. Initially, this meeting took place daily, after which it was reduced to twice and then once a week.

COVID materials (such as hand gels, self-tests, mouth masks,...) can also be ordered through this channel to support the POVOs as best as possible.



37 leaflets



8 319 mails



13 050 pieces



400 litres



60 000 pieces

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 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 November 2021, two refresher courses were organised to comply with the changing 'code of good practice' with respect to First-Aid treatment.

In the course of 2021 the team showed full commitment during some less serious incidents where the support of external services wasn't required.





43 PROJECTS IN THE SPOTLIGHT

DREDGING

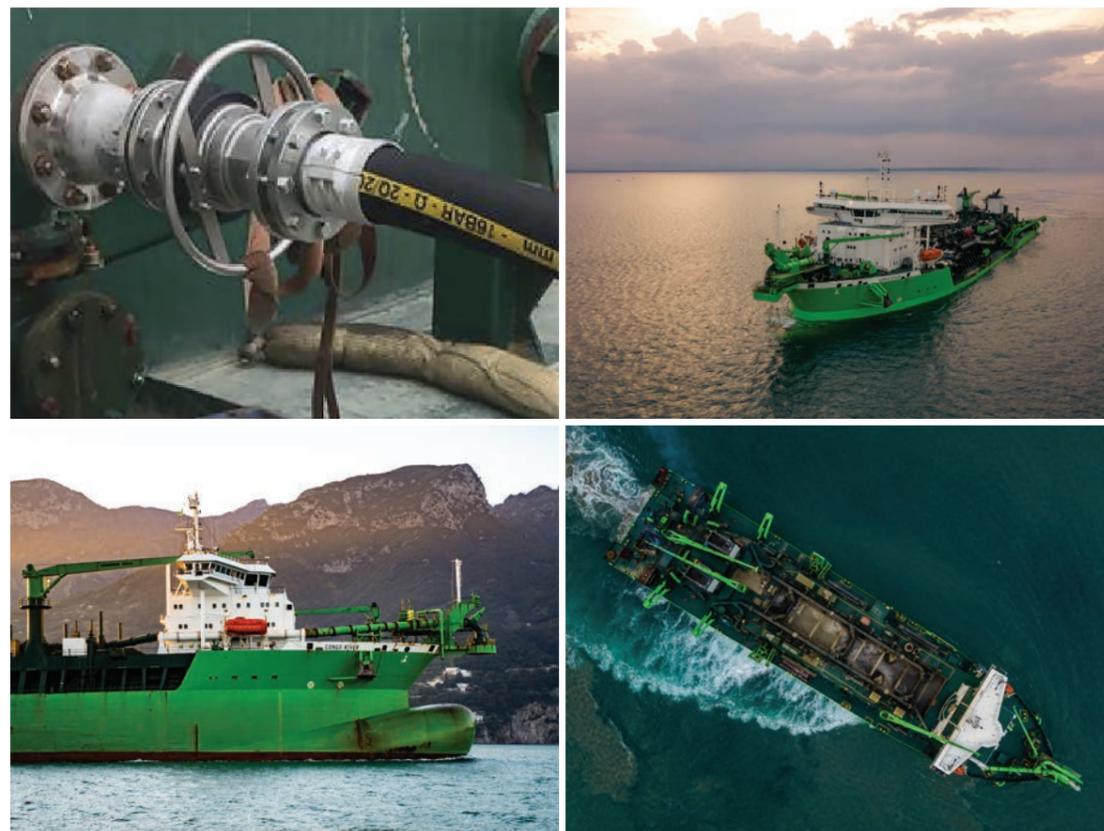
DRY BREAK/DISCONNECT COUPLINGS on Sea Channel project

At the Sea Channel project in the Arctic region of Russia.

Special attention was paid to particular environmental matters, including an extensive water quality monitoring campaign by means of internally designed environmental buoys. A strict protocol in case of oil spills was in place, including the use of dry break couplings to prevent spills during offshore fuel bunkering.

Dry break couplings, also known as disconnect couplings, are fitted to each end of the bunker hose. They are designed for a quick and spill free (dis)connection by using a self-sealing design. There are also safety breakaway couplings that have the same working principle but have the additional advantage that they disconnect automatically in the event of strong external forces on the coupling/bunker hose.

The benefits of using dry break couplings are reduced chances of spill and quick coupling/decoupling.



OPEN MANHOLE SIMPLE COVER WITH GRATING on the trailing suction hopper dredger Bonny River

Open manholes are a risk, requiring protective barriers to prevent people from falling in. On board the trailing suction hopper dredger Bonny River, our team installed protective gratings to cover open manholes.

This solution is an easy-to-use safety measure. It's also easier to ventilate the tank prior to entering as the fan can be placed vertically on the grating, without the need for special lashing.



BLIND SPOT CAMPAIGN on the Fehmarnbelt project

On the Fehmarnbelt project in Denmark our project team organised a blind spot campaign for everyone working on site. Everyone was encouraged to experience the range of blind spots by sitting in an excavator, wheel loader or dumper. Multiple sessions were held, spread over several days. To follow up the campaign and keep awareness levels high, Toolbox talks will be organised.

This has already resulted in raised awareness of blind spots on site and, since the campaign, there have been no incidents with damage related to blind spots around heavy machinery.

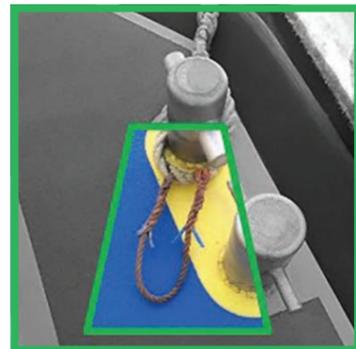


MOORING TAILS
on the Świnoujście – Szczecin fairway project

While handling ropes, our hands are exposed to pinch point hazards between rope eyes and bollards. This could lead to crush injuries or even amputation. Mooring tails ensure you have something available to easily handle the rope while keeping your hands out of pinch points. While mooring tails are common practice on large vessels, they are often not used on smaller ones. But the pinch points remain the same!

That's why our project team for the modernisation Świnoujście – Szczecin fairway project in Poland introduced mooring tails as standard for all ropes. This was done for all termination eyes, whether for lifting, mooring or any other application.

The introduction of mooring tails for all ropes resulted in improved safety as hands are no longer exposed to pinch points during rope eye handling.



QUICKSAND RESCUE PLATFORM
on the Abu Qir Phase 1 project

The unique location of the Abu Qir Phase 1 project in Egypt necessitated initiatives to combat the dangers of quicksand. Firstly, the project team built a quicksand rescue platform to help recover someone. Additionally, the team launched a campaign to remind everyone of the risks of quicksand.

Everyone was involved: foremen, watchmen, pipefitters, reclamation workers, surveyors, etc. The campaign itself was prepared together with the foremen and management team, and was an action resulting from the project's lessons learned meeting.

The outcome of this campaign is that everyone's awareness increased, not only of quicksand risks, but also of the importance of following instructions and taking preventive action to avoid incidents. Furthermore, engagement of both operations and the survey department ensured its success.



INTRODUCTION SAFETY ZONE
on the Elbe maintenance project

On the Elbe maintenance project in Germany there is a 1.25km (0.8 miles) long quay that was used for the project. It had no clear definition or visible markings to indicate it was an area which should stay clear when loading or unloading vessels. To make this area more visible, a safety zone was clearly marked on the quay wall in collaboration with the harbour authority.

Thus, the area is kept free of obstacles to ensure safe walking and working for lines men, riggers etc. It also acts as a strong visible reminder to wear a life jacket and high visibility vest when working in the safety zone.

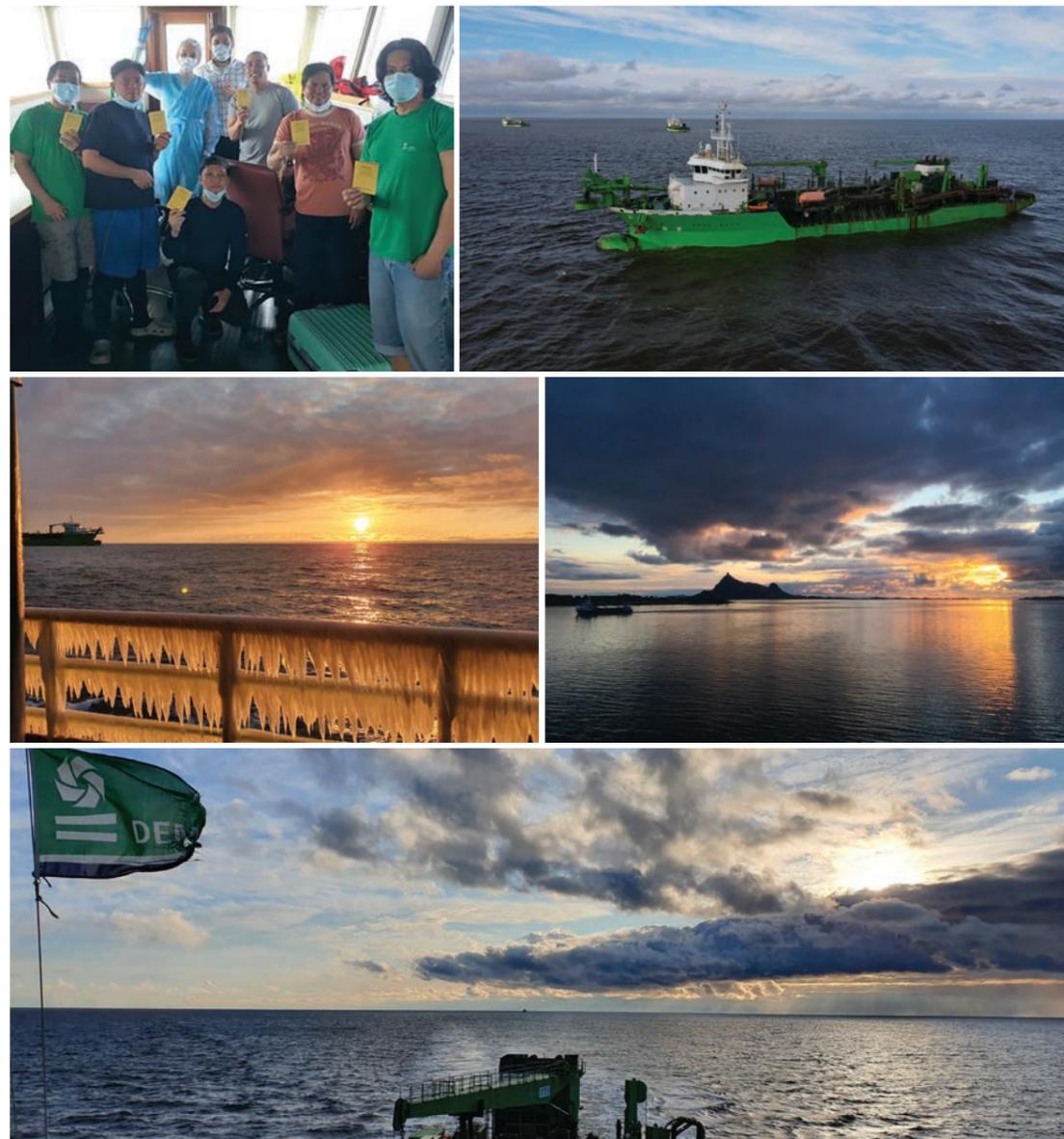


COVID PREVENTION IN ARCTIC CONDITIONS on the Sabetta Sea Channel project

The success of the Sabetta Sea Channel project was largely dependent on prevention of COVID-19 infections within the project team and on project site. With equipment, survey and accommodation vessels, as well as crew travelling from their home countries to the Sea Channel via Moscow and Sabetta Port, it was a massive task.

The effort required compliance with both company and local authorities' legislation. Pre-travel PCR testing was followed by strict quarantine at a dedicated site in Moscow. PCR testing was continued during quarantine, at regular intervals on board, and prior to traveling home. Measures on board included distancing (safety bubbles), strict hygiene requirements (wearing of PPE, washing hands, sanitizing common areas, provision of sanitizers at the entrances to public places), and the availability of voluntary vaccination. DEME developed a COVID dashboard for vessels with clear health reporting.

The impressive results speak for themselves - with more than 1 000 COVID-19 tests taken, and over 500 crew changes in a 3-month period - there were zero COVID cases on the project!



WEAK LINKS IN THE PLOUGH PULLING LINES on the Sabetta Sea Channel project

To improve the productivity of the TSHDs on the Sabetta Sea Channel project, two Mega Ploughs were used for bottom levelling. Both ploughs have a length of 30m and a weight of 76 ton each. Bed levelling is done by pulling the plough over the seabed by means of pulling lines connected between the plough and the sides of the vessel, both at port and starboard side. The pulling lines are continuously under load during the bed levelling works.

Having an unpredictable sudden failure in one of the pulling lines or another location in the ploughing set-up would result in uncontrollable 'kick-back' reaction forces, which could lead to major damage and potential injuries. The forces involved with the Mega Ploughs are very large: peak pulling forces exceed 100 ton!

In order to control the location of damage or failure in the pulling line, a weak link was included in the set-up. The weak link has the lowest working load and break load characteristic, and prevents damage to other parts of the pulling line, the plough and vessel itself.

During the ploughing (bed leveling) works the weak links are inspected regularly and replaced when deformation becomes visible. On the project it was found that deformation of the weak links occurred faster than expected (indicating higher pulling forces). Therefore, the load bearing capacity of the weak links was increased, while remaining the weakest part of the pulling line.

An improvement idea to simplify the inspection and replacement of weak links, was to place these links closer to the middle of the pulling line. This would allow the pulling wire and the weak link to be lifted on to the deck of the plough vessel using only its own deck crane, and without requiring assistance from other vessels. This more efficient process resulted in a total of 6 weak links being replaced during the project duration of almost 3 months (19/07/2021 till 28/09/2021), using only the two XXL plough vessels.



LEARNING IMPROVEMENTS FOR EVERYONE
on the Abu Qir Phase 2 project

The Abu Qir Phase 2 project's HSE Campaign & Safety Week, which is a key part of its Safety Program, focused on Blind Spot Safety Awareness. Safety initiatives for the project made use of LIFE (Learning Improvements For Everyone), a tool created to encourage everyone on the project to make positive observations and identify areas of improvement. It's a concept based on a no-blame approach and on positive interaction and communication for which project specific training is provided. It's easy to use as LIFE observations and ideas can be generated and submitted in any language using a paper format or through electronic platforms that include Apprise, email and WhatsApp.

The Blind Spot Awareness Safety Campaign is one of many campaigns and trainings that was initiated from submission of LIFE cards from the field and LIFE trending leading observations to address issues which require attention so that incidents can be prevented.



DRAGHEAD ACCESS PLATFORM
on the trailing suction hopper dredger Pallieter

Accessing dragheads for maintenance and repairs can be unsafe, especially when done by climbing a steep ladder with no attachment point for a fall harness. Therefore DEME has developed a removable draghead access platform with protective work area, which attaches to the side of the draghead for safe and easy access. This custom-made, lightweight aluminium platform with a fixed entrance ladder is both easy to manoeuvre and store. Extra mounting point locking mechanisms also ensure it is fully secured after installation.

Benefits of the access platform include reduced risk of falling from heights, enhanced workspace when working on the draghead, reduced risk of dropping objects (hand tools), better workability, a stable workplace and easier access. Furthermore, use of the platform ensures fewer incidents as well as lower repair or maintenance time.



MAINTAINING PRODUCTION DURING A COVID OUTBREAK
on the Abu Qir project

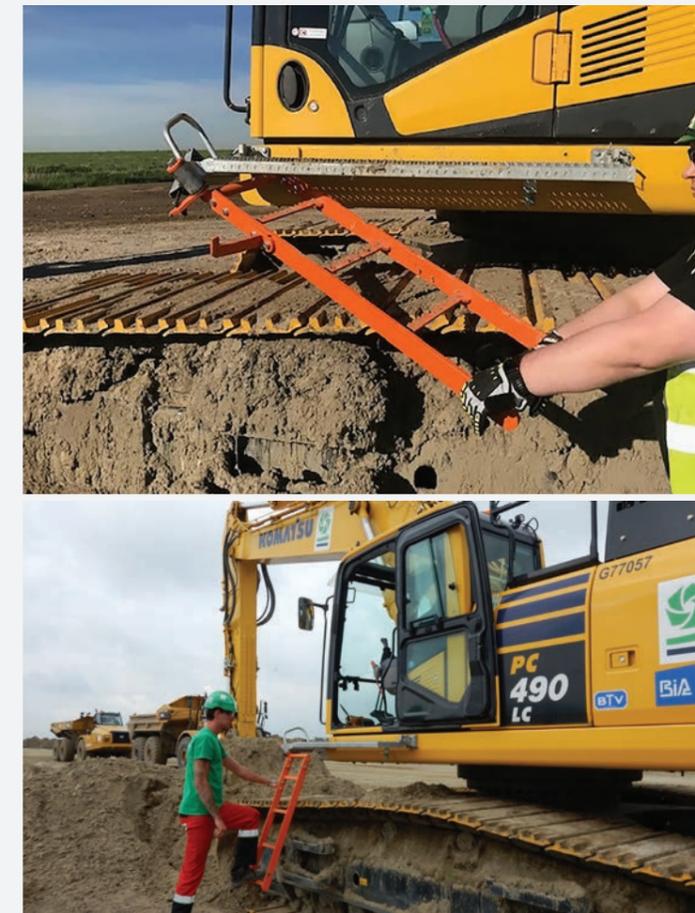
Rigorous COVID-19 mitigation measures on the Abu Qir project ensured that lives were protected while keeping operations going. When the Spartacus arrived on the project, a number of COVID-19 positive cases were identified onboard. By implementing strict anti COVID procedures the cases were identified early and the spread of the infection to other crew members was stopped. Patients were isolated and quarantined onboard under the care of a nurse who monitored their condition and recovery. This early intervention and control of the infection, as well as the close collaboration that was fostered with the client, enabled us to keep the Spartacus dredging without interruption.

Investment in test kits and medical personnel were well rewarded. Not least because infected crew fully recovered and all crew members were able to return to normal duty.

RETRACTABLE LADDER FOR EXCAVATOR ACCESS
on the Hedwigepolder project

Accessing heavy machinery is not without its risks. DEME found that a lot of operators had injuries to their shins caused by contact with the tracks when using the existing steps located inside the boundary of the tracks to step on and off excavators. A search for solutions to reduce potential injuries, and avoid other operational and transport safety issues, resulted in the development of a retractable ladder made out of one piece of metal. Located just above the upper structure of the crane cabin on a safety area beside the excavator door, the self-retracting ladder remains protected when not in use.

The benefits of this simple solution are a reduction in incidents of injury to operators when stepping on and off equipment, operational efficiencies such as the ability to adapt a standard ladder with a maximum length to smaller types of track excavators and a design that requires almost no maintenance.



THE ROAD TO 10 YEARS LTI-FREE In Papua New Guinea

Like most Pacific islands, Papua New Guinea (PNG) was formed as a result of volcanic action which resulted in a dramatic topography that contributed towards limiting development of the country's infrastructure to transport via sea, rivers and air. This topography also resulted in its people being scattered over remote areas, with different clans and tribes developing unique cultures, languages, music, histories, myths and legends, and skills for survival. The result is that PNG is an island country of immense cultural and biological diversity.

DEME is proud of its long association with Ok Tedi Mining (OTML), one of the world's largest gold and copper mine operators and a 100% PNG owned entity that is committed to conducting its operations in a manner that respects cultural heritage and human rights. This is especially important in a country with a colonial history that only achieved independence in 1975, and a diverse population that aspires to learn, work and better their lives.

The contract to remove mine-derived sediments from the lower Ok Tedi river system, situated in the Western Province of PNG has resulted in significant social and environmental benefits. DEME is especially proud of the fact that the project's QHSE-S, clinic and HR teams include many dedicated and talented Papua New Guineans.



The project team operates in an extremely remote location which means they must be as self-sufficient as possible in all aspects of the project. Planning for supplies - from water and food to tools, equipment and medical supplies - often requires a 6-month lead time. And in such isolated conditions, safety considerations are paramount.

With such a diversity of people on this project, it was important to rethink the safety culture while keeping to the KISS (Keep It Simple & Safe) principle. By establishing trust through observation and joint record keeping, communication lines opened up, and encouraged the exchange of ideas and knowledge. Risk assessments, JSAs and safe working procedures were documented with the involvement of people at the workstations and the immediate supervisors. Constant adaptation and oversight ensure legal and client policy compliance, and successful inspections by the MRA (Mining Resources Authority of PNG) and DLIR (Department of Labour and Industrial Relations).

Over the years, Dredeco has developed a robust QHSE-S programme, which includes improved pre-start and Take Five processes and a drill training matrix aligned to each workstation, reinforced through regular communication and practice drills. Development of local talent is further enhanced by the recent implementation of a 5-year training program, a pathway towards taking on more responsibilities in the future.

The result of this effort is 10 years of Lost Time Incident (LTI) free operations for all Dredeco workstations at the Bige Ok Tedi site – an extraordinary accomplishment and a deserved reward for DEME's dedication to well-being and safety at the workplace.

This more than two-decade project has removed over 240 million cubic metres of river sediment from the Ok Tedi River in the Western Province of PNG, a vast territory of what was once rainforest die-back area, that is now being rehabilitated for the local communities thanks to the committed determination of DEME's client. Other milestones of the project include the significant reduction in seasonal flooding of the lands on which the river communities live and the mobilisation up the Fly River of a high-performing booster station.

Through its training and development as well as its dredging activities DEME is proud to have contributed towards the sustainability of both the environment and the PNG communities. And achieving this safely could not have been done without the support and dedication of all project team members.



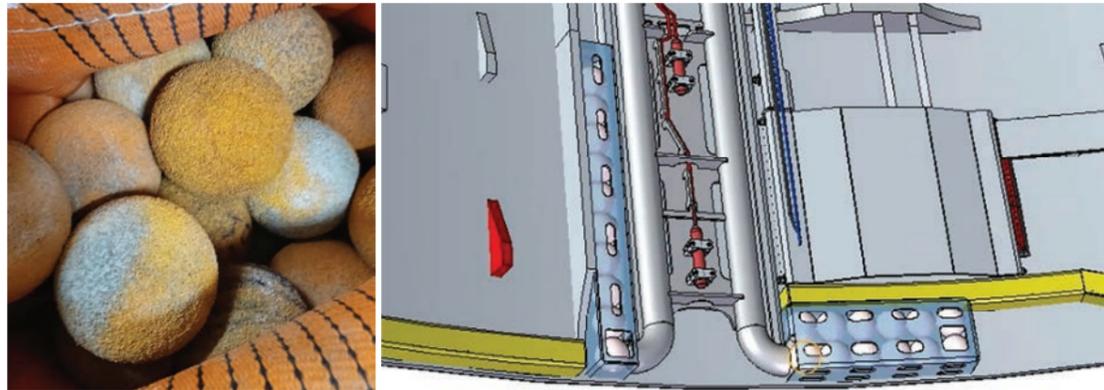
OFFSHORE

GROUT BALL CATCHERS on the Saint-Nazaire Offshore Windfarm project

The Saint-Nazaire Offshore Windfarm consists of multiple subsoil grouted monopiles. After the grouting operations have been completed the grouting plant needs to be cleaned, including flushing of all the lines. In order to make sure the lines are grout free, multiple sponge balls are pumped through the lines using water at high pressure to clear the inside of the grout hoses. To minimise the release of waste into the ocean, a solution needed to be found to retrieve the sponge balls.

The project team therefore designed catcher frames into which sponge balls are shot and stored, prior to their removal once the MODIGA (Monopile Offshore Drilling Interface Grouting Assistance tool) is back on deck.

The positive results of this green initiative include optimal cleaning of grouting lines via a low impact solution, the prevention of 1 074 sponge balls containing grouting residue being released into the ocean, and the recuperation of the sponge balls for reuse on other locations.

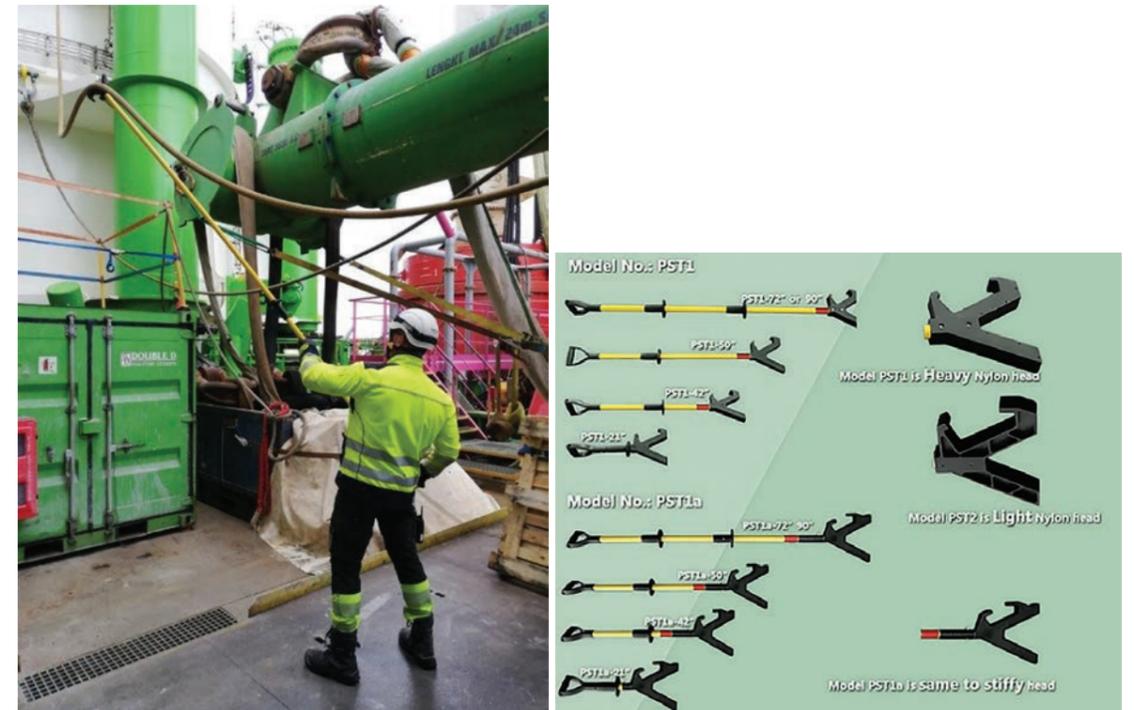


USE OF PUSH-PULL TOOL FOR TAGLINE AND LOAD HANDLING on the Saint-Nazaire Offshore Windfarm project

On the Saint-Nazaire Offshore Windfarm project a trend analysis of incidents in the first year showed a high level of load handling and tagline management. These high-risk tasks are related to being 'in the line of fire'. In response to this analysis the project team investigated opportunities to reduce the exposure of personnel to the handling of taglines.

The push-pull tool was therefore developed. The sticks are not only used for handling the loads but also to mitigate the risk of walking under the load to reach a tagline. Best practice is to use a push-pull tool of at least 2m in length so that people remain a safe distance from the load.

This safety tool initiative resulted in reassuring crane drivers that personnel can keep a safe distance from loads and ensured that no-one was put 'in the line of fire' during load handling activities.



CARBON OFFSETTING OF PROJECT FLIGHTS in the Scottish Highlands

In looking to offset its carbon footprint, DEME supported a unique initiative on its Moray East project. As one of the biggest sources of CO₂ on the project related to air travel, DEME made a donation per flight for the duration of the 3-year project to the Trees for Life foundation. This charity works towards the rewilding of the Caledonian forest in the Scottish Highlands.



A specific grove was created for the project, named T.R.E.E.S. of DEME, which stands for Transitioning to Renewable Energy in Eastern Scotland. It has been estimated that 4 additional trees in the Caledonian forest compensate for 1 ton of CO₂. The Moray East project funded the purchase and planting of 857 trees.

The benefits of this initiative include increasing awareness among DEME employees and subcontractors about the impact of travelling on the environment, creating homes for local fauna and flora, supporting a local environmental, educational, and employment initiative and offsetting 214.25 tonnes of CO₂ which corresponds to a medium sized petrol car travelling 1 190 277km (739 604 miles).



ABOVE AND BEYOND AT ON-THE-JOB WORKING AT HEIGHT TRAINING on the Hinkley Point project

The Hinkley Point project in Great Britain has a high proportion of high-risk tasks. A large part of the team needed training on working and rescue at height, including using skyworkers and scaffolding. To resolve this, the project team set up permanent scaffolding in an empty port hangar and organised regular training sessions at the base port.

The results of this on-the-job training initiative were an increase in the number of training sessions - over 40 sessions yielding more than 300 accredited certifications, a boost to morale during weather days training sessions, increased efficiency due to minimal downtime and larger teams subsequently being available to perform high-risk, working-at-height tasks.

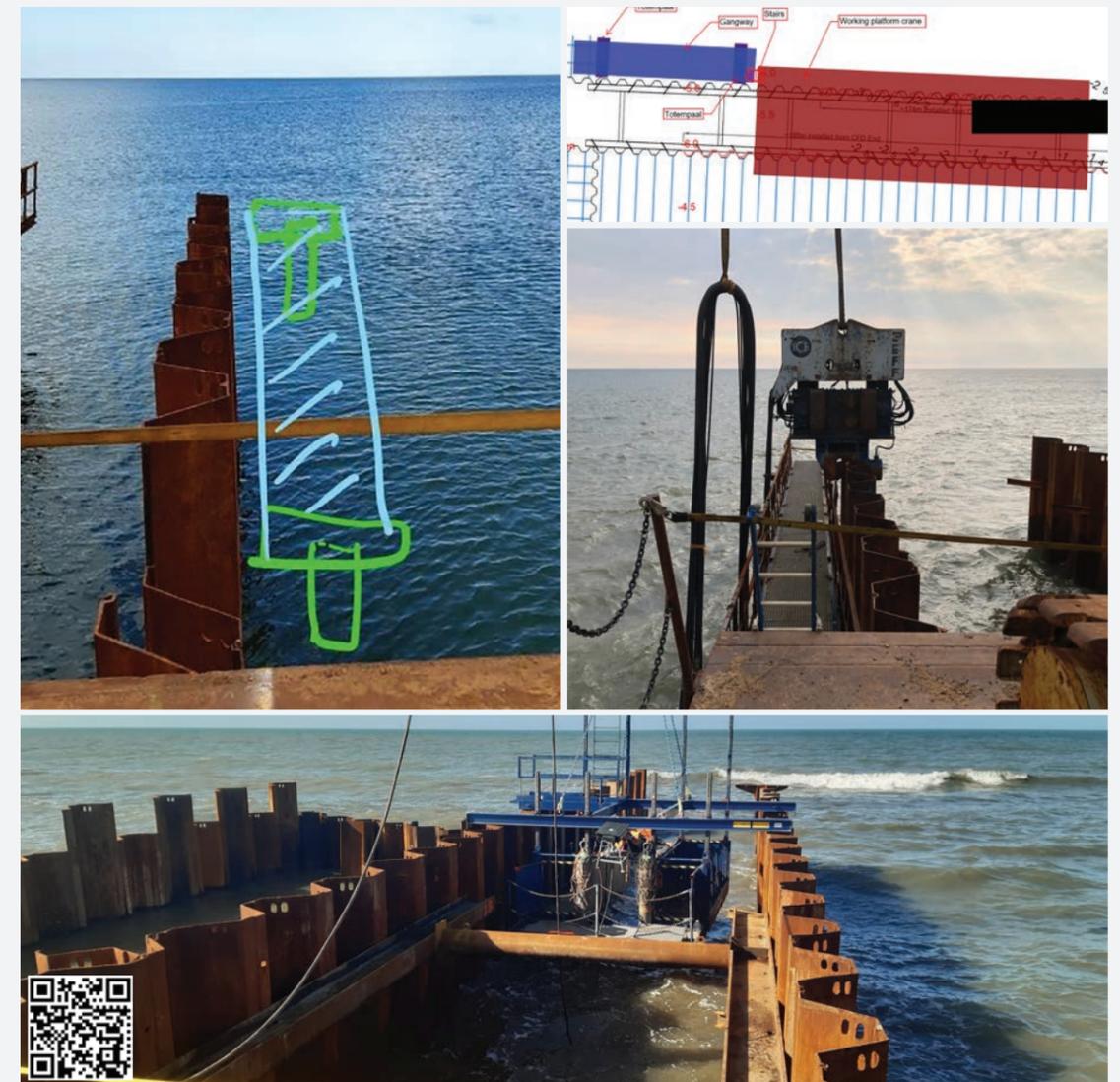


AVOIDANCE OF MAN RIDING BY CREATING A FIXED WORK PLATFORM on the Europe II project

On the Europe II project in Denmark a problem was encountered with the retraction of sheet piles during the removal of the cofferdam at the landfall site. Due to UNP profiles fixed to the sheet piles, they couldn't be extracted by the normal means (guiding frame) since they would get stuck. Therefore an alternative way had to be found. The initial proposal was to use either a man-riding basket or a working platform (customized to be placed hanging on the cofferdam itself). However, both these solutions had considerable safety drawbacks. The work from a man basket would involve man-riding, while the use of the working platform would require tricky manoeuvring operations (including manual handling of a suspended load) to get the platform in place. Therefore the landfall team tried to find a safer solution to this problem.

A method was devised in which a temporary work platform (gangway) could be installed next to the cofferdam to connect the sheet piles. This involved installing two totem poles as support for the gangway, landing the gangway on top of the totem poles and connecting the gangway by way of a stair to the working platform of the crane.

This method of accessing the sheet piles resulted in improving safety in several ways. Not only was man riding completely avoided, but manual handling was also greatly reduced and there was no need for personnel to be 'in the line of fire' during lifting.



MUDLINE REFERENCE CELL INSTALLATION on the Seamade project

On the Seamade project, 2 plates per monopile, with a mudline reference cell for impressed current cathodic protection, are required to be installed at a depth of approximately 30m MSL onto 3 monopiles in total. The initial design involved a plate with 4 bolts that must be bolted onto 4 stubs on the monopile.

Initially this was thought to be a diving operation as it seemed impossible to do using a remotely operated vehicle (ROV). However, one ROV subcontractor claimed that it would be feasible by engineering a bolting tool to adapt the current design. A risk analysis confirmed that the ROV solution was the best option safety-wise as it would eliminate all high-risk diving activity. Furthermore, this would be financially beneficial as other ROV work could be combined.

After a thorough preparation campaign, which involved updating the initial design by reducing the number of bolts in the connection to 2, the execution went smoothly. After ROV launching, it took less than 15 minutes to connect the mudline reference cell to the monopile. A feat which is unlikely to have been achieved by diving operations.

Technical leadership and innovation in the preparation phase of this project resulted in a safety enhancing solution for the whole project by successfully removing people from being 'in the line of fire'.



LNG SYSTEM COMPLETION AND COMMISSIONING on the Livingstone

The LNG system of Living Stone was not commissioned during new building. The cooling down of the system before start-up was originally planned with LNG, which was only to be used for cooling and would be lost to the environment as blow off. As the system was pressurized for the first time after many years it could lead to LNG escaping to other areas on the vessel, for example in the case of a valve leak. This would not only cause a dangerous situation, but would also mean that the complete system would need to be degassed before the issue could be remedied.

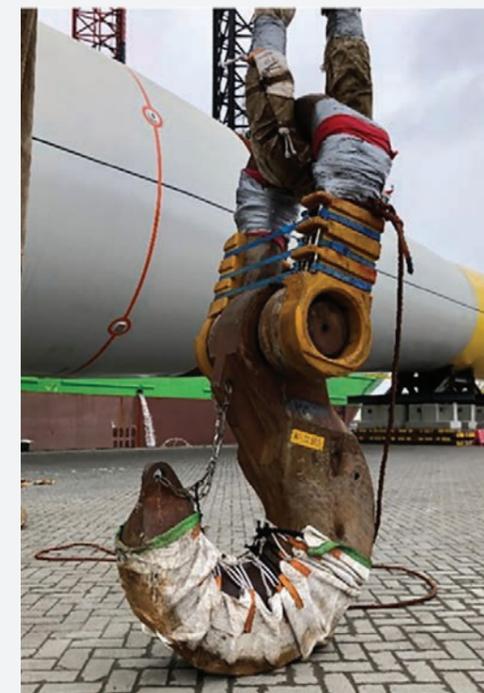
A team comprising TSIs, vessel staff and internal and external consultants came up with the idea to use nitrogen instead of LNG. Good preparation and cooperation resulted in the smooth execution of a high-risk phase during system start-up, achieved without any delays in delivering the vessel to the project.



MOORING OPERATIONS FALL HAZARDS on the Groenewind

To date, and especially on smaller vessels, it has been common practice to place bollards close to the edge of the side of a vessel or installation, often resulting in guardrails being interrupted at that place. In these cases, a very dangerous situation arises: personnel that has to work on or in the vicinity of the bollards are exposed to the danger of falling overboard due to lack of adequate guardrails. At DEME, the risk of falling is always considered to be a high-risk task (HRT).

This HRT risk was taken in consideration in the early design phase of the SOV Groenewind. The mooring area has been completely fenced with a sturdy full-fledged guardrail. To make this possible, several rope locks and/or fairleads had to be installed to properly guide mooring ropes and wires over the side of the ship without interfering with the guardrail. Groenewind's design shows that safety and operational requirements can be successfully combined, and that 'lack of space' can be redefined.



BELLY SLING HOOKS on the HornSea II project

Monopile belly sling hooks are used to lift the monopile horizontally. Last year an incident took place where one of these hooks fell over on deck. With a weight of approximately 2.2mT, this poses a significant risk to personnel working close by. To ensure safer operations and reduce the chance of being in the line of fire when working with belly sling hooks, custom made hooks were procured. The new belly sling hooks have a significantly lower centre of gravity and wider base, making it nearly impossible for the hook to topple over when landing on deck. Furthermore, the hooks do not need a shackle, making it safer to handle them.



ENVIRONMENTAL



DUAL FUEL EXCAVATOR on the Terranova and Callemansputte projects

In order to reduce the CO₂ footprint of the redevelopment and nature realisation Terranova and Callemansputte project, it was decided to purchase an excavator that injects up to 30% hydrogen during combustion. This dual-fuel excavator runs on diesel with the admixture of hydrogen, and offers an opportunity to make progress in energy transition in an affordable way.

The results of this innovative transition towards more sustainable equipment are evidenced in a 40% reduction in CO₂ emissions (GHG emissions) and a 60% reduction in NO_x (air emissions) at maximum power, without noticeable power loss for the operator. In addition, there's a possible saving of +/- 55 000 litres of fuel oil and 145 tonnes of CO₂ on 10 000 operating hours. One of the next innovative steps on the project will be the production of green hydrogen on site, based on the already installed solar park.

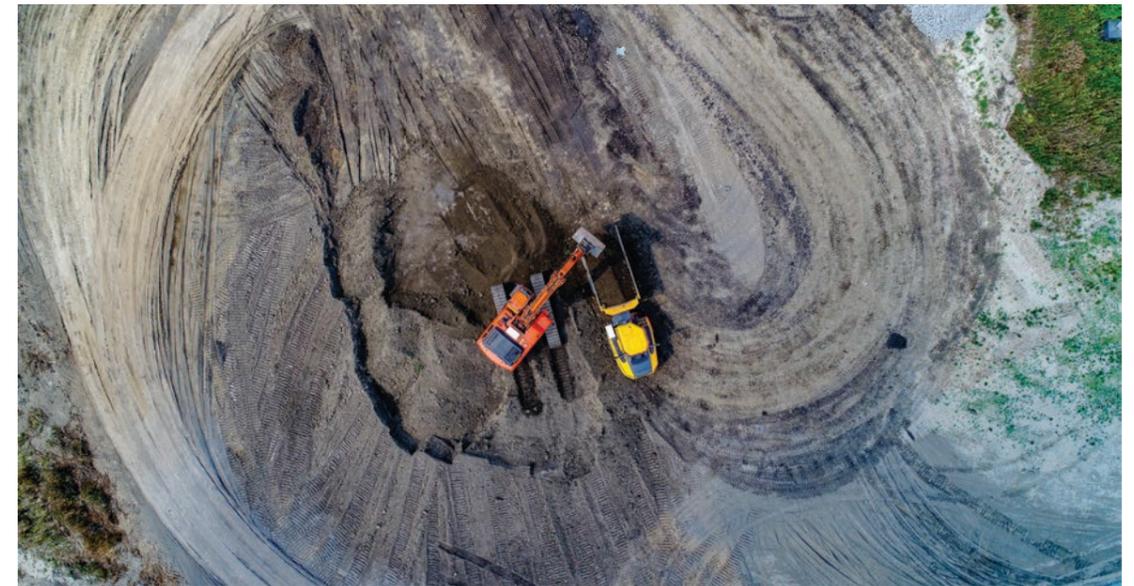


SCRAPER FOR CLEANING THE BOTTOM OF BARGES on the Conde-Pommeroeul project

The Conde-Pommeroeul project in France involved the dredging of an inland waterway. In such activities, barges that are full of sediment are normally emptied using a bobcat. However, this has safety disadvantages: 2 lifting operations - one to install the bobcat in the barge, the other to remove it, the bobcat operator has to access the barge via a 3 to 4m ladder, the bobcat is operated on the very slippery floor of the hull and there's a collision risk of 2 machines – the bobcat and the grapple of the discharge crane – working at the same time, in the same area.

The project team developed a solution to clean the bottom of the barges: the fabrication of a scraping tool that can be operated by the grapple of the crane, instead of the bobcat.

This scraper tool initiative resulted in savings in time and money: eliminating the 2 lifting operations and bobcat hire costs and freeing up the bobcat operator for other tasks. In addition, operational risks are eliminated: no collisions as only one machine operates in a limited space and potentially hazardous ladder use is no longer required.



INFRA

RE-USE OF WOOD on the GOVA 7c project

The project GOVA 7c includes 5 locations in Southern Netherlands. At these locations, the mooring, berthing and guidance constructions will be replaced. The current constructions are mainly made of wood, and their demolition provides a lot of reusable material.

The initiative is to re-use 80m³ as fendering in the new construction, with the remaining wood being either re-used, remanufactured, recycled or recovered. This will result in a 95% re-use of the wood. The other 5% consists of tar-bearing wood which cannot be re-used.

The re-use of 80m³ of Azobé results in a reduction of 946 tonnes CO₂ equivalent, representing a forest of 1 football field in size. The other remaining re-used wood represents a forest covering the surface area of about 12 football fields. Together, these CO₂ emission reductions are a significant contribution towards DEME's sustainability efforts.



USE OF BAMBOO on the GOVA 7c project

The project GOVA 7c includes five locations in Southern Netherlands. At these locations, the mooring, berthing and guidance constructions will be replaced. Normally only UHMWPE or Azobé wood is used for the fendering of these constructions. However, DEME has proposed the use of bamboo for a part of the cladding as a pilot project to reduce its CO₂ footprint. The bamboo part will be monitored on different aspects, different locations on the construction and different weather conditions.

By using a small quantity - 10 pieces of 100x50x1775mm - of fast-growing bamboo, there will be a reduction of 83kg CO₂ per ton compared to Azobé wood. This represents a CO₂ emission reduction equivalent to a car ride of 750km.



WALKWAYS VS. TRAFFIC at the DEME Infra workshop

The construction of a new DEME Infra workshop in the Netherlands necessitated a reorganisation of the site traffic plan. Specific walkways were clearly marked to separate pedestrians and traffic on site. In addition, the PPE free area got a separate entrance.

This resulted in overall operations and safeguard improvements by eliminating collisions between pedestrians and traffic, as well as providing clear access and walkways for everyone at the workshop.

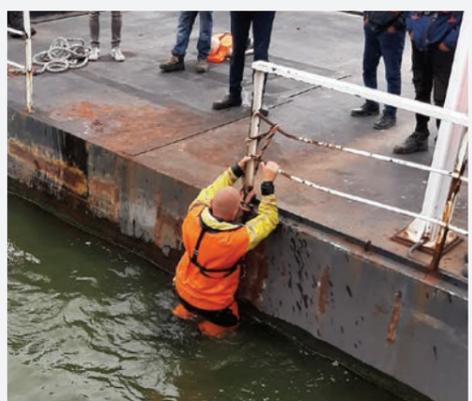




DIVING DRONES on the GOVA project

One of the high-risk tasks within our Activity Line is diving. We now use drones (mini ROVs or Remotely Operated Vehicles) instead of divers, where possible. Although ROVs can't be used for underwater works, they are a good solution for inspections. The use of drones maximises divers' safety by mitigating the risk of getting into line of fire situations.

			
8 Thrusters waardoor 360° verticaal en horizontaal beweegbaar	Uitwisselbaar batterij	Snelheid van 6 km/h Werkdiepte 100 meter Werkradius 200 meter	4K + EIS Beeldstabilisatie en tot 12 Megapixel foto's
			
Separate hulpmiddelen	Anti-Blokkeer Motor	Uitwisselbare SD geheugenkaart en Live Stream mogelijkheden	Gebruiksvriendelijk, snel en makkelijk inzetbaar

MOB TRAINING on Jetty Koole Terminal project

Due to the nature of the works on this project - above and/or near water – each construction team member is exposed to the potential risk of a man overboard (MOB) emergency situation. To mitigate this risk, MOB training was organised for all project crew members. As a result, every project member knows how to prevent and respond to this dangerous set of circumstances.

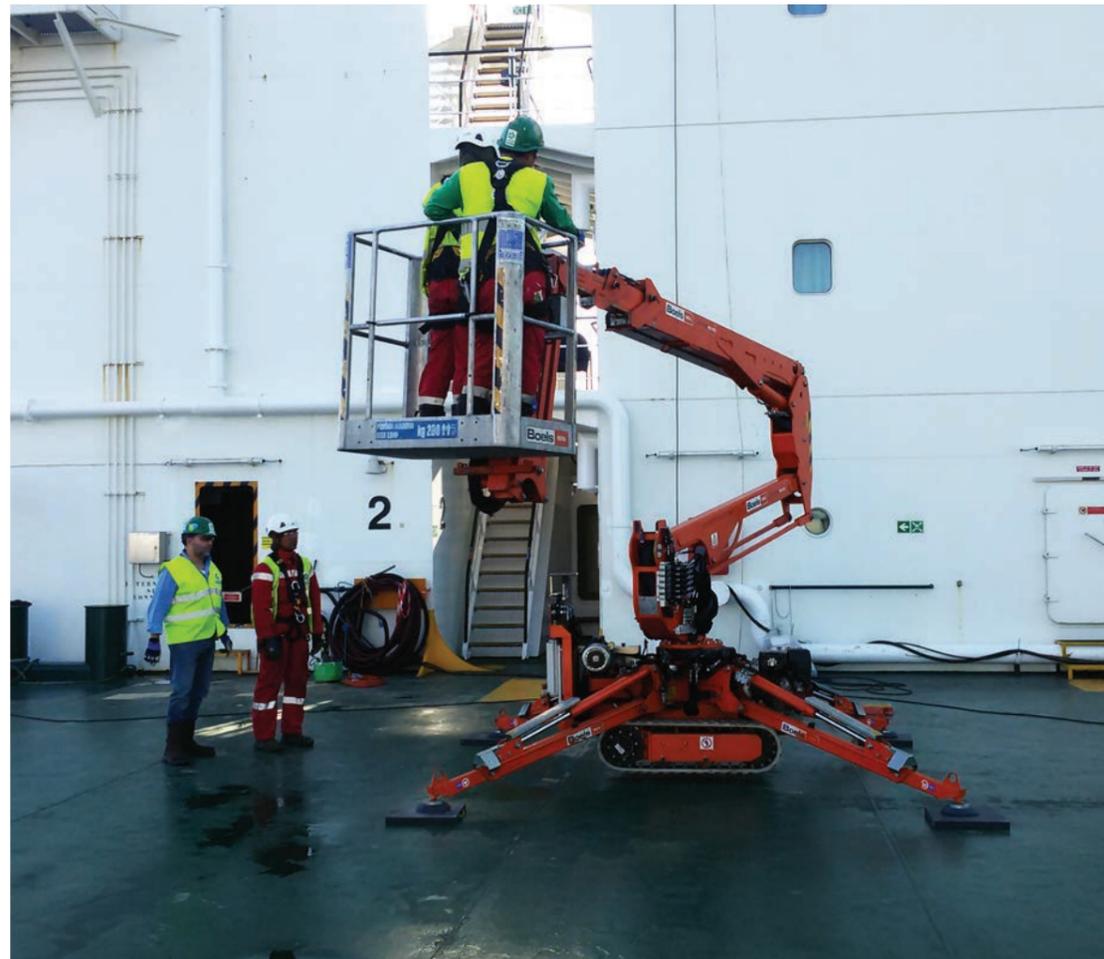


DOCKINGS AND MAJOR REPAIRS

2021 was another busy year for the QHSE Technical Safety support team, with COVID-19 bringing additional challenges to ensure health and safety in dockings and repairs. Several initiatives were developed further during the year:

Short overview

- » **DEME Bridging Document:** a QHSE document with all DEME requirements regarding High-Risk Tasks is included in the main contract for shipyards & contractors.
- » **Stage Gate Overview Plan:** provides a clear overview of the steps to be performed for all major repairs.
- » **Quality Control System:** prepared by our quality-appointed person, it's become an important document during MRs and commissioning.
- » **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 of this team means that, in addition to new-build vessels, existing vessels will also be adapted to current DEME Safety Standards.
- » **Internal Trainings tailored to the crew covering:**
 - » Forklift
 - » Skyworker
 - » Lifting Management
 - » Rigging of loads
 - » Scaffolding
- » **Dedicated QHSE Engineer:** start to finish follow-up of the daily preparation and supervision of dockings and major repairs for each ship or project.



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