

The deugro Service Portfolio

Oil and Gas Industry



deugro's Oil and Gas Expertise at a Glance

deugro is fully focused on identifying the specific needs of our clients in the oil and gas industry and tailoring unique solutions to meet these. We see ourselves as an extension of our clients in their respective supply chains, providing the best in terms of both cost and service.

deugro has always been considered a market leader in project logistics innovation, due to the complexity of the projects we execute. Over the past years, we have built up an impressive track record of handling projects for the oil and gas industry and other complex sectors. Thanks to our expertise in a wide range of projects in different fields, we are able to capitalize on synergies and harness buying power, both of which are beneficial to our clients.

In regard to the oil and gas industry, we serve upstream, midstream and downstream projects, including refineries, liquefied natural gas (LNG) and gas to liquids (GTL) plants, pipelines, offshore production platforms, floating production storage and offloading (FPSO) unit conversion, and other related oil and gas projects.

Timely delivery of resupply items, project cargo or standard equipment shipments is critically important to oil, gas and energy operations. deugro understands the demands and risks in this business environment and operates with tailored logistics solutions in a safe, efficient and effective manner, constantly in accordance with the highest industry compliance practices.



Specialized Supplier



Family Enterprise Since 1924



Global Access
40 + Countries
70 + Offices



Trusted Partner



In-house Chartering Team



Accommodation modules secured on the barge at Vitória Port, Brazil

Our Oil and Gas Industry Services

- Multimodal transportation solutions
- Major capital project (MCP) support and execution
- Onshore and offshore global resupply solutions
- Early project engagement (Pre-FEED/FEED), transportation studies and logistical engineering
- Brownfield development and project delivery
- International freight consolidation and supply chain solutions
- Site turnaround, supply chain management and logistics services
- Supplier transportation assurance activities and execution management
- Expedition solutions, item control
- Customs clearance
- Non-vessel operating common carrier (NVOCC)
- Full container load (FCL) capacity planning, time-bound solutions and rate management
- Less than container load (LCL) consolidation and deconsolidation services

**211.5 MT Callater towhead
on a heavy lift crane**



Project Insight:

Yamal LNG Project

After several years of planning, engineering and execution, the various deugro teams have managed one of the largest and most complex LNG projects ever executed: Yamal. The following interview was held with our Project Manager Sebastian Dries.

What was the most challenging part of this project?

deugro faced a lot of challenges: the shipping window was very small and the consolidation process in Europe was complex. Due to ongoing changes, we as the logistics service provider needed to include a sufficient buffer to allow for a continuous and timely delivery.



CAD-based 3D simulation of the HVAC heater

What does “the deugro difference” mean to you in regards to the Yamal Project?

The deugro difference was shown in the ability to immediately react to both the client's and the project's changing demands, while putting client satisfaction and project success first. With our expertise and the experience of all teams involved, we were able to make sure that our service went far beyond shipping or just delivery.

How did you manage to ensure flawless execution of the project with over 15 different deugro offices involved worldwide?

It benefited us tremendously that a lot of team members had worked overseas and with each other already as part of the deugro's most promising (DMP) trainee program or during their earlier jobs within deugro. Additionally, the project control tower concept implemented for Yamal fully paid off: The project's lead office is the main interface to the client and is able to evaluate all proposals made by colleagues overseas.

» We were able to make sure that our service went far beyond shipping or just delivery. «

Sebastian Dries, Project Manager

Some of the offices handling massive amounts of shipments even dedicated specific staff solely to Yamal. Daily, sometimes hourly calls and close contact between these dedicated colleagues and the control tower ensured flawless and seamless operations.

Can you talk about the obstacles the team faced due to the remote project site, or in general?

The remote location and the restricted access via the Kara Sea called for specific vessels that have a higher ice class than normally needed for our regular business. It also made it necessary to thoroughly plan and follow up on collection dates and shipping schedules so that we could deliver without any risk of the vessel not being able to navigate back to ice-free waters. Because we were limited in our choice of suitable tonnage, and at the same time had to remain flexible to support possible changes within the project's schedule, we could only overcome challenges through close collaboration between the project control tower and our chartering desk.

How did the CAD-based 3D simulation developed in the planning phase affect the actual execution?

The simulation of the HVAC heater transported from Gijon to Sabetta was a huge help in demonstrating and illustrating the actual steps of the operation to the client, his vendors and fabricators. It supported our ongoing discussions with port authorities, the carrier Rolldock and other subcontractors involved.

Sebastian Dries,
Project Manager



QHSES – Safety First!

Client satisfaction is the motivation behind all our efforts. It is our conviction that this can only be successfully accomplished if we are good custodians of the trust granted to us by our clients, their goods and the surrounding environments. All companies of the deugro group are guided by this fundamental principle. We aim to continuously achieve the deugro group's objectives and vision, leading by example and setting the standard for quality, health, safety, environment and security (QHSES) in our industry.

For deugro—a company of the deugro group—we have developed an Integrated Management System (IMS), and are ISO-certified (ISO 9001:2015, ISO 14001:2015 and BS OHSAS 18001:2007) by DQS GmbH. This system is continuously reviewed and improved to enable us to meet our objectives in the future, too.

At deugro, we integrate QHSES in every phase of your project—from the very beginning of the concept to the design and all the way through to execution. Because every project is a unique undertaking, our approach is planned on a case-by-case basis, pursuant to the most stringent HSE standards. Before the implementation of the execution phase, we develop the project-specific HSE plan, taking into

account all site-specific conditions and covering every aspect of the scope of work.

This project-specific plan focuses on implementing detailed risk management for the project to ensure that all risks identified and assessed are reduced to as low as reasonably practicable (ALARP). This is completed by identifying possible hazards that all project stakeholders may be exposed to, and by making sure that all mitigating controls are identified and properly implemented. During the execution of the project, our QHSES set-up ensures that all operational and HSE key performance indicators (KPIs) that were agreed to are closely monitored and acted upon to ensure that performance continually improves.

Should there be any incidents or occurrences of non-conformance, QHSES and the respective operational team work closely together to investigate and devise the appropriate corrective action.

Our activities are planned, organized and performed in a safe and environmentally-friendly manner. We are dedicated to maintaining the environment in which we work and to providing a safe, secure and healthy workplace for our staff and all parties involved in every project we handle. Our reputable and competent business partners and subcontractors are vetted by the QHSES team based on their equally high commitment.

We are committed to a culture where health and safety are not compromised!

Our approach to your project



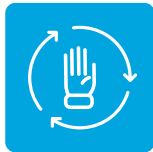
Plan
Specific risk assessment, QHSES plans



Do
Job safety analysis, method statement, subcontractor vetting, training



Check
Auditing, workplace inspection, certifications



Act
Management review, preventative and corrective actions



deugro minds. Safety matters.

Our Compliance Standards

The deugro group compliance standards are reflected in various ways, and it is our philosophy to incorporate compliance at all levels of the group and in everything we do. Our corporate policies—the Code of Ethics and Compliance (CoEC) and the Anti-Corruption Compliance Policy (ACCP)—are proof of our commitment. These corporate regulations are mandatory for all deugro group companies worldwide, and employees and business partners are required to operate within their framework at all times. Our Compliance Management System (CMS) was designed to consider various international regulations and recognized standards, including the United

States Foreign Corrupt Practices Act (FCPA), the UK Bribery Act 2010 (UKBA) and the OECD Guidelines for Multinational Enterprises. The CoEC and ACCP serve as the foundation for the CMS, and are reviewed, updated and acknowledged by all deugro group employees on a regular basis.

Furthermore, our Transport Management System (TMS) screens all shipments, specifically the names and addresses provided, on a 24/7 basis against all applicable international governmental sanction lists in order to scrutinize each business transaction.

To keep our employees involved in our efforts to live and maintain

the highest standards of ethics and integrity, we also offer frequent compliance training. It is provided online and in face-to-face workshops, subject to individual risk assessments. Important announcements on the corporate intranet and local bulletin boards serve to raise ongoing awareness.

Local compliance ombudsmen are available in all of our offices. All compliance ombudsmen receive face-to-face training by the Head of Global Legal and Compliance.

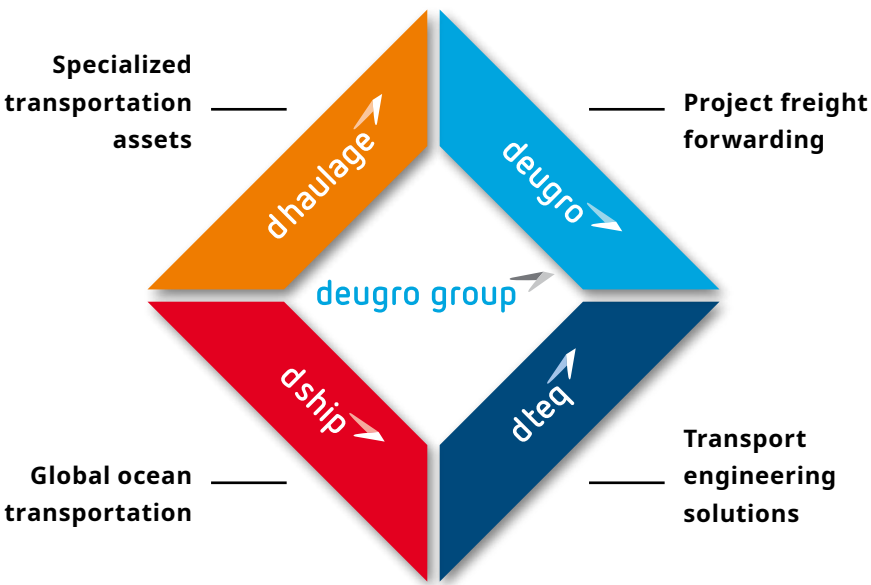
» A successful compliance program is not about focusing on the rules. It is about fostering a true culture of ethics and integrity. «

Jessica Kaplan, Head of Global Legal and Compliance

deugro group: The Unique One-stop Shop

The deugro group originates from deugro, the first company founded in 1924 in Frankfurt am Main, Germany. Today, the deugro group continues to be a family-owned enterprise with a strong financial foundation. This global, flexible and diversified network with local knowledge and experience is redefining industry standards now more than ever.

The deugro group is comprised of four independent companies that offer far-reaching competence, experience and know-how in their fields of business:



deugro

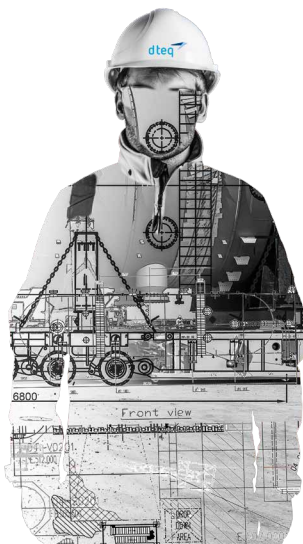
deugro is a highly specialized freight forwarder with a strong focus on turnkey logistics solutions for industrial projects. It has a proven track record in successfully executing projects of any magnitude, even under the most challenging conditions and requirements. deugro focuses wholly on identifying and solving clients' specific needs with unique tailor-made solutions to fulfill all requirements. To deliver the best in both cost and performance, deugro serves as an extension of its clients in their respective supply chains. It provides ocean and inland waterway freight services, road and rail transportation as well as air freight to almost any destination.

» We are redefining industry standards now more than ever. « Thomas C. Press, CEO – deugro group



dhaulage

dhaulage provides an extensive and comprehensive range of heavy haul and heavy lift equipment for any kind of specialized or challenging project. The company owns and operates its own fleet of prime movers, heavy duty hydraulic trailers as well as other specialized conventional trailers, and installation equipment, which are available to our clients at any location worldwide. Furthermore, dhaulage owns a variety of supporting equipment, such as fenders, lifting equipment of various capacities, lighting towers, generators and a tailor-made fly-over bridge with a capacity of 300 metric tons.



dteq

dteq Transport Engineering Solutions provides tailor-made transport and marine engineering solutions, as well as port captain, surveying and supervision services, and project consulting. To solve and overcome all the challenges of moving oversized and heavy cargo, dteq's experts leverage decades of specialized engineering knowledge and experience. They do so with dedication, talent and an inventive spirit for every project phase.



dship

dship Carriers provides cost-effective tramp services for heavy lift and project cargo. Driven by service, dedication and high-quality workmanship, dship ensures that risk remains at a minimum and delivers solutions that exceed clients' expectations. A global provider of ocean transportation services, dship manages and owns a fleet of modern and reliable multi-purpose vessels. These are designed to support the specialized needs of breakbulk, heavy lift, dry bulk and project cargo clients in the oil and gas, wind energy and floating cargo industries—to name just a few.

Project Insight:

Gas Compression Project

Two 650-metric-ton Gas Compression Modules

Following the successful shipping and delivery of a 220-metric-ton e-room package, deugro was pleased to receive the final award to ship two 650-metric-ton gas compression modules from Batam, Indonesia to Western Australia. The project included extensive commercial and technical investigations regarding vessel suitability by deugro Perth.

The modules and accessories are destined for a gas plant, situated off the northwest coast of Western Australia.

The deugro Difference

A key driver in deugro being awarded the contract was our proposal to utilize a self-propelled barge or modular carrier. This type of vessel has a low draft, allowing it to berth at the fabricator's site jetty in Sekupang, Batam, Indonesia (which has a maximum depth of 5 meters at low tide).

To accommodate this jetty depth limitation, deugro Perth sourced the *Dongbang Giant 5* from the specialized South Korean vessel operator Dongbang. With an empty draft of 3.2 meters, the *Dongbang Giant 5* could easily berth at the Sekupang jetty where, even after loading the two 650-metric-ton modules with a loaded draft of approximately 4 meters, there would still be sufficient and safe under-keel clearance from the seabed.

The Dongbang fleet of module carriers caters to the favored engineering approach in Australia of modularization, whereby oil and gas, mining, or similar plant packages are prefabricated as preassembled modules (PAM), rather than the more traditional stick-build construction method. The vessel allows for roll-on by self-propelled modular transporter (SPMT) of extreme heavy lift or oversized equipment packages for stowage and sea-fastening on deck.



Arrival at Sekupang, Batam, Indonesia



Scope of Work
Vessel charter, sea-fastening design, vessel stability, stowage calculations, customs clearance, placement into storage facility



Cargo
220 MT e-room, 2x 650 MT modules and accessories



Volume Shipped
25,430 CBM, 1,674 MT

Project Insight:

Apache Callater Project

deugro (United Kingdom) Ltd. transported two towheads, Skene and Callater, which are designed to form a complete subsea bundle.



Over the years, previous towheads have been moved through direct contract between Subsea 7 and equipment operators or haulers. In this instance, deugro was the first non-asset owner to secure such a contract. By leveraging our market intelligence and in-house expertise, we ensured that we worked with the most suitable subcontractors who utilize the correct equipment. The result of these factors ensured the project was delivered within budget and safely.

Challenging transportation conditions

Manufactured in Wick, UK, the towheads were transferred to a flat-top barge, complete with support tug, which deugro had mobilized from Germany to Invergordon specifically for the project. The specialized lead tug was chartered locally in Scotland. The movement took place in December; as such, weather observation and forecasting was crucial for the movement.

One way to transport the towheads to Wester, UK is by road, through the center of town. The road infrastructure through the town is extremely restrictive and

commences with a 14-percent incline away from the port. The challenge then was to negotiate the narrow residential streets with the load, which had an overall length in excess of 40 meters and a rigid length of 27 meters.

In cooperation with the local police and highway agencies, deugro minimized road traffic congestion as much as possible by timing the movement to avoid the start and end of school days and times of high traffic flow. Overhead cables were also in conflict with these significant loads and were lifted or removed, temporarily, in advance to prevent any potential risk of damage.

In many locations, the loads moved through pinch points with just a few centimeters to spare, and the pre-planning and significant engineering works completed were critical to ensure safe and effective load placement in order to prevent issues and ensure negotiability. The movement through the town was only effective due to the great teamwork of all involved stakeholders, including the transport specialists, Subsea 7 and the local community.

» deugro understands the demands and risks in this business environment. «



14% Incline
Steep road transportation



Record Transit Time
1.5 hours from Wick to Wester



Great Teamwork
Project team and local community



Zero Incidents
No safety concerns during the move



Record-breaking transit time

Not only did deugro's client, Subsea 7, benefit from time saved, but also the project owner, Apache, with an overall positive impact on the project. A new record in transit time of the Skene and Callater towheads was achieved, with just 1.5 hours per movement from Wick to Wester. Indeed, Apache confirmed that its North Sea Callater Project had started producing earlier and under budget.



Project Insight:

Gas Compressor Plant

deugro successfully delivered gas compressor modules to an extremely remote area in the Peruvian jungle within the contractual time frame.

deugro Peru SAC was selected by Odebrecht E&P GmbH to transport the gas compressor modules, supplied by GE Nuovo Pignone in Italy, from the Port of Vibo, with a subsequent call in Marina di Carrara. The delivery point was the final job site in the remote Peruvian jungle, accessible only by river during an approximately five-month-long window.

Once at the Amazon River, after 11,120 kilometers of ocean and river transport, the delicate offloading operation took place midstream. Nine barges, each with a capacity of up to 2,500 metric tons, were ready to receive the cargo upon arrival of the ocean-going vessel. dteq Transport Engineering Solutions, together with a locally-contracted port captain, coordinated and supervised the entire discharge day and night until all 627 pieces were stowed safely on the barges. The barges sailed further up the Ucayali and Urubamba Rivers for 15 days before finally reaching the job site.

One of the biggest challenges we faced was the quality of barges available in this remote area. When we compared the construction plans provided with the barges



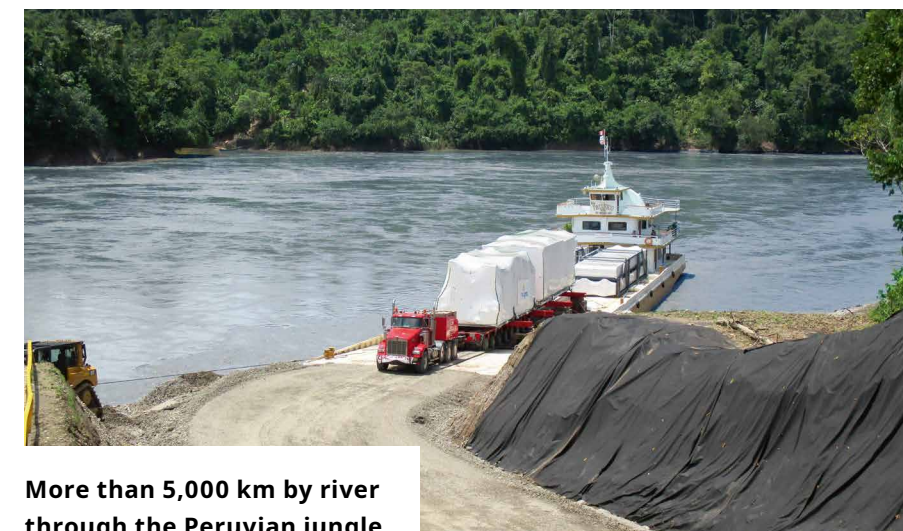
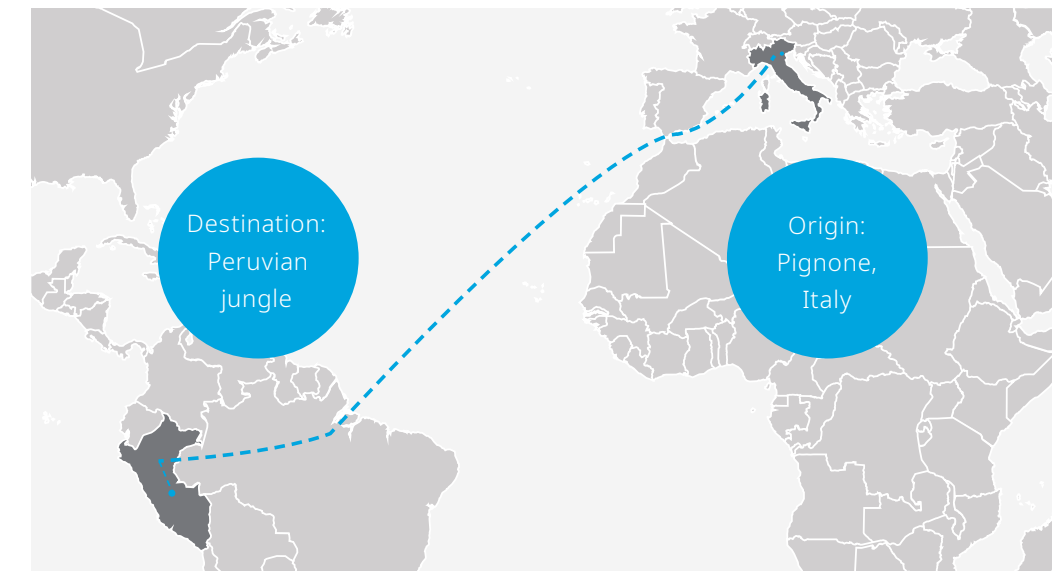
» The offloading operation onto nine barges took place midstream on the Amazon River. «

on site, we found that the actual structure of the barges did not match the drawings submitted by their owners. This situation required intense naval engineering works to attain the real barge conditions reflected in the drawings, and proceed with the barge-related calculations required by the client's underwriters.



The challenges

- Extremely remote area in the jungle
- Restrictions due to climate (El Niño, tropical rainfalls)
- Fluctuating water levels within a single day, up to 1.6 meters
- Delicate offloading operation midstream on the Amazon River
- Availability of adequate barges



More than 5,000 km by river through the Peruvian jungle



Project Data

- Shipping period from October 2015 to April 2016
- Volume of 627 pieces, 1,837 MT and 9,928 cbm in total
- Maximum heavy lift of 67 MT

Project Insight:

PNG LNG Project



PNG LNG is an integrated development that includes gas production and processing facilities in the Southern Highlands and Western Province of Papua New Guinea.

PNG LNG includes liquefaction and storage facilities (located northwest of Port Moresby on the Gulf of Papua) with a capacity of 6.6 million metric tons per year. There are over 700 kilometers of pipelines connecting the facilities.

deugro Projects Australia, together with deugro in Papua New Guinea (PNG), successfully executed consignment number 1,000 for the EPC4 contract in support of the PNG LNG Project in Papua New Guinea.

Besides the worldwide forwarding and expediting scope handled through the support of deugro's

global office network, deugro PNG managed the challenging onshore logistics component in Papua New Guinea for the EPC4 contract. Over 100 AN124 flights took place before the last piece of equipment was delivered via this unique "air bridge" approach.

After an approximately 800-kilometer flight, the AN124 landed in Komo in the Papua New Guinea Highlands. deugro's team then offloaded the cargo packages with our Goldhofer trailers and managed the interim storage and handling of these packages within a laydown yard managed by our Komo-based staff.

Once the job site was ready for the plant and equipment to be installed, deugro PNG managed the delivery of these packages via our own trucks and trailers over a number of treacherous roads and steep inclines.

A critical component in the planning and establishment of the transportation equipment allocated to the project was our forever keen and highly capable transport engineering team. Such an operation, with deugro taking on the task of self-managing the heavy haul scope of works in a challenging environment such as Papua New Guinea, has greatly benefited from and, to a great extent, was reliant on the technical support.

The project team conducted pre-award execution studies combined with frequent infrastructure and equipment surveys following the project's signoff. The preplanning phase over a 16-month period and ongoing surveys in a constantly changing environment proved to be invaluable, since the project, and subsequently deugro's tasks, moved into the more complex handling and heavy haul scope of work.

» 300,000 FRT of offshore transportation to Papua New Guinea. «

Project Insight:

Parque das Conchas (BC-10) Project

Parque das Conchas (BC-10) is an energy-producing, deepwater project located in the Campos Basin, off the coast of Brazil. deugro has been awarded the transportation of accommodation modules from UAE to the BC-10 field. The modules are helping to operate a Rigless Intervention System that serves to facilitate the replacement of worn or failed caisson-based artificial lift systems deployed at the project site.



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Project Data

- Client: SBM Offshore
- Project Owner: Shell
- Cargo: Accommodation modules, 2,000 FRT
- Cargo Highlights: 12 x 12 x 7 m / 85 MT
- Origins: Abu Dhabi, UAE
- Project Location: Off Guanabara Bay, Brazil



HSE Requirements
Beyond the strict standard

A total of six hazard identification (HAZID) or job safety analysis (JSA) meetings were held in Kuala Lumpur, Abu Dhabi and Rio de Janeiro prior to each critical step of the operation. In addition, the scope of surveys had been expanded to include bathymetric surveys in Abu Dhabi, since a rock was blocking part of the jetty and was considered "unsafe."



Technical Requirements
Transport engineering

Given Shell's deep knowledge and experience, this project included complex offshore requirements and, subsequently, very complex technical requirements. This involved a lengthy and in-depth approval process between Shell and deugro, covering the method statement and the respective transport engineering documents.



Vast Distance
Teams in multiple time zones

Considering the vast geographical distance the accommodation modules had to overcome, close cooperation of all deugro offices involved worldwide was required. All in all, this project resulted in excellent teamwork—both SBM Offshore and Shell highlighted and appreciated how well deugro's offices worked together to make this project a success.

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a company of the **deugro group** 

