deugro

The deugro Service Portfolio

Sustainable Energy Industry

deugro's Sustainable Energy Expertise at a Glance

With a team of experts specialized in the sustainable energy sector, deugro has the know-how needed to tailor unique solutions that meet clients' needs. We leverage our experience to identify requirements throughout all project phases and the supply chain, and are at our clients' side to support a smooth process within budget and on schedule.

For every sustainable energy project, deugro provides innovative solutions. We have a proven track record built on the successful execution of multiple projects. Thanks to our broad market presence, with experience in various fields, we are able to take advantage of synergies and industry contacts to provide our clients with the best in terms of safety, availability, cost and time schedules.

In regards to the sustainable energy industry, deugro is offering logistics solutions for low-carbon projects. These include biomass, carbon capture, energy from waste, geothermal, hydrogen, on- and off-shore wind , solar, and wave and tidal developments.

We understand the specific challenges facing the sustainable energy industry, such as remote job sites, tight delivery schedules, limited resources in remote areas, permitting and regulatory compliance issues, stringent local requirements, climatic conditions and infrastructure limitations.

In the power generation sector, energy production from sustainable sources is constantly growing, and industry experts are expecting this trend to continue well into the future. deugro stands ready and able to support its wind and solar energy clients during this period of rapid growth and expansion.
Solar power capacity installed worldwide is projected to more than double, or even triple, to more than 500 GW between 2016 and 2020. By the year 2050, solar power is anticipated to become the world's

Specialized Supplier

Family Enterprise Since 1924

Global Access 40 + Countries 70 + Offices

Trusted Partner

In-house Chartering Team

largest source of electricity, with solar photovoltaic and concentrated solar power contributing 16 and 11 percent, respectively.

In the wind sector, the market is also growing rapidly, especially within offshore wind. The market trend is seeing an increase in capacity, toward multi-megawatt turbines now also being installed in deeper waters, and a widening of the geographical areas for installations. The offshore wind industry will represent a major portion of the world's energy supply in the future. As a result, the wind sector is becoming an ever more global industry, both onshore and offshore.

Tailor-made transportation vessel *Rotra Vente* – RAPID Offshore Wind Logistics Concept

Our Services for the Sustainable Energy Industry

We offer consultancy services, project planning and full-service project forwarding solutions tailor-made for the sustainable energy sector:

- Technical Engineering
- Chartering
- Multi-modal transport
- Field Management
- QHSES
- Cargo Insurance
- IT Solutions
- Port Agency
- Stevedoring
- Preassembly and storage of key components
- Warehousing
- Packaging
- Equipment & tooling design and fabrication

Offshore Wind Jacket and Tripod Foundations


NO24

QHSES – Safety First!

Safety is deugro's top priority. At the core of our safety culture is where you will find our deugro group Life Saving Rules, which set the standard for all deugro group companies. We not only realize but unequivocally stand unified on the statement "Our people are our greatest asset," also regarding the people of the companies we work with in partnership, to safely deliver world-class service to our clients. As a company, we must ensure that we have resolute and safe systems of work in place to protect and preserve the health, safety and well-being of our employees.

For deugro—a company of the deugro group—we utilize the policies, system and standard operating procedures that have been developed and make up our ISO-accredited Integrated Management System (IMS) as our directive on how we manage and safely deliver quality service.

We have ISO-certified and accredited management systems in:
Quality
ISO 9001:2015
Environment
ISO 14001:2015
Occupational Health and Safety
ISO 45001:2018

This system is continuously reviewed, monitored and developed. Internal triggers allow us to quickly make any necessary adjustments and to ensure we meet both our company objectives and our project KPIs while fostering continuous improvement.

At deugro, we integrate quality, health, safety, environment and security (QHSES) into every aspect and phase of the client's project.

Our success at executing projects safely and meeting client's expectations starts with a risk-based approach. From the beginning, we utilize our very experienced and diverse workforce to collaboratively identify all hazards that can cause harm to a project and develop suitable control measures to either eliminate the risk or assuredly reduce the risk to an acceptable level.

This risk-based approach, along with working under our years-long, tried-and-tested Integrated Management System gives us direction in ensuring that we develop project-specific quality, environmental and safe systems of work.

Through proper planning and managed execution, through the implementation of identified control measures as well as the use of up, down and cross communication, and through the constant review and monitoring of our performance on all levels and implementation of corrective actions whenever necessary, we deliver all project QHSES KPIs while delivering the most important aspect of any project: the safety of all stakeholders.

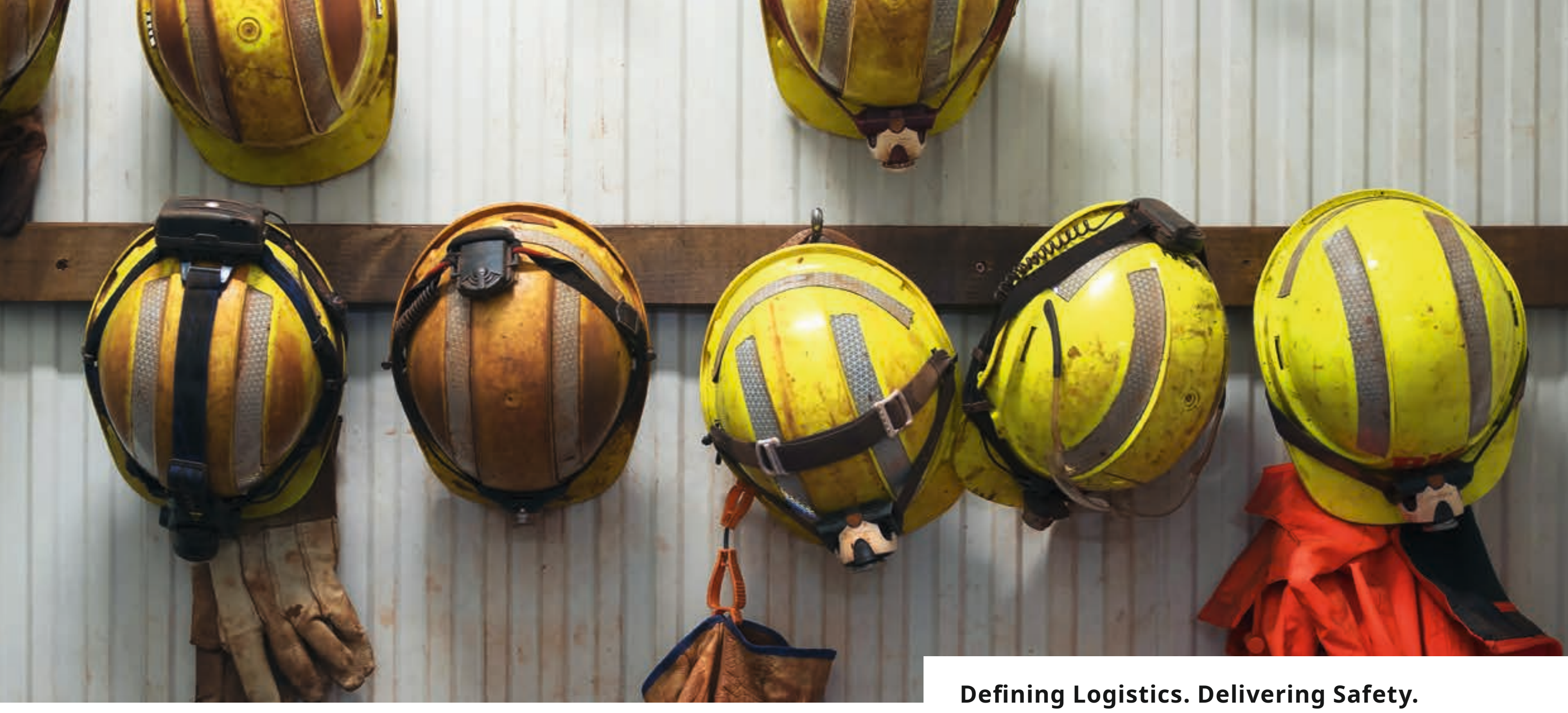
Our approach to your project

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



Defining Logistics. Delivering Safety.

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

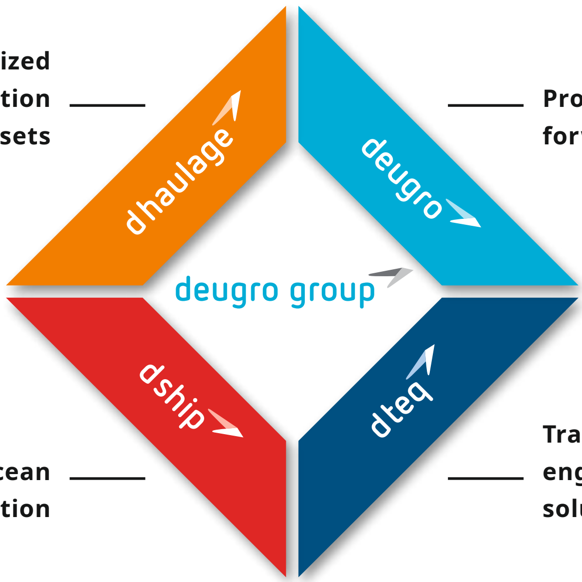
deugro group:
The Unique One-stop Shop

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:

Specialized transportation assets

Project freight forwarding



Global ocean transportation

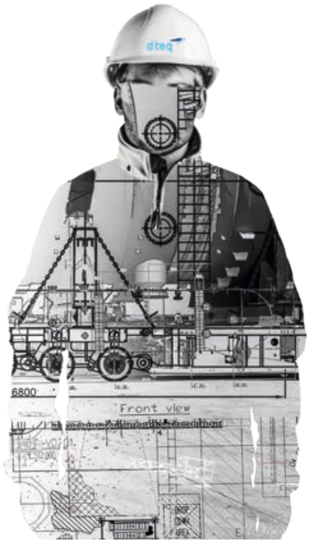
Transport engineering solutions

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.

Offshore Wind Logistics Concept, deugro Danmark A/S

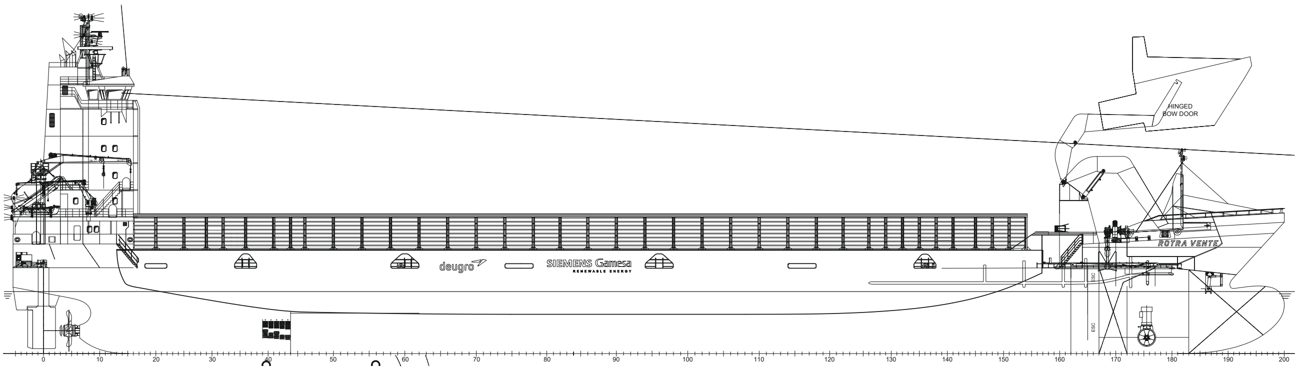
deugro completed a unique transportation concept that included tailor-made transportation vessels with a special roll-on/roll-off (RO/RO) function.

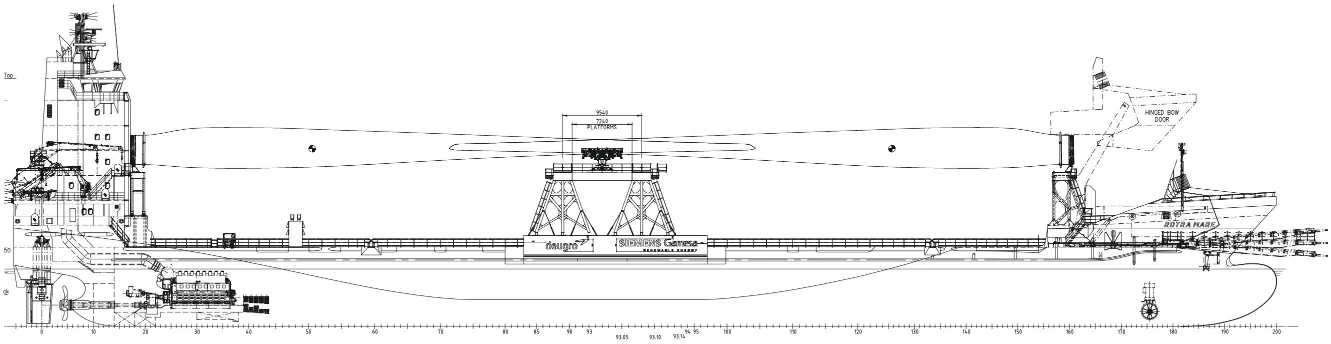
With the building of these vessels, deugro worked for the first time on a contract to plan and execute custom-designed ships. The initial project went far beyond a conventional approach to ocean freight. In fact, we needed to study the entire offshore and shipping industries to come up with an optimized design. Because no off-the-shelf industrial solutions were available on the market to meet the original project's requirements, the dimensions and weights called for innovation. deugro devised a solution to redesign the vessels and make them fit for purpose. The method we chose is flexible, innovative, efficient and safe: Two newly built RO/RO vessels were to handle the transportation. Additionally, minimal crane usage was to significantly enhance both savings and safety. Thanks to deugro's solution, transportation costs are expected to decrease by approximately 15 to 20 percent when the project is completed.

The vessels are designed to be flexible to allow for both RO/RO and lift-on/lift-off (LO/LO) operations, while holding cargo under deck at the same time.

In December 2016, Siemens and deugro celebrated the delivery of the first vessel, Rotra Vente, in Esbjerg, Denmark, together with clients and representatives of the offshore wind industry. Following the event, the vessel took up operations, connecting components from various wind turbine production facilities with installation harbors in the North and Baltic Seas.

Since March 2017, the construction of the sister ship, Rotra Mare, has been completed. It was built and optimized to transport towers and





rotor blades. The vessel is assigned to navigate between production facilities in the UK, Denmark and Germany and their respective installation harbors. In 2021 and 2022, the vessels went to the shipyard for modification. Rotra Mare will become wider and longer to feature an overall length of 152.70 meters. This will enable the vessel to transport 12 blades with a maximum length of 97 meters or nine blades of 108 meters in length.

The modification of Rotra Vente is a larger undertaking, since the garage will be removed and pontoons will be welded to the vessel. The ship will also have a new overall width of 23.6 meters. This will enable the vessel to transport seven of the new 11 MW Siemens Gamesa nacelles.

“Our cooperation and continuous business development with Siemens showed us that long-term strategic partnership is the way forward in setting new standards for the industry. We are grateful for the trust and confidence that Siemens has placed in us, and we are looking forward to collaborating on future projects,” says Hans Henrik Groen, Branch Manager of deugro Danmark A/S.

» Optimizing the means of transportation is an important step in reducing the cost of energy in the supply chain. «

An overview of the rebuild of *Rotra Vente* (top), *Rotra Mare* (bottom and left)

Project Insight:

Wind Farm Projects in South Africa

deugro provided transportation and logistics services to Siemens Wind Power for two large wind farms in South Africa.

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Project challenges

- Coordination of discharge, temporary storage and on-carriage of the huge cargo volumes arriving at the Port of Ngqura on 17 vessels
- Timely provision of equipment for the on-carriage, which was not available locally
- On-carriage in a challenging infrastructure, not designed for large movements, requiring huge numbers of risk management and traffic control measures
- Site deliveries with 700+ heavy lifts and loads

Jeffreys Bay Wind Farm

The project was the result of a government initiative to approve sustainable energy capacity on the high scale of 1,800 MW, allowing for a total of 25 wind farms to be constructed over a four-year period. At the time the initiative was approved, there were no operational large-scale wind farms in South Africa. The project is located in Eastern Cape, South Africa and consists of 60 SWT-2.3-101 turbines, each featuring an 80-meter-high tower.

deugro Denmark's scope of work encompassed ocean transportation from Lianyungang, China and Vietnam (towers); Houston, USA (blades); and Esbjerg, Denmark (main components) to the Port of Coega, South Africa. From here, deugro South Africa's scope of work covered road transportation from the Port of Coega to the final destination, as well as unloading at the site.
A project laydown area of 30,000 square meters was established by deugro at the Port of Coega. This included bulk civil works so that the infrastructure would be able to handle multi-axle trailers and supply the required electricity, water and security services.

The project involved a total of 150,000 freight tons and 17 ocean freight voyages, which were booked on a combination of full- or part-charter vessels. Deliveries required more than 700 heavy lifts and loads to the site. Contractually, we were committed to delivering 2.2 complete wind turbines per week, which we met to the satisfaction of all stakeholders.

Sere Wind Farm

The wind farm is located in Western Cape, South Africa and consists of 46 SWT-2.3-108 turbines, each featuring a 115-meter-high tower. Slightly smaller than the Jeffreys Bay Wind Farm, the project laydown area here covers 25,000 square meters and was likewise established by deugro, at the Port of Saldanha.
deugro Denmark's scope of work encompassed ocean transportation from Lianyungang, China (towers); Lingang, China (blades); and Esbjerg, Denmark (main components) to the Port of Saldanha, South Africa. deugro South Africa took over from here, with the scope of work covering road transportation from the Port of Saldanha to the project site, followed by unloading on site.

The project involved a total of 168,500 freight tons and seven ocean freight voyages, which were booked on full-charter vessels. Deliveries consisted of more than 650 heavy lifts and loads to the site. We were able to deliver two complete wind turbines per week as stipulated in the contract.

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Project highlights

- 168,500 FRT of cargo, including a large number of OSHL components
- 7 full- charter ocean freight voyages
- Site deliveries requiring over 650 heavy lifts and loads
- Long-term approach to sourcing specialized trucking equipment

Project Insight:

Gullen Range Wind Farm

deugro signed a logistics contract with one of the world's leading wind turbine manufacturers. With the support of deugro group's transport engineers, deugro designed an overall cost-effective transportation and logistics model for the project and supported our client with calculating reliable freight budgets.

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Project challenges

- Safe and timely coordination and transportation of 788 oversized loads according to the construction site's requirements
- Interface management at various load and discharge ports, including the job site
- Strict quarantine regulations for imports to Australia

Also part of deugro's offer was a dedicated project team from start to finish. The deugro project manager was involved from the very beginning of the project's inception, from budget pricing to feasibility studies, and was an integral part of the operation. This included supervision at the ports of loading and discharge, as well as at site activities and meetings.

After a comprehensive pre-project set-up, which included a rigorous carrier and vendor selection process, the first of nine full-charter vessels was loaded in China.

Due to different manufacturing locations within China, the shipping schedule needed to incorporate two ports of call, namely Taican and Tianjin, before arriving at the final destination, Port Kembla, Australia. These two ports of loading added pressure on the delivery schedule, providing further risk exposure to potential port congestion and the possibility of not receiving the cargo components alongside the vessel within the agreed Laycan periods.

On average, we completed the loadings in both ports within six days, with a further 18 days (average) for the ocean voyage to Port Kembla.

In cooperation with deugro China, we executed the entire shipping project on time.

» deugro designed an overall cost-effective transportation and logistics model for the project and supported our client by calculating reliable freight budgets. «

deugro Australia's project team, together with deugro China, inspected all the cargo prior to each voyage. Cargo condition and integrity were checked, including adherence to Australia's strict quarantine regulations, prior to loading to minimize the risk of potential quarantine holds, which would impact the construction schedule.

Project Insight:

Belo Monte HVDC Project

Now finally up and running, Belo Monte is the third-largest dam in the world today. It is Brazil's main hydroelectric plant, generating more than 11,000 megawatts of power at full capacity. The power generated is transmitted over a 2,000-kilometer-long transmission line, able to provide sustainable energy for 17 entire Brazilian states and hence 60 million people. This amount of energy replaces the output of about eight nuclear power plants.

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Project data

- Power vertical: Transmission
- Cargo: 28 transformers (14 x 400 kV, 219 MT each; 14 x 800 kV, 332 MT each)
- Max. dimensions: 1,070 x 480 x 510 cm
- Origins: Germany, China and Brazil
- Places of delivery: Vitória do Xingu (Belo Monte job site) and Estreito (substation), Brazil
- Volume: 68,343 FRT

The transformers were shipped by heavy lift vessels to the ports of delivery in Santos and Belém, where parts of the cargo were transshipped on locally sourced deck barges with special grillages. This allowed the self-propelled modular trailer (SPMT) to enter underneath the transformer at the final discharge location in Xingu, Pará for further transportation. The other part of the cargo was transported by road with specialized heavy haulage equipment.

After a five-day voyage through the Bay of Guajara, Marajo, Pará River, Straight of Breves, and Amazonas River, before finally heading into the Xingu River, the deck barge arrived at the discharge location at Xingu, where a custom-made mobile jetty was waiting to discharge the valuable cargo. This jetty had been constructed in cooperation with a subcontractor especially for this project, in order to be able to adjust to the local tide variations. In addition, using the customized jetty allowed the team to minimize the impact on the community and to avoid the disruption of the vital ferry service of the Trans-Amazonian Highway.

The discharge at Xingu was one of the major challenges of the project and had to be planned and executed carefully in cooperation with a team of engineers from dteq Transport Engineering Solutions (dteq), a company of the deugro group. While docking, the barge had very few contact areas available and specific mooring points had to be built. Once the barge was safely placed for the roll-off operation, the cargo needed to overcome a 14-percent incline on the gravel path of the Xingu riverbed. The solution to secure this crucial

Challenges

- Difficult and complex Brazilian terrain
- Roads affected by transformer size
- Significant tide changes, winds, currents and busy ferry traffic on the Amazon River
- Steep 14% incline at discharge in Xingu
- Extremely long transportation routes spanning half the Earth's circumference

move was a special surface on the jetty to prevent a slide backwards. The whole jetty was fixed on steel beams built into the ground. This precise move was only effective due to the great teamwork of all project parties involved.

» This precise move was only effective due to the great teamwork of all project parties involved. «

From here on, deugro successfully managed the transportation via SPMT to the final job site, the HVDC converter station in Xingu. This station is able to receive energy from the Belo Monte complex and convert it into alternating current in order to transport the energy to the town of Estreito, which is 2,000 kilometers away.

At the same time in Estreito, multiple axle line trailer and girder bridge units delivered the remaining transformers. The sheer size of each transformer meant that roads would be affected. In cooperation with the local authorities, deugro minded all weight limits and other regulations. Various measurements were taken, such as allowing the roads to "breathe" between each massive cargo move or bridge inspections after each load.

One particular road section was so uneven that it required the height of the hanging cargo on the girder bridge to be raised. The cargo would otherwise have been hung up on the hilly parts of this challenging route.

In addition to the power distribution part of this project, deugro transported equipment designated for the power generation plant at the Belo Monte job site as well. Fourteen transformers weighing up to 218 metric tons each, six transformers of up to 265 metric tons in weight, rotors and turbine shafts were shipped from their factories from various origins in Brazil to Vitória do Xingu. The scope not only included transportation by road and ocean, but also discharge and storage.

Project Insight:

Solaire Holman Project

deugro handled the complex solar project, including last mile transportation and storage of 5,256 pallets, for a 50-megawatt solar plant—adapting smoothly to last minute challenges and with zero incidents.

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Project highlights

- 171 of 179 containers received within only two weeks, with a limited receiving capability at the job site
- Quick localization of an interim storage site in Santa Teresa
- Temporary indoor storage in Houston, provided by deugro, for more than 5,256 pallets of solar panels until the job site was ready to receive them
- No demurrage charges

The 50 MW solar plant, consists of solar photovoltaic (PV) units and a single-axis tracking system. deugro's project scope included transporting and handling solar panels, solar steel racking, and components in almost 400 40-foot containers from multiple ports of discharge to the job site in west Texas.

The solar steel racking and the components were transported from China in 179 40-foot containers, arriving by rail in Santa Teresa, New Mexico. The initial plan was for 35 containers per week to arrive over a period of five weeks. In reality, 171 of the containers were received within only two weeks and needed to be pre-pulled from the rail station.

The solar panels were shipped from Turkey and South Korea to Houston in 219 40-foot containers. Transporting the solar panels was equally challenging because the containers arrived in a very short period of time. To avoid additional fees, they needed to be pulled from the port.

One constraint was the job site's receiving capability of a maximum of eight containers per day. Due to the limited time for clearing the rail terminal and port, deugro worked quickly with its approved suppliers to locate an interim storage site in Santa Teresa, Houston and sourced qualified trucks to move all containers out of the rail ramp and the port to avoid any additional charges. deugro destuffed more than 5,256 pallets of solar panels

» deugro worked quickly with our approved suppliers to locate an interim storage site in Santa Teresa and sourced qualified trucks. «

and temporarily stored them until the job site was ready to receive them.

In conclusion, all materials were delivered damage-free and on schedule. Given the tight time frame and various unplanned challenges, the project was a great success, with 100 percent client satisfaction and zero incidents.

deugro.com

a company of the deugro group