

Rotra Mare loaded with 6 blades and 7 tower sections on its way to Rotterdam



Offshore

Wind Operations

» The development required a lot of engineering and naval architecture work. «

dteq went far beyond a conventional transportation approach by assisting the *Rotra* vessel modification concept, selecting the most suitable equipment and advising on how to modify it. Two purpose-built vessels—*Rotra Vente* and *Rotra Mare*—were redesigned specifically to deliver wind components to project locations. Because no off-the-shelf solutions were available, dteq was deeply involved in the development of this own innovative design.

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Rotra Vente / Rotra Mare

- A movable bow allows trailers to roll onto the main deck over the bow ramp.
- A hydraulic sliding ramp weighs 70 MT, is 16.5 m long and 5.6 m high.
- To avoid excessive heeling and trim variations during cargo operations, the vessels are equipped with an automatic heeling tank system and a manual forward/aft trimming system with a capacity of 2,000 CBM per hour.

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Scope of work

dteq Transport Engineering Solutions' scope of work involved the planning of a unique transportation concept, including a full-scale roll-on/roll-off (RO/RO) option with a tailor-made oceangoing vessel for the offshore wind industry. This concept was also designed to use the deck space efficiently for cargo stowage and lashing. Developing this specific approach required a lot of engineering and naval architecture work, hand in hand with the vessel owner.

Project achievements

dteq delivered technical expertise to modify the self-propelled modular transporter (SPMT) solution sourced for the RO/RO operation. Combining the vessel ramp and

SPMT created flexibility for crane usage at both the loading and offloading ports, which also proved to be more cost-effective and independent of wind conditions. Stowage plans were arranged, and the lashing concept was adapted to the deck's capacity and available space.

In addition, the vessels *Rotra Mare* and *Rotra Vente* went to the shipyard for tailor-made modification. The *Rotra Mare* has become wider and longer to feature an overall length of 152.70 meters, which will enable the vessel to transport 12 blades with a maximum length of 97 meters or nine blades of 108 meters in length. The *Rotra Vente* will also have a new overall width of 23.6 meters, which will enable the transport of seven new 11-mega-watt Siemens Gamesa nacelles.

