Overview

CASE STUDY

ElectRA 2500-SX tugboat

PRODUCT

2 x 12M26.3 SCR Marine gensets

CERTIFICATION

IMO Tier III

Classed by ABS

RATING

954 kWe – 60 Hz

690 VAC

APPLICATION

Oil & gas terminal tugging

PARTNERS

Distributor: BTM Co.

Shipyard: Sanmar

Customer: BOTAŞ.

Baudouin Powers Sanmar's Next-Generation ElectRA Tugboats for BOTAŞ Marmara Ereğlisi LNG Terminal & BOTAŞ Saros FSRU Terminal.

Baudouin generator sets have been selected to power a new series of advanced diesel-electric tugboats built by Turkish shipyard Sanmar Shipyards for BOTAŞ the Turkish state-owned oil and gas pipeline corporation.

Part of Sanmar's innovative ElectRA class, these tugboats represent a new generation of tugboat designed to combine operational performance, environmental responsibility, and advanced propulsion technology. Each vessel integrates high-efficiency diesel-electric propulsion supported by battery energy storage, enabling superior maneuverability, optimized fuel consumption, and reduced emissions during demanding terminal operations.

Classed by ABS, the vessels measure 25.40 meters in length overall (LOA) and deliver a bollard pull of 70 tons, with a maximum speed of 12 knots.

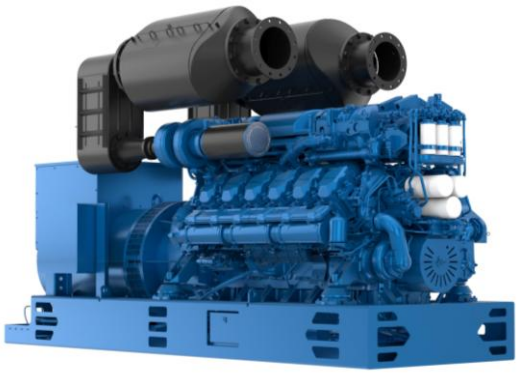
The ElectRA tugboats are designed around a diesel-electric propulsion architecture, where propulsion motors are powered by onboard gensets rather than mechanically coupled diesel engines. Complementing the diesel-electric system is a 5085 kWh battery energy storage system supplied by Corvus Energy, which enables additional operational flexibility and reduces engine load variations.

To meet stringent environmental regulations applicable to port and terminal operations, the gensets are fitted with SCR aftertreatment systems, reducing nitrogen oxide (NOx) emissions and ensuring full compliance with IMO Tier III standards. The successful integration of the diesel-electric and battery systems required close coordination between Sanmar Shipyards, Baudouin's R&D teams, and BTM Avrasya, ensuring optimal system performance and reliability.

Operational Benefits

By separating power generation from propulsion, the generator sets can operate closer to their optimal load range, improving fuel efficiency and reducing engine wear compared with conventional mechanical propulsion systems. This configuration is particularly well suited to tugboats, whose duty cycles typically involve short bursts of high power followed by extended periods of low-load or standby operation.

Electric propulsion motors deliver instant torque and highly responsive thrust control, enabling precise maneuvering when assisting large vessels in confined port environments. This results in enhanced operational safety and improved efficiency during docking, escorting, and positioning operations.



The integration of a battery system further enhances operational flexibility by supporting power peaks and enabling smoother load management, contributing to reduced fuel consumption and lower emissions. Additionally, electric propulsion significantly reduces noise and vibration levels, creating a quieter and more comfortable working environment for the crew while minimizing acoustic impact in port areas.

Finally, the multi-generator configuration provides inherent redundancy, ensuring continued vessel operation even if one generator set is offline—an essential feature for critical operations within energy terminals.