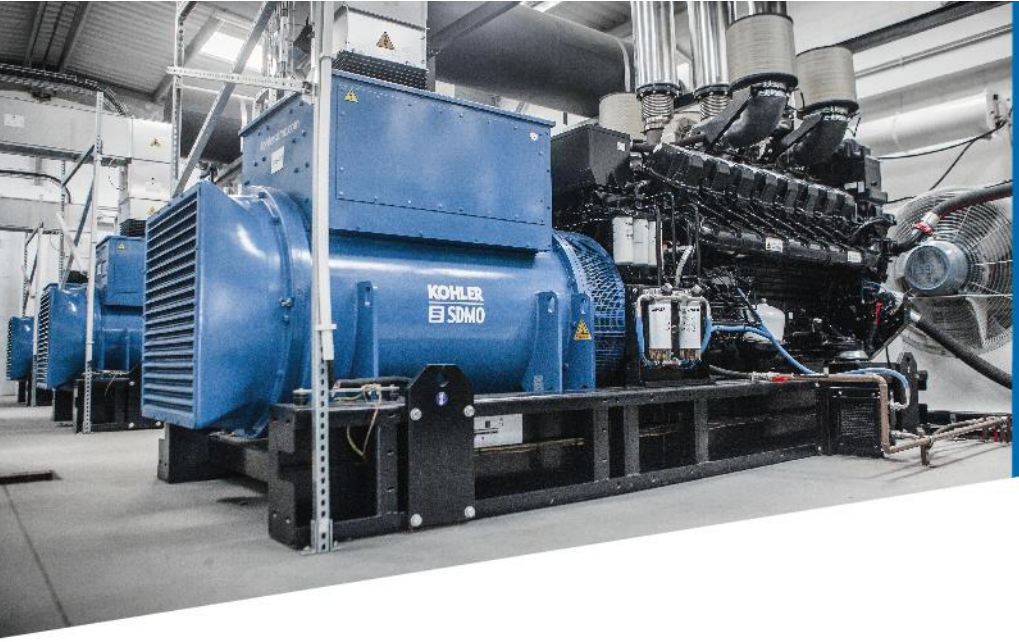


KOHLER | SDMO

APPLICATION: TRANSPORT

CUSTOMER: MPS

POWER PLANT: 4 X 3100 kVA

LOCATION: GHANA

NEW TEMA PORT TO BE POWERED BY A KOHLER-SDMO BACK-UP POWER PLANT

A major project to create a leading maritime hub in West Africa

MPS TEMA

EIFFAGE RMT

The Tema Port in Ghana welcomes significant volumes of container traffic, particularly from neighboring landlocked countries such as Burkina Faso or Mali. A project to extend the current installations was launched in 2014 with a view to reducing congestion at the harbor and enabling it to manage even greater maritime traffic. The plan is to build a new, larger port terminal to manage the increased trade flow, thereby making the Tema Port in West Africa more competitive.

Meridian Port Services (MPS) is a joint venture between APM Terminals, Bolloré Africa Logistics and the Ghana Ports & Harbours Authority (GPHA). This joint venture is managing the extension project before taking charge of the port's operations.

In particular, the project involves dredging the channel, constructing a breakwater measuring 3550 m, 127 hectares of port platform, new berths, buildings and a standalone power station.

The Tema Port currently has a capacity of 1 million TEU (Twenty-foot Equivalent Units, the unit of measurement used for the volume of containers in a terminal or on a ship). The extension project will expand the capacity of the port almost fourfold to 3.7 million TEU. The project will also extend the port's current docks from 574 m to 1400 m, and will double the number of berthing spaces for container carriers from two to four.

Partner teams to provide high-quality installations

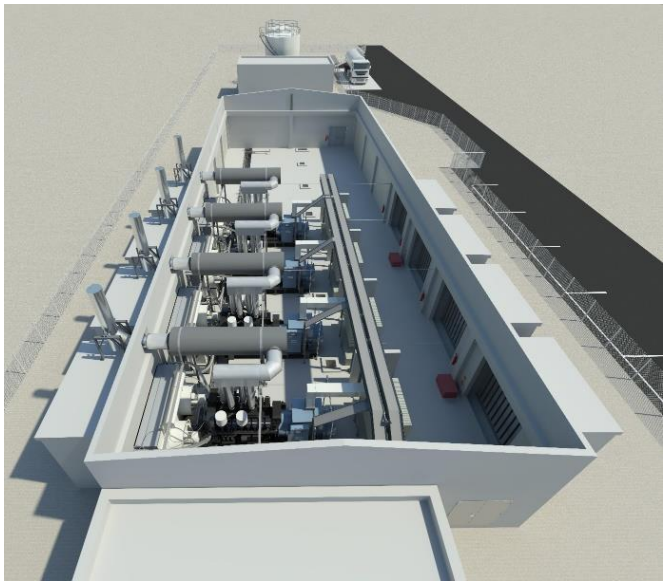
The project includes a backup power plant to provide the new port with a secure electrical power supply.
This power plant must supply power to the entire port: the gantry cranes, equipment for handling the containers, workshops, administrative buildings, lighting, etc.

The Eiffage Group is working on several aspects of the project, especially the electrical part of the port via its German subsidiary RMT. As a result, KOHLER-SDMO partnered with RMT to offer the backup power plant to equip the new Tema Port.

View of the outside of the backup power plant in the foreground with two fuel tanks (left), and the building housing the four generating sets (center)

A powerful backup power plant

The backup power plant includes four KD SERIES 3100-kVA fuel efficient diesel generating sets, which may be extended to six in phase 1 of the project. The power plant is housed in a purpose-built installation divided into several areas: Generator hall, fuel oil processing plantroom, medium voltage switchroom, low voltage switchroom which includes the generators' control-synchronizing panels.



3D view of the power plant buildings

The power plant has a voltage of 20,000 V. The installation is completed with bus ducts, electrical transformers on a retention container and medium-voltage switchgear.
The motors are cooled by vertical dry-coolers installed in the building.
Sound trap enclosures reduced the sound level of the power plant to 85 dB(A) at 7 m.

The power plant is equipped with generating sets from the KD SERIES range, which won the Gold Award of the 2018 Products of the Year.

Fuel delivery: Two external tanks, with a capacity of 150 m^3 each, have been built on site.
The installation is completed with a fuel transfer station, featuring a volumetric meter; this station can empty a fuel tanker in one hour.

Fuel tanks

The external tanks are connected to a 4000-liter daily service tank. The diesel is then processed by two single centrifugal pump skids (7 m^3/h).

The fuel processing room also houses two 1000-liter tanks: one for fresh oil and one for used oil, with a pump for topping-up and draining operations. A third tank (this time with a capacity of 1500 L) is dedicated to coolant.

Fluid processing room

Installations designed for the marine environment

The power plant includes processes and equipment specially designed for coastal operations.
The alternators have been tropicalized and the generating sets feature anti-condensation pre-heating elements.
In terms of ventilation, the dry-coolers have undergone a special treatment to protect the wiring harnesses, and the ventilation grilles for the air inlets and outlets are made from stainless steel, as is the external exhaust piping.
Finally, the two external fuel tanks are coated in category C5M paint.

The generator power plant was installed by RMT under the supervision of KOHLER-SDMO.
Ghanaian operators, supervisors and managers received and benefited from training provided by the KOHLER-SDMO teams on how to run, operate, monitor and maintain the power plant.

The new port will be operational from June 2019 and, in future, the backup power plant may be extended to include 10 generators, if necessary.

Control/command cabinets room in the power plant

Inside view of the power plant with its four generating sets

Photo credit: MPS Tema, DoDo GraphiX Media

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