

FROM DIESEL TO DIGITAL

HOW TO ENSURE SAFE POWER AND DATA TRANSMISSION



Cairo, 01.10.2026

**IN 2026, VAHLE GETS
THE WORLD MOVING.**



 **> 215** Mio.

TURNOVER IN
EURO (2025)

 **> 900**

EMPLOYEES

 **13**

MARKET
ORGANIZATIONS

 **5**

PRODUCT
GROUPS

 **4**

TARGET
MARKETS

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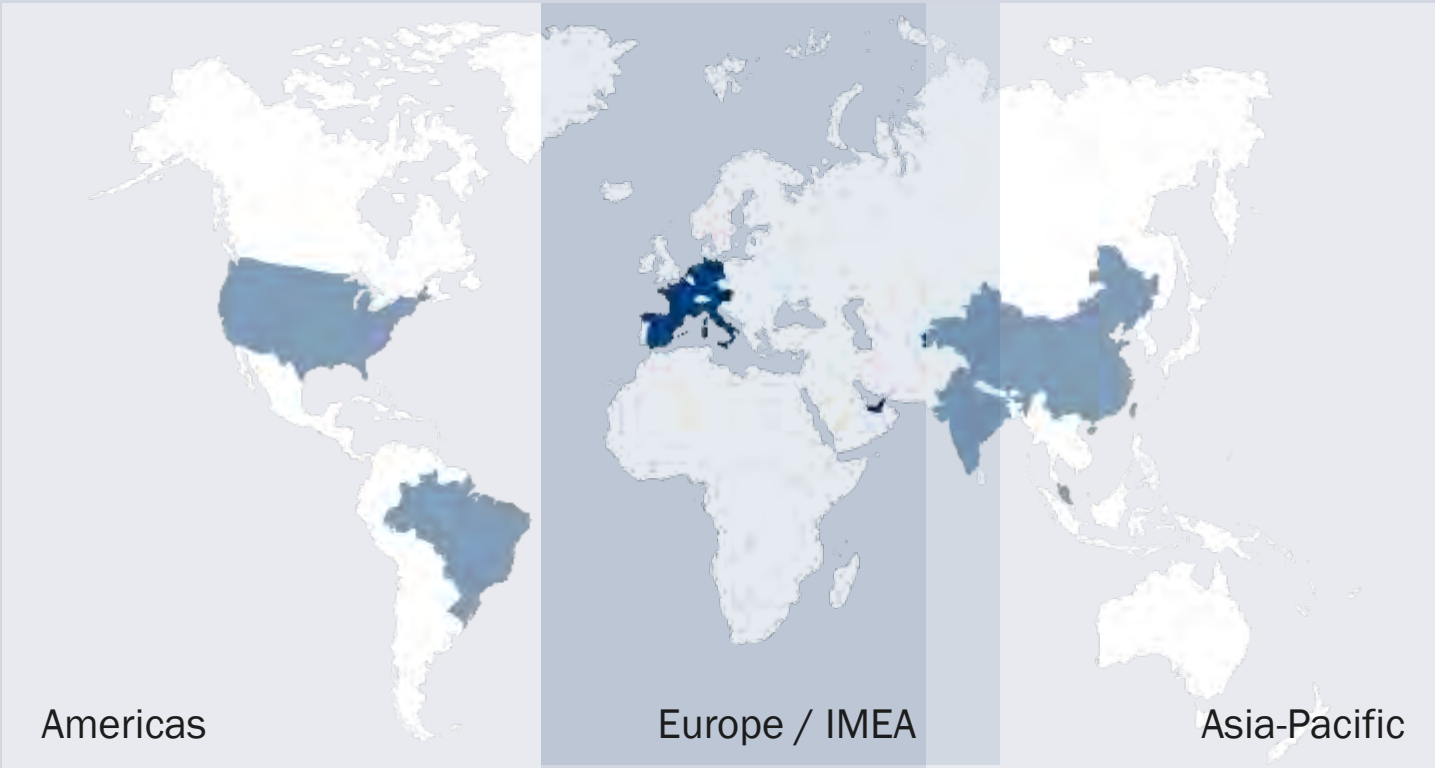
MARKET
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 **5**

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TARGET
MARKETS



Energy Transmission



Intralogistics



Data Communication



Crane Technology



Positioning



Automotive



Control Systems



Port Technology



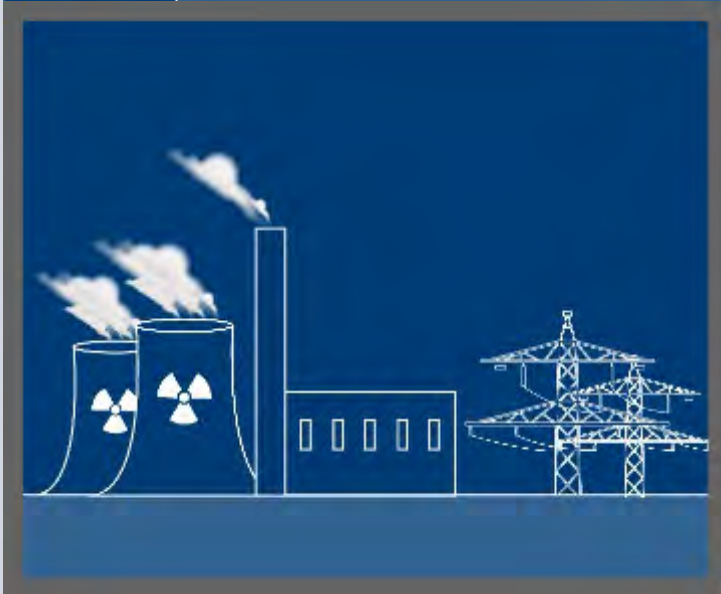
System Solutions

Simplified Container Terminal Overview



Simplified Container Terminal Overview

In a changing world – 20 years ago



Simplified Container Terminal Overview

Nowadays and in the future



Container Terminal Automation

Step by step approach



1.0 ELECTRIFICATION

Insulated conductor rails 1000V, 1000A with aluminium/stainless steel

2.0 POSITIONING

Precise position feedback with a contactless reading head

3.0 DATA COMMUNICATION

Interference-free and safe data & video

2020 - 300 Mbps

2024 - 600 Mbps

2026 - 1 Gbps

4.0 - AUTOMATION

Combination of electrification, positioning and data communication for remote control



Case study – Great Britain, HPH UK – Port of Felixstowe

Innovations and Milestones



2014 – today



Brownfield

66 ZPMC RTGs



RTG Retrofit

59 blocks (15,3 km)



Case study – Great Britain, HPH UK – Port of Felixstowe

Innovations and Milestones



2020 – today



Greenfield



8 Remote ZPMC
AeRTGCs

17 Remote KC
AeRTGCs

Container Blocks



18 blocks (5,2 km)



Great Britain, HPH UK – Port of Felixstowe

Customer case study – Out of Sustainability Report 2025



SCOPE 1

Scope 1 emissions refer to GHG emitted from sources directly owned or controlled by the company. This included the emissions from the combustion of fossil fuels for equipment operation and power generation at the terminals.



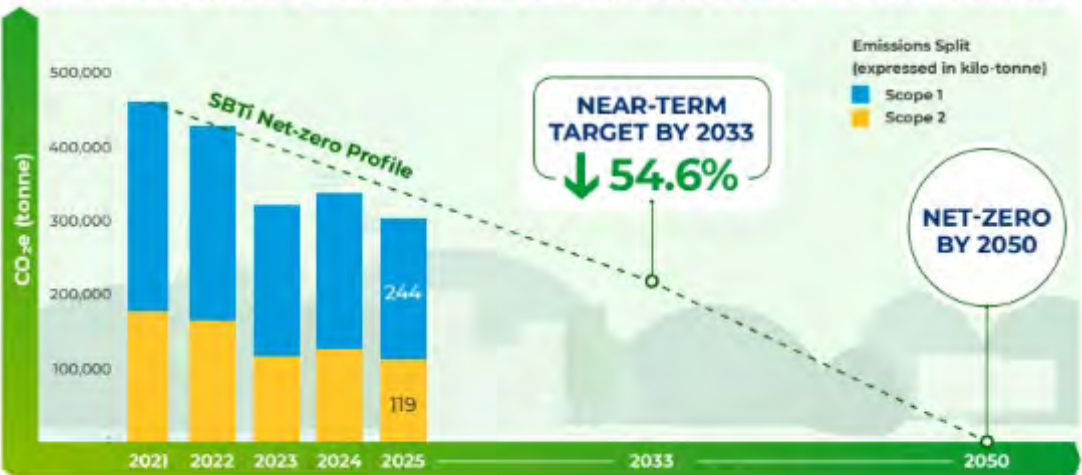
Diesel Consumption
-6.4%
compared with 2024

Total VAHLE savings since 2015 together with the PoF:

197.164.000 kgCO₂ *₂

This equals to roughly 74 million Liter Diesel = 2.114 road tanker

TRACKING SCOPE 1 AND SCOPE 2 EMISSIONS TOWARD SBTi TARGETS



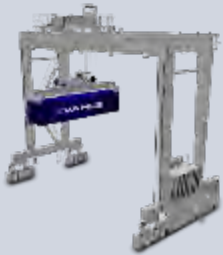
AIR EMISSIONS	UNIT	2023	2024	2025
NO _x emissions	tonne	1,035.40	1,033.50	965.46
SO _x emissions	tonne	3.48	3.46	3.38
Particulate matter emissions	tonne	95.96	94.50	87.39

Egypt, Damietta Alliance Container Terminals

Greenfield Project Success Stories



2024 - today



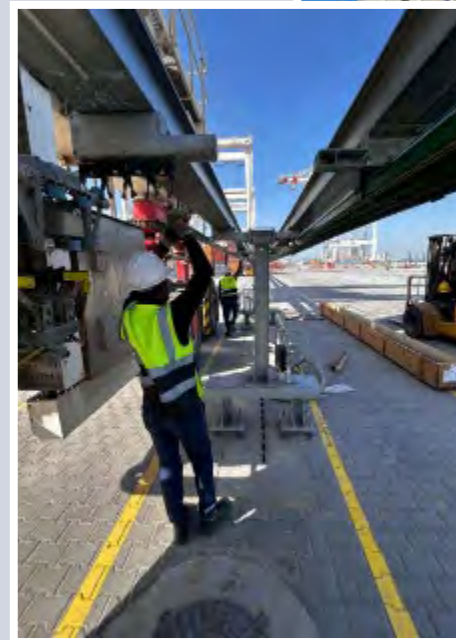
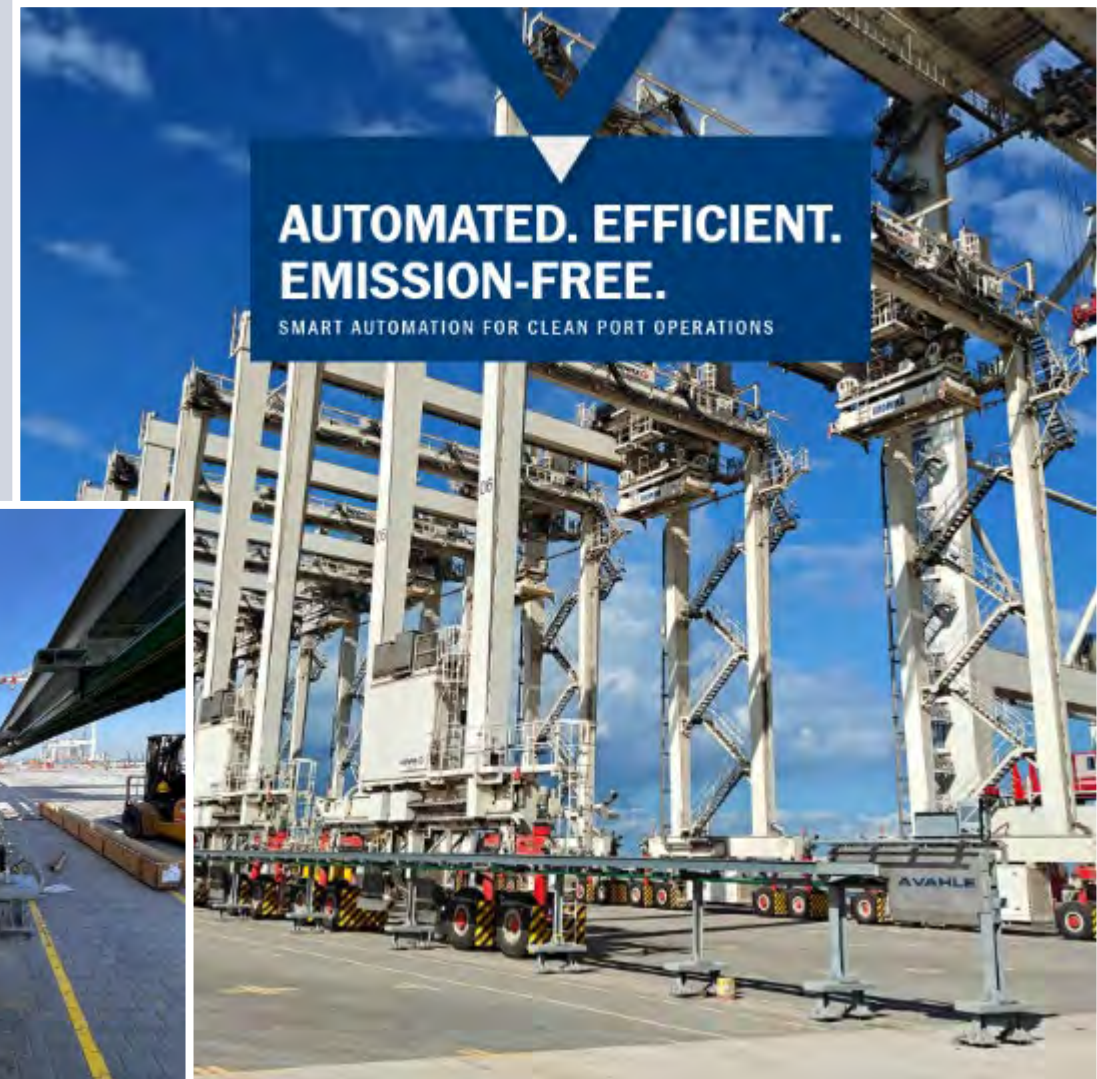
Automatic electric arm solution for 40 new GENMA (RIC) eRTGCs



Electrification of 10 double sided container blocks – 5,000 m



Including **Positioning system & RFID Block detection**

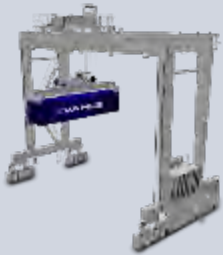


Egypt, Hutchinson Ports Sokhna – RSCT

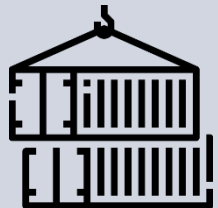
Greenfield Project Success Stories



2025 - today



Automatic electric arm solution for
18 new ZPMC eRTGCs



Electrification and automation of 8
double sided container blocks –
5,720 m



Including **Data communication rail**
SMGX 300 Mbit/s & Positioning
system

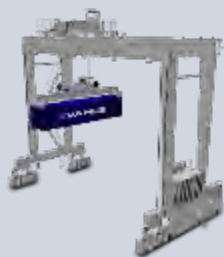


UAE, DP World Jebel Ali T1

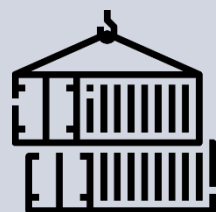
Brownfield Project Success Stories



2025 - today



Automatic electric arm solution for 1 ZPMC eRTGC (Motor cable reel removed)



Trial - Electrification of 1 Container block 247 m



Including **VAHLE Battery Energy Storage System**



Functions for retrofit and new OEM cranes



- **Block change batteries** to charge during the exit of the conductor bar powered block. We use NCA cells for this type of battery solution,
- **Hybrid batteries** in combination with smaller Diesel genset and/or conductor bar for a full eRTGC. We use NCA cells for this type of battery solution.
- **Peak shaving batteries** to cap load peaks above a defined limit. The power grid reference is kept within a defined value.

VAHLE Battery Storages for RTGCs



Retrofit projects in a VAHLE energy Battery Storage Container

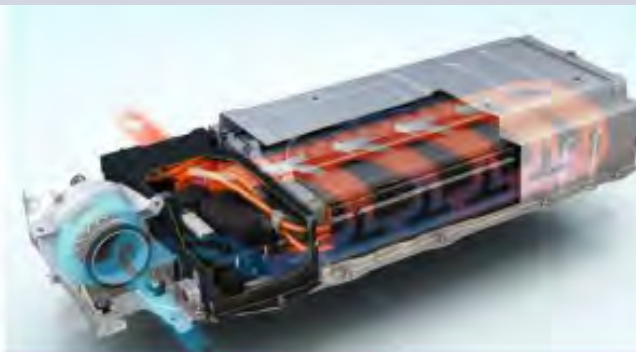


New OEM cranes in OEM e-room or Battery Power Pack

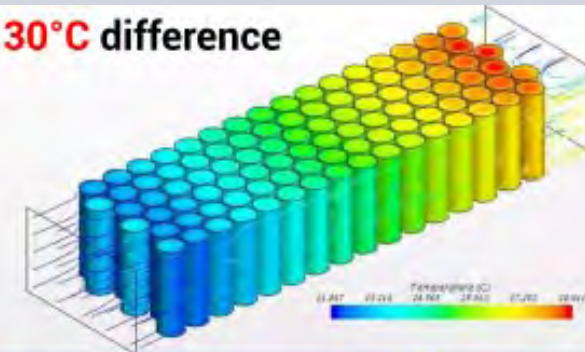


AIR COOLED

- Big space need
- Air contamination
- Low efficiency



30°C difference

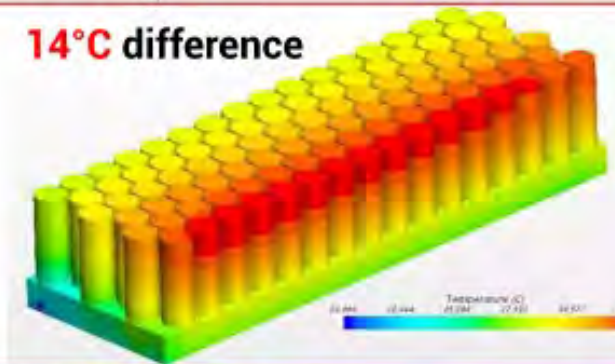


WATER COOLED

- Cold plate (volume/weight)
- Isolate water from live parts
- Water leakage risk



14°C difference

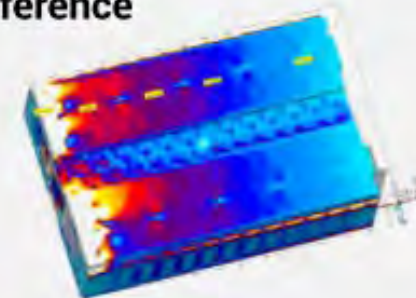


Immersion Cooling

- Best cooling efficiency
- No additional parts
- Homogeneous temperature
- Improved safety



2°C difference



Intelligent Battery Management System (BMS)

Safety BMS / BSM

Battery Management System

Battery Safety Management

European hardware and software electronics BMS

Prevent overcharge/discharge, overcurrent

Prevent over/undertemperature

- Best-in-class functional safety reaching ASIL C
- World first immersion cooled battery conforming to ISO 26262

ISO 26262 = automotive standard for safety of electronic/electronic components

ASIL = Automotive Safety Integrated Level, ranging from A to D



Benefits of VAHLE Electrification & Automation Solutions



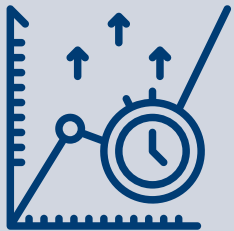
ECONOMIC

- Optimized OPEX by reduced fuel cost and idle time
- Reduced dependency on fossil fuel supplies
- Reduced GenSet maintenance cost
- Smart / remote maintenance
- Personnel costs are saved
- Productivity is increased
- Optimized Total Cost of Ownership



ECOLOGIC

- Reduction of CO₂ emissions and noise pollution
- Sustainable and green – at best with renewables



EFFICIENT

- Flexible yard operation
- Automatic connection system
- Autosteering
- Seamless synchronization
- Human Safety

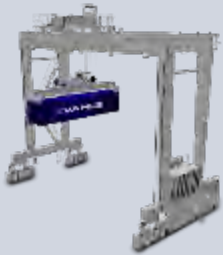


Abu Dhabi, CMA CGM Terminal Khalifa Port

Greenfield Project Success Stories



2024 - today



Automatic electric arm solution for
20 new Konecranes eRTGCs



Phase 1 - Electrification and
automation of 20 container blocks –
5,680 m



Including **Data communication rail**
SMGX 300 Mbit/s & Positioning
system



Project study - Khalifa Port | Abu Dhabi

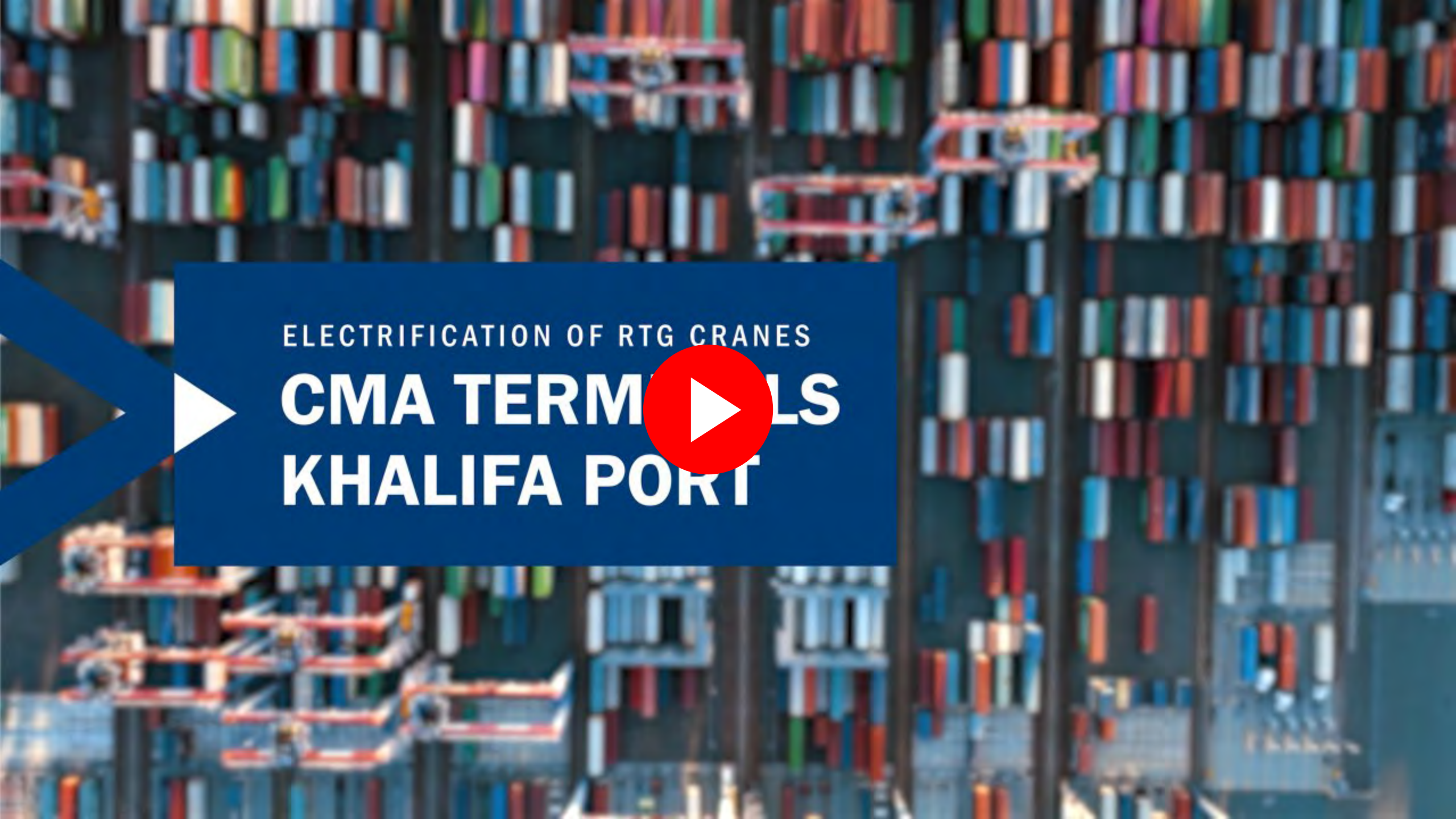
Impressions – Trimotion compact – Installation and commissioning



Project study - Khalifa Port | Abu Dhabi

Impressions – Trimotion compact – Installation and comissioning





ELECTRIFICATION OF RTG CRANES

CMA TERMINALS KHALIFA PORT

**YOUR VISION COUNTS:
WE ARE READY**

**MEET US AT:
BOOTH #6&16**



PROUD MEMBER OF:

 **PEMA**