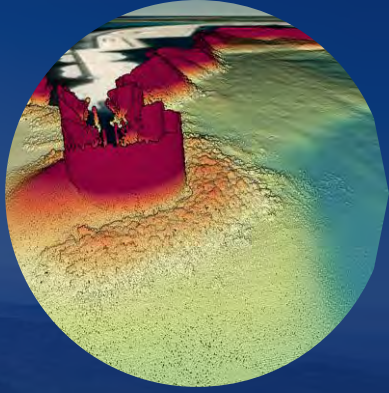
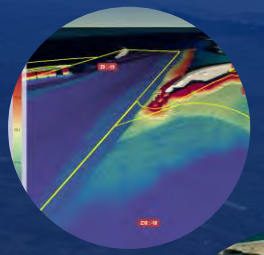
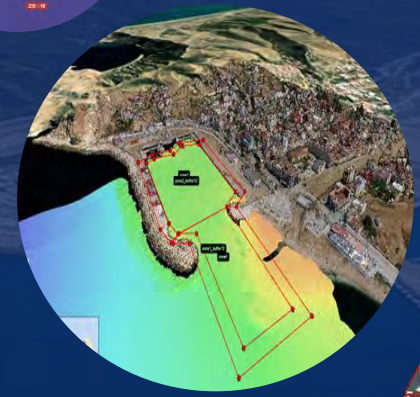
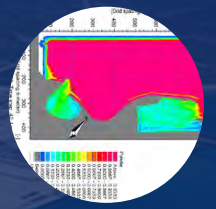
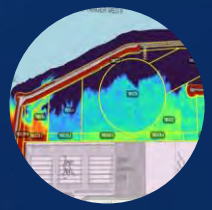
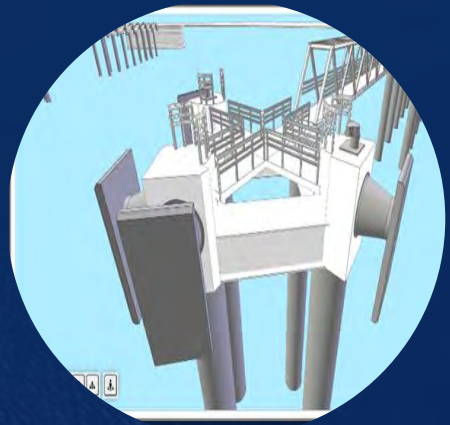
TANGER MED ENGINEERING

ENGINEERING SUPPORT TO MAXIMIZE OPERATIONAL EFFICIANCY & REDUCE CO2 EMISSION – A PATH TO NETZERO EMISSION

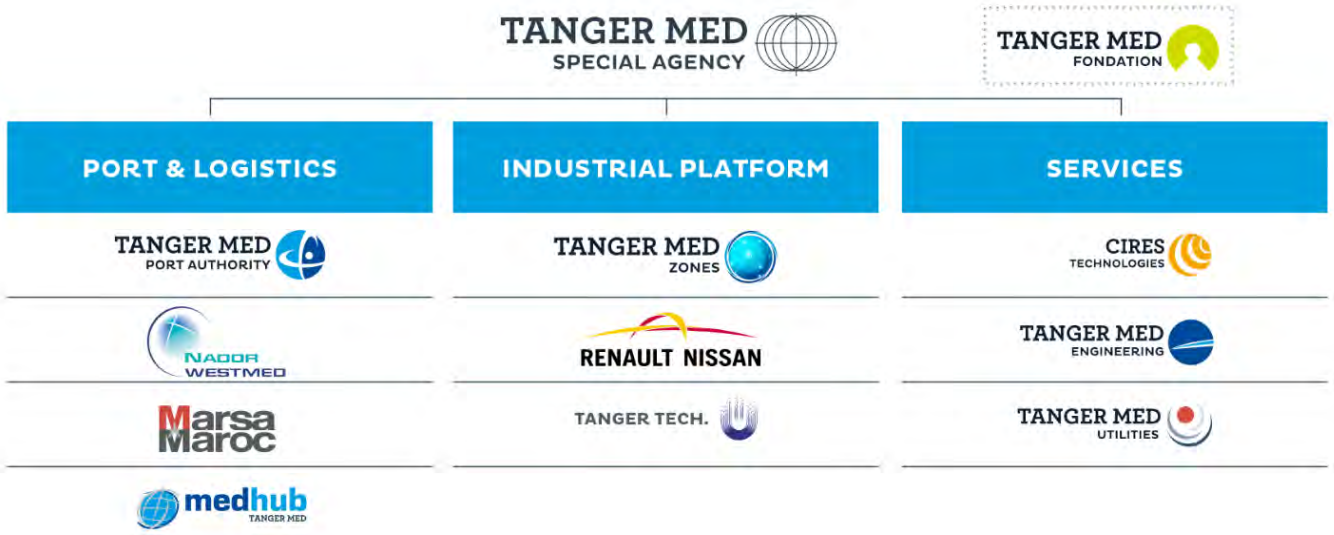




PRESENTED BY: BOUSHABA OUSSAMA

ABOUT TANGER MED ENGINEERING

WHO WE ARE?

- Tanger Med Engineering (TME) is an engineering consultancy firm, specialized in planning, design, construction supervision and asset management of ports/maritime facilities, logistic and industrial projects.
- Based on the experience and the expertise of its engineers, TME delivers innovative, value-engineered solutions tailored to the client needs.
- TME is a subsidiary of Tanger Med Special Agency (TMSA). TMSA is a public limited company with an executive board and a supervisory board, in which government ministers and heads of the public entities concerned sit. TMSA is in charge of the development, planning and management of the Tanger Med industrial-port complex



BUSINESS SECTORS

PORT & MARITIME

LOGISTICS & INDUSTRY

FIELDS OF EXPERTISE

- FEASIBILITY STUDY, CONSULTING AND PROJECT TIMELINE
- DESIGN, ENGINEERING AND PROJECT MANAGEMENT
- ENERGY TRANSITION AND ENVIRONMENTAL IMPACT
- ASSET MANAGEMENT, MODELING AND TRAINING

KEY FIGURES

EXPERTISE DEPLOYED IN

40 Ports

20 SEZs

200 Engineers & Experts

ABOUT TANGER MED ENGINEERING

OUR CAPABILITIES & SERVICES

CONSULTING AND TRAINING

- Market and feasibility studies
- Public-Private Partnerships Schemes
- Technical due diligence
- Training for port officers (safety and security)
- Certified training for pilots in the Full Bridge Marine Simulator TMMS "TANGER MED MARINE SIMULATOR".

PORT AND MARITIME

- Masterplanning and design of container, bulk and ro-ro terminals oil and ro-ro terminals
- Design of maritime structures, berthing and mooring structures
- Hydraulics numerical and physical modelling including wave modelling (Mike 21 SW and BW), hydrodynamic modelling (Mike 21 HD), sediment transport (Mike 21 ST) and maneuverability studies
- Waterfront development, marinas and cruise terminals
- Land reclamation and dredging
- Integrated coastal zones management

LOGISTICS AND INDUSTRIAL

- Logistics platforms and dry ports
- Industrial parks and economic zones
- Industrial buildings
- Logistic warehouses and storage facilities
- Roads and utilities Design (water, power, drainage, ...)
- Tertiary and office buildings
- Access and control areas

ASSET MANAGEMENT

- Maintenance management
- Inspection, expertise and risk management
- Asset management system in accordance with ISO 55001
- Performance management and life cycle cost control
- Digitization of the asset management process

MOBILITY, ENERGY AND ENVIRONMENT

- Energy: HV substations, HV lines and distribution networks
- Renewable energies: photovoltaic and wind farms
- Environment and sustainable development: water cycles, wastewater treatment and recycling, waste management
- Mobility management systems

KEY FIGURES

1 000 Ha of supervised port terminals

40 Ports accompanied both in Morocco and worldwide

10 000 m of meters of built linear quay

400 000 m² of constructed logistic and industrial buildings

2 000 Ha of developed logistic and industrial platforms

ABOUT TANGER MED ENGINEERING

OUR TRAINING CENTER

Pilots and harbor masters Training and Marine simulation

- State-of-the-art training of the pilots, and captains of ships ;
- Training of officers and crew members in charge of navigational watch ;
- Training of the captains of tug boats and other support and environmental protection vessels ;
- Training of the staff in charge of marine traffic : port control, VTS ….

Training on ports operations and Material Handling

- Container handling operations
- Bulk/Breakbulk cargo material handling systems
- Material Handling Safety
- Material Handling Maintenance

Training on ports projects engineering and management

- Port structures and various port and maritime studies and masterplaning
- Mathematical Modeling of Marine Structures
- Physical modelling and similitude of marine structures
- Marine Geotechnical & Geophysical Survey
- Design of Seawalls and Breakwaters
- Design of Marine Facilities for the Berthing and Mooring
- Maintenance and asset management

> 60 TRAINING SESSIONS

> 1200 DAYS OF TRAINING

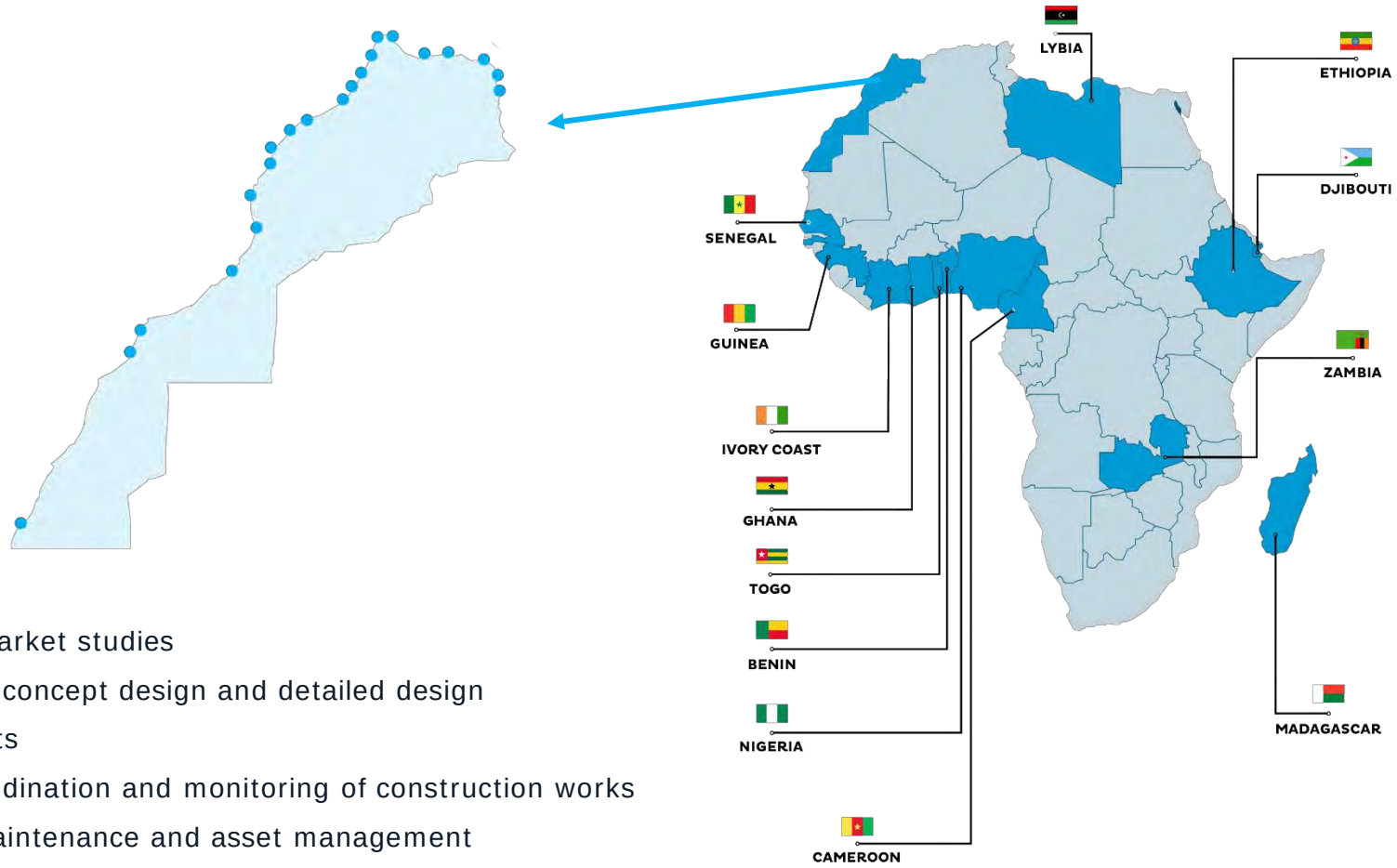
> 250 PARTICIPANTS FROM AFRICA

→ Our training program is tailormade to meet our clients' needs

ABOUT TANGER MED ENGINEERING

OUR PROJECTS

TME has supported major ports in Morocco and in Africa.



- Feasibility and market studies
- Master planning, concept design and detailed design
- Tender documents
- Supervision, coordination and monitoring of construction works
- Infrastructure maintenance and asset management

ENGINEERING SUPPORT TO MAXIMIZE OPERATIONAL EFFICIANCY & REDUCE CO2 EMISSION

OPTIMIZING VESSEL TURNAROUND TIME MAKING USE OF NAVIGATION SIMULATION

- Navigation simulation, a tool to provide training for pilots in a virtual environment.
- Navigation simulation, a tool to accurately define port environmental operational limits (winds, tides, currents, waves), maximizing operational windows and optimizing port capacities.
- Port expansion masterplanning.

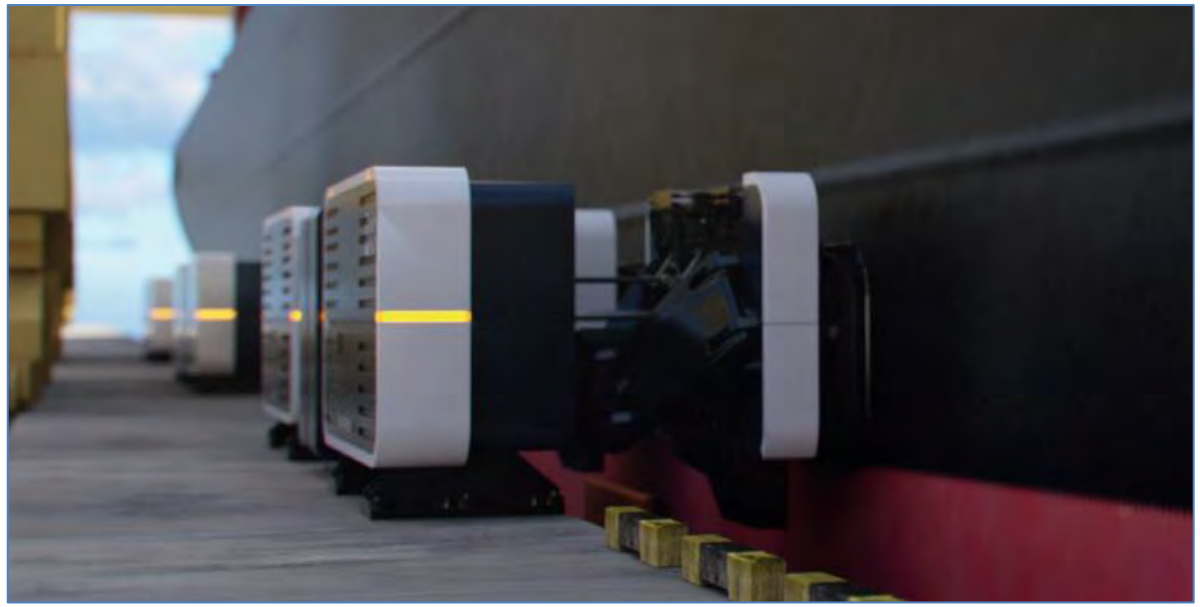
KRIBI PORT

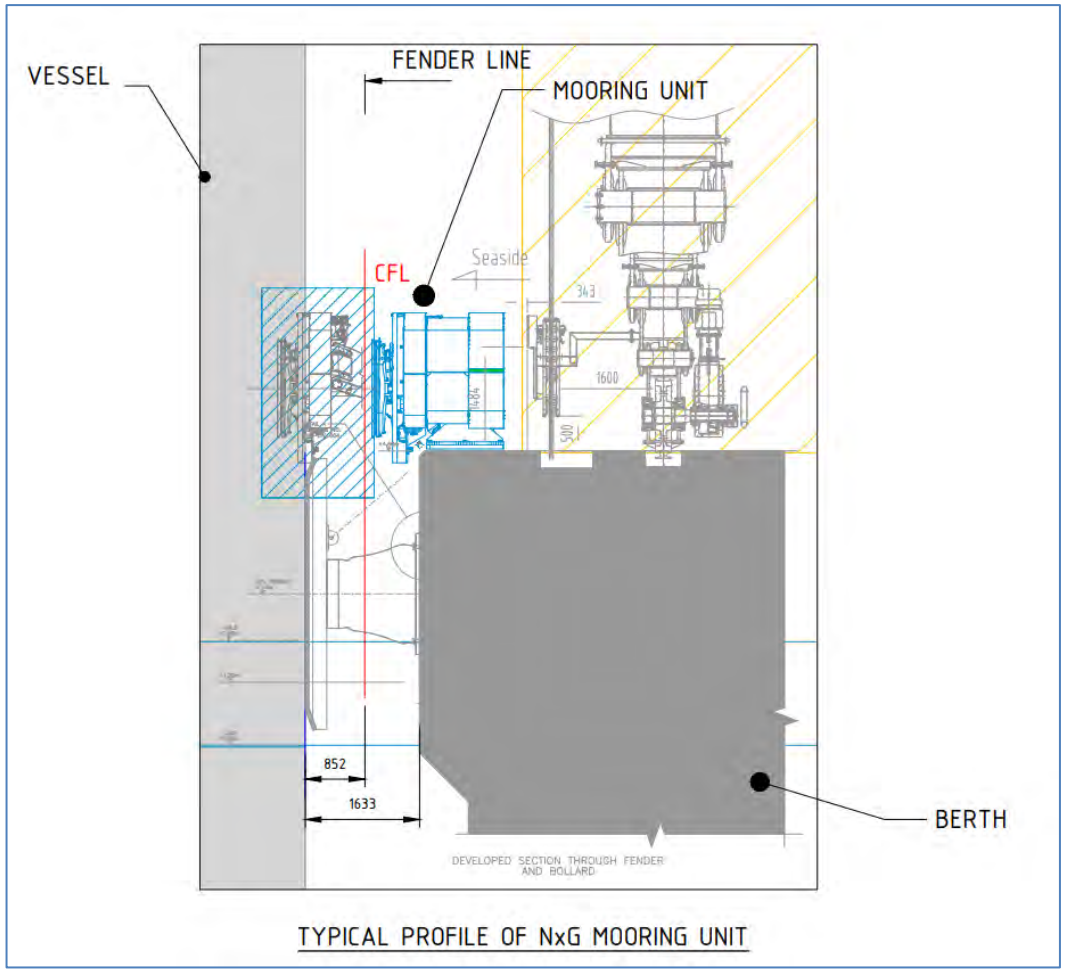
RORO PORT TM

ENGINEERING SUPPORT TO MAXIMIZE OPERATIONAL EFFICIANCY & REDUCE CO2 EMISSION

OPTIMIZING VESSEL TURNAROUND TIME MAKING USE OF AUTO MOORING

- Reduction of berthing time from 30mn in average to 30s, this optimises port vessel turn around time significantly, maximizing the port capacities.
- Reduction of ship emissions during berthing.
- The system helps keeping the vessel steady while at berth maximizing the ship to shore cranes operations.



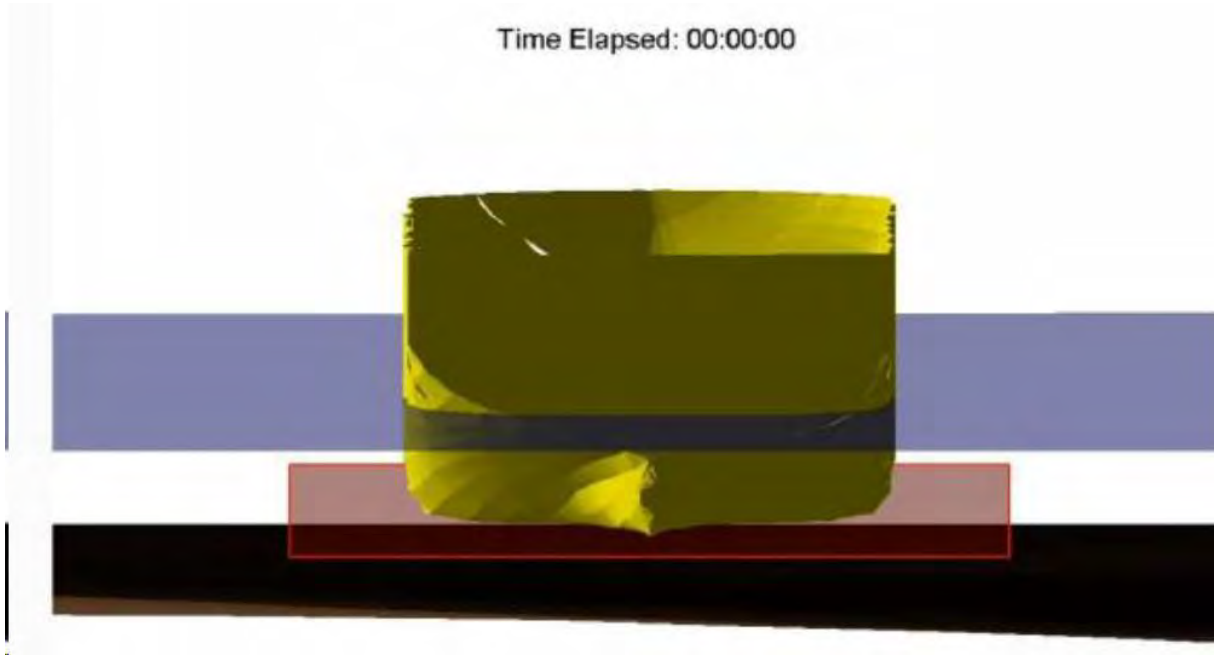


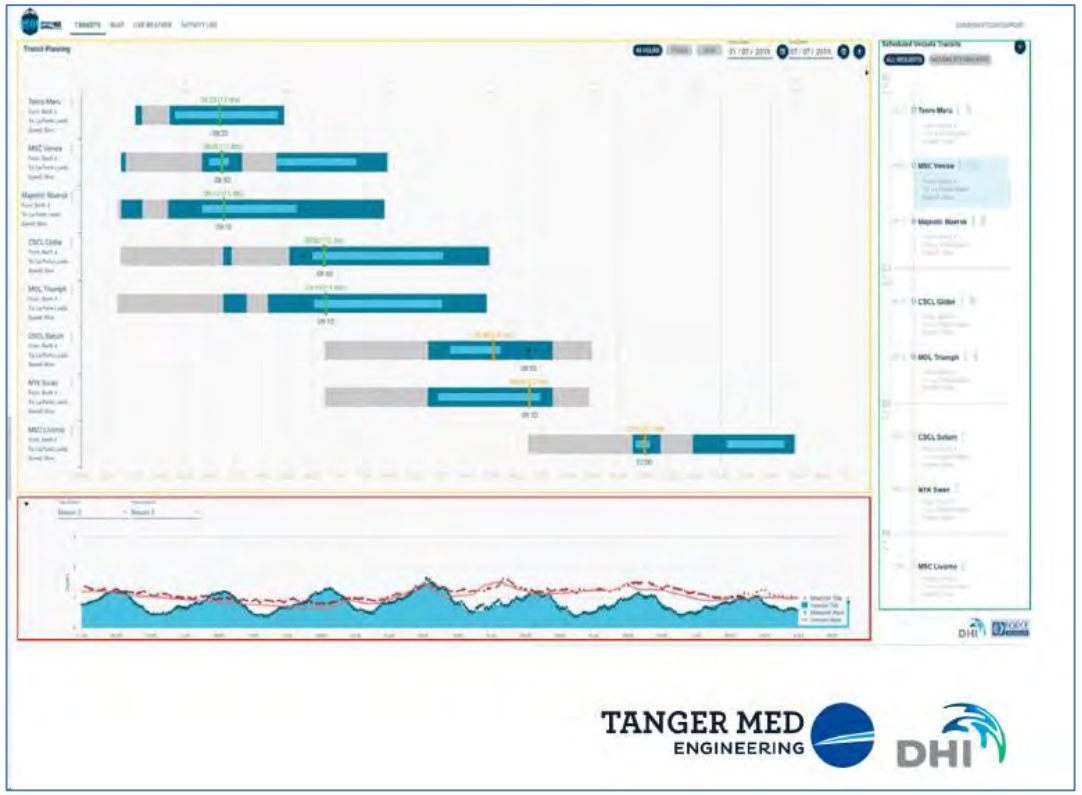
TYPICAL PROFILE OF NxG MOORING UNIT

ENGINEERING SUPPORT TO MAXIMIZE OPERATIONAL EFFICIANCY & REDUCE CO2 EMISSION

OPTIMIZING VESSEL CAPACITIES MAKING USE OF NCOS ONLINE SYSTEM

- Providing harbour master and pilots with vessel dynamic under keel clearance during vessel approach until berthing.
- This maximizes port handling capacities without investment in capital dredging or infrastructures.
- Provision of accurate winds, tides, currents and wave forecast to the harbour master and pilots allowing a better planification of port calls.

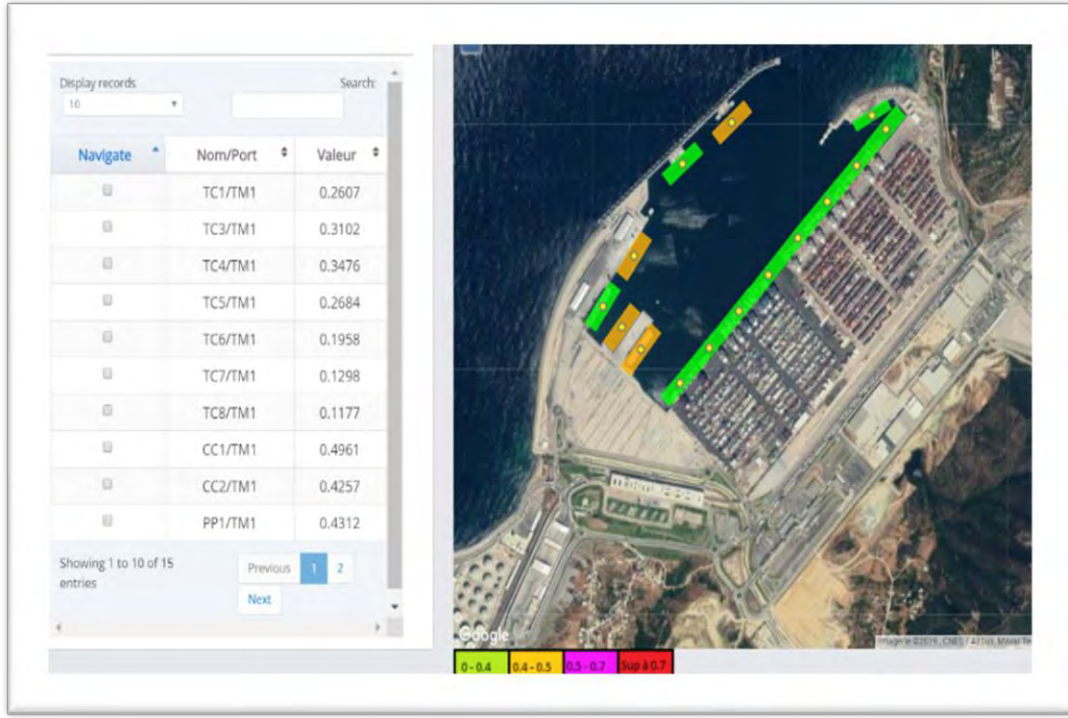


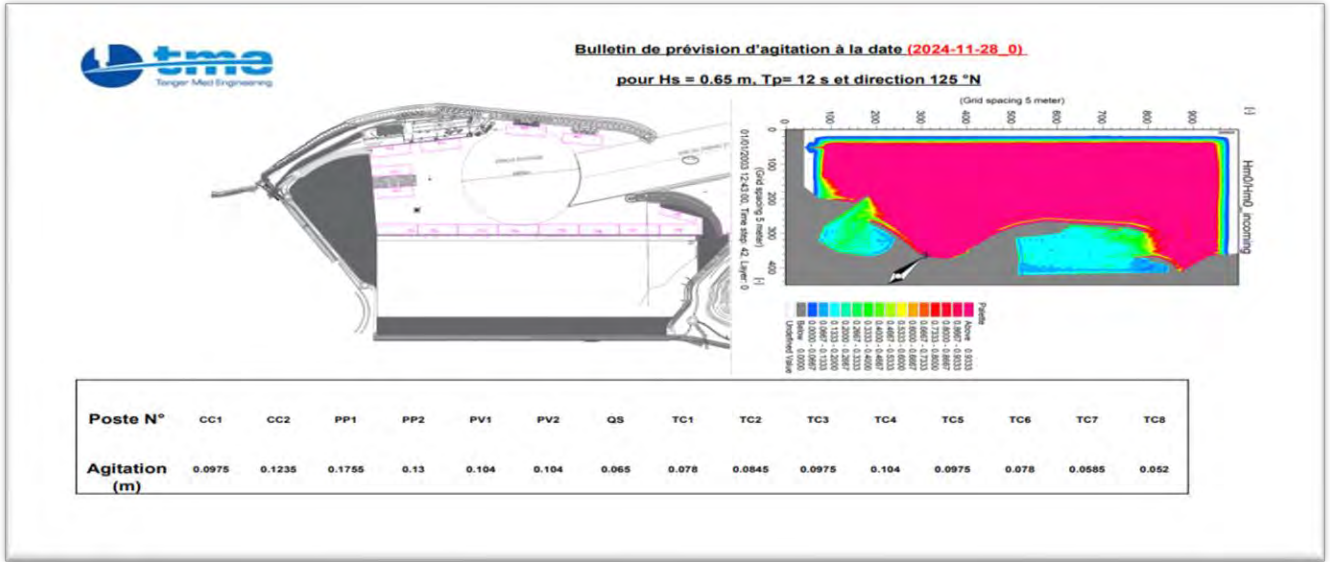


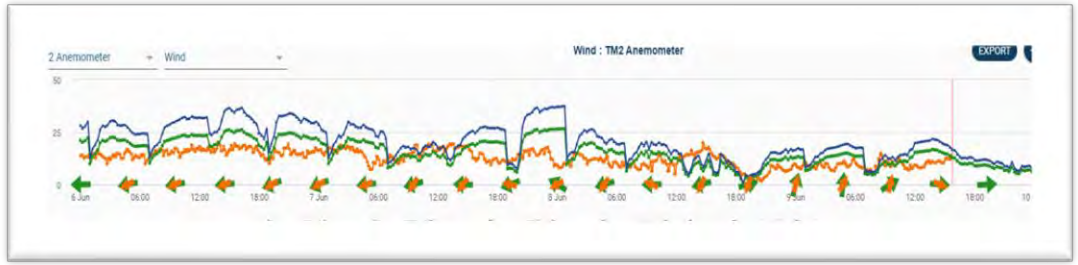
ENGINEERING SUPPORT TO MAXIMIZE OPERATIONAL EFFICIANCY & REDUCE CO2 EMISSION

REAL-TIME DATA & AGITATION MANAGEMENT — A STEP TOWARD SMART PORT OPERATIONS

- Providing an integrated platform for real-time meteorological and agitation data across ports.
- Reducing vessel wait times and idle emissions through proactive scheduling and alerts
- Enhancing safety with instant notifications on adverse conditions and interactive dashboards
- Optimizing resource allocation to minimize environmental impact and support net-zero objectives and improve decision making through advanced analytics.



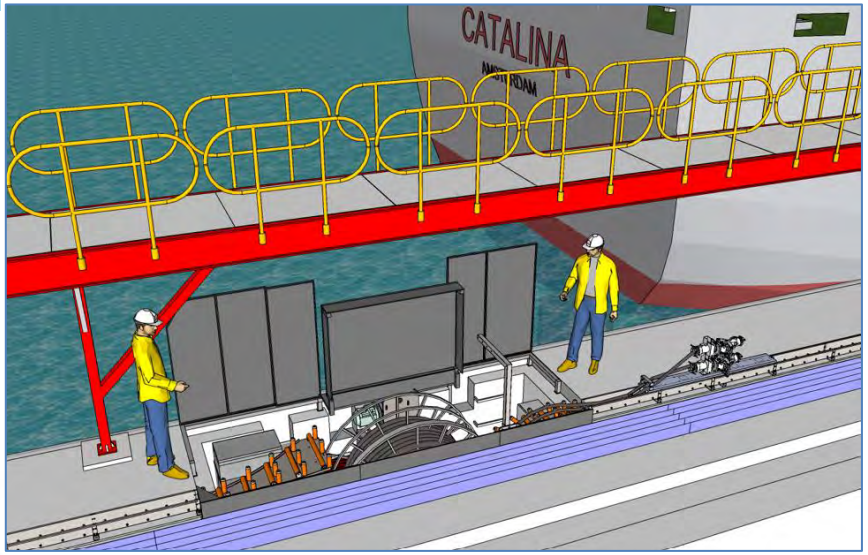


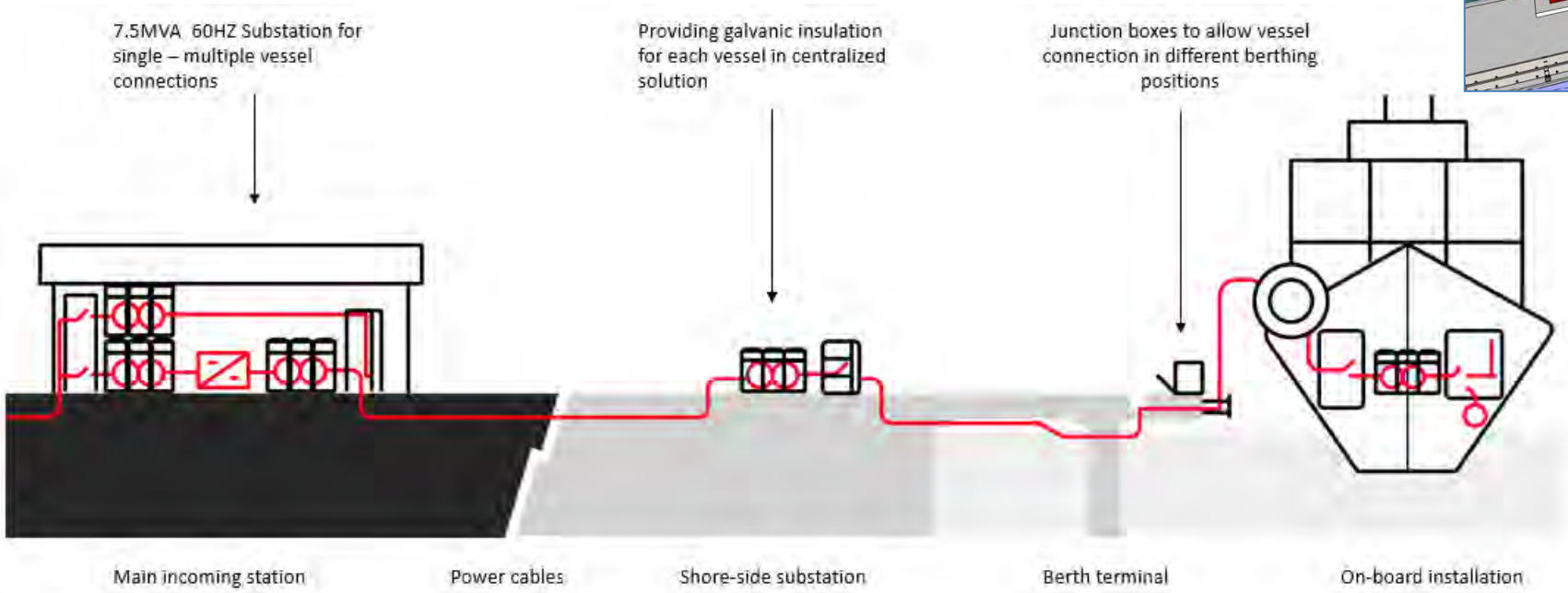


ENGINEERING SUPPORT TO MAXIMIZE OPERATIONAL EFFICIANCY & REDUCE CO2 EMISSION

SHORE POWER A STEP TOWARD PORT OPERATIONS DECARBONISATION

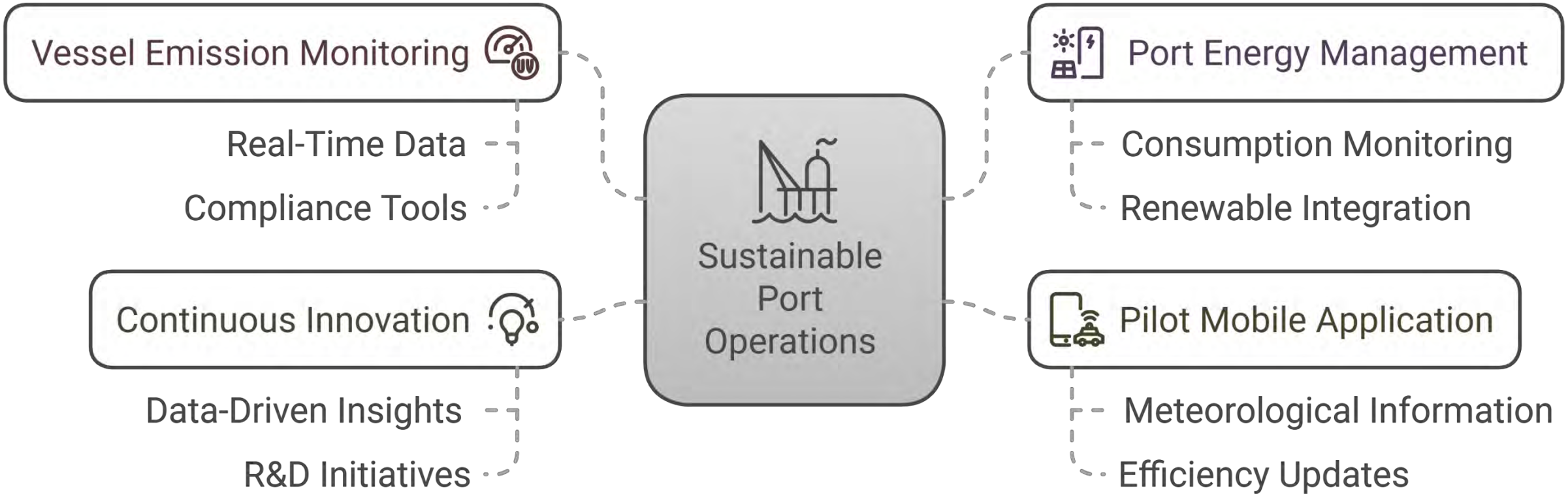
- Ensuring vessels, with different LOAs, are connected to high voltage electricity while at berth.
- Reducing vessels CO2 emissions while at berth.
- Maximizing the port authority profitability, as a sole energy provider in the port perimeter, while preserving the environment.





ENGINEERING SUPPORT TO MAXIMIZE OPERATIONAL EFFICIANCY & REDUCE CO2 EMISSION

FUTURE ENDEAVORS & PROJECTS



ISO 55001 Asset Management

ISO 50001 Energy Management


TANGER MED
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YOUR PARTNER
FOR INNOVATIVE
SOLUTIONS