Market Unit brochure

PORTS & MARITIME

CAVOTEC

WE CONNECT THE FUTURE

Cavotec wants to contribute to a future world that is cleaner, safer and more efficient by providing innovative connection solutions for ships, aircraft and mobile equipment today.

Our Markets

Ports & Maritime

Electrification and automation from berthing to shipping.

Cavotec develops and manufactures innovative automation and electrification technologies for the global ports and maritime sectors.

We continually innovate and develop our technologies to ensure that we deliver the levels of operational performance, safety and sustainability that our customers demand at all types of ports and terminals.

Cavotec is the global leader in automated mooring, shore power, crane electrification, connection and charging systems.

Airports

Powering, cooling and fuelling aircraft.

Cavotec is a leading Ground Support Equipment (GSE) specialist, developing state-of-the-art systems for gates, remote aprons and Maintenance Repair & Overhaul (MRO) hangars for commercial and military applications.

Cavotec's comprehensive range of systems includes 400Hz and 28VDC Ground Power Units (GPU), Pre-Conditioned Air (PCA) systems, wet services and fuel systems integrated under passenger boarding bridges (PBB), as well as in-ground and tunnel systems.

Industry & Mining

Connecting, powering and controlling industry and mining equipment.

Cavotec develops technologies that drive productivity and contribute to customers' operational efficiency. We improve existing systems, and bring new technologies to the market to meet the cost and operational challenges our customers face. We support customers in a wide variety of industrial sectors, such as cranes, energy, processing and transportation, surface and underground mining, and tunnelling.

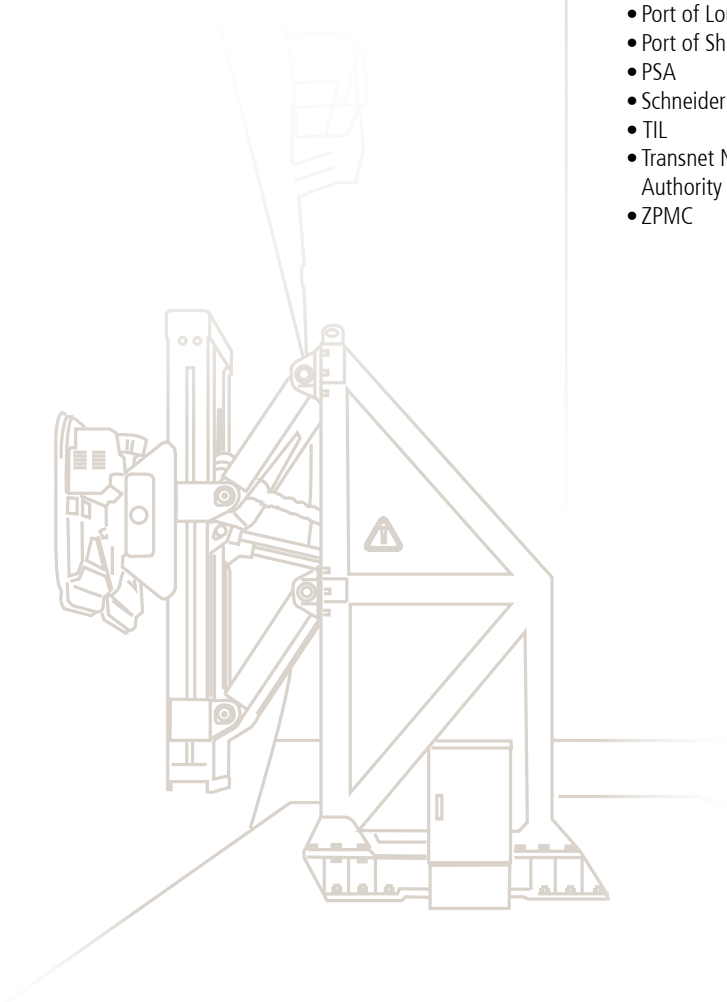
Our solutions for the Industry & Mining sector include motorised cable and hose reels, Human Operator Interface (HOI) systems, Radio Remote Controls (RRC), power connectors, slip rings and spring driven cables and hose reels.

PORTS & MARITIME

Contents

Who works with us:

- ABB
- APMT
- Cargotec
- DP World
- Konecranes
- MSC
- Narvik
- Norled
- Port of Hong Kong
- Port of Los Angeles
- Port of Long Beach
- Port of Shanghai
- PSA
- Schneider Electric
- TIL
- Transnet National Ports Authority (TNPA)
- ZPMC



ELECTRIFICATION OF MOBILE EQUIPMENT

As national and international legislative requirements on environmental standards in ports continue to be tightened, the industry has been intensifying efforts to operate more efficiently and more sustainably. The electrification of cranes and other mobile equipment is a major step towards this goal.

Cavotec supports customers with the design of advanced electrification systems that maximise asset utilisation.

We design and manufacture motorised cable reels, Panzerbelt cable protection systems and power connectors according to specific technical requirements and environmental conditions.

Cavotec has also developed manual and automated systems for the safe and efficient connection of Electrified Rubber Tyred Gantry cranes (E-RTG) and Automatic Stacking Cranes (ASC) to power grids. Other applications include automatic plug-in systems for electrical and hybrid heavy duty vehicles, trucks and Automated Guided Vehicles (AGV).

Crane electrification

Cavotec's extensive experience and comprehensive range of innovative technologies help customers to connect and electrify STS, RTG, ASC, RMG and mobile harbour cranes, thereby improving efficiency and reducing environmental impact.

Motorised cable reels

Cavotec manufactures motorised cable reels for horizontal, vertical, continuous and intermittent use for ship-to-shore (STS) cranes, automatic stacking cranes, (ASC), rail-mounted gantry, (RMG), E-RTG, and other ship loaders.

Intermittent use

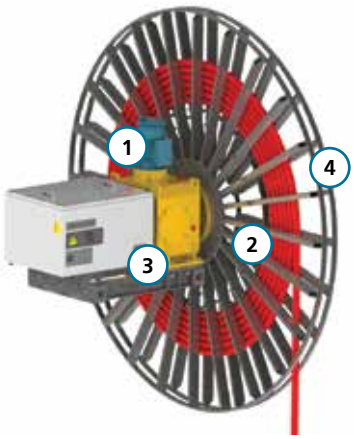
Our hydrodynamic system is recommended for intermittent use applications. Key features of this system include compact design, constant torque output in reeling and unreeling mode, standard motor and low maintenance. Normal torque outputs are 10-700 daNm with speeds ranging from 10 to 60 m/min.

Continuous use

For continuous use applications, we recommend our T-series gearboxes. These can be used with several drive systems and fitted with different drums such as monospiral, random lay and parallel lay.

We recommend our Torque Motor units for small reels and slow speed applications (5-40 daNm and 0-60 m/min), while our Cavotec Reel Control (CRC) is best suited for larger reels (torque output 40-1200 daNm).

Cavotec cable reel system

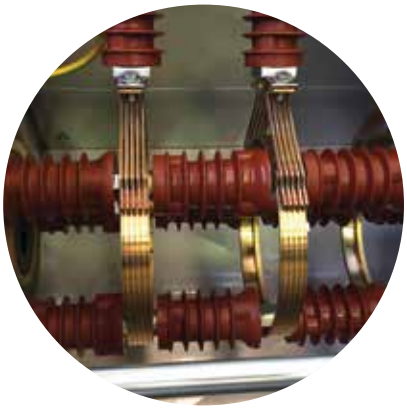


1. **Motor (with drive)**
   Standard squirrel cage or torque motors, according to IEC Norms. Hydrodynamic cable reels can be supplied with a pneumatic or hydraulic motor.

2. **Gearbox or Torque Unit**
   Seven gearboxes and eight torque units are available with variable output torque from 10-1200 daNm.

3. **Collector**
   Standard sizes of collectors are available for power and signals. Current ratings vary from 10 to 2400Amp, voltages up to 30kV. We also manufacture customised collectors exceeding the above parameters.

4. **Drum**
   The drums are composed of standard elements and can easily be adjusted to required widths. Standard drum diameters range from 300mm to 8700mm.



Cable Reel Control (CRC)

The CRC system achieves precise speed and torque control of standard maintenance-free squirrel cage motors. A torque limiter between motor and gearbox is not needed.

CRC offers an almost constant pull on the cable. In fact, by following the torque reference signal computed on the basis of reeling variables – such as cable weight, reeled cable on the drum, acceleration or deceleration of the crane, position on the track – the CRC minimises the pulling force on the cable.

Cavotec has also chosen to use oversized, not force ventilated, motors for reliability and for simplicity in system layout. The result is a longer cable life and improved reliability of the cable reel system.

KP brushes

Standstill slip ring applications often require a high degree of de-rating of existing capacity of conventional carbon brush gears. Increasing the physical size of brushes is not always a solution, since the actual contact area does not increase proportionally.

Cavotec has overcome this problem by developing a multi-contact brush gear, which has substantially increased capacity. This is achieved by the separation of the brush into many independent sections ensuring a larger effective contact area.

Fibre optic rotary accumulator

Optical signals are increasingly used in ports and terminals, where composite cables with fibre-optic bundles are common.

To meet these demands, Cavotec has developed a fibre-optic rotary accumulator. Thanks to its innovative design, this unit can also be used as a stand-alone rotary accumulator if the reel is equipped only with fibre-optic cable.

The rotary accumulator guarantees a dimming of less than 3dB, including any bilateral connection. The connection is made on either side via plug connectors in the fixed and rotating terminal boxes.

Cable guides

Engineered to the highest standards, Cavotec cable guides extend the service life of cables and ensure safe, continuous operations. Several features can be adapted to optimise cable guidance depending on the requirements of specific applications. Key features of our cable guides include:

- Cable tension devices featuring mechanical switches or contactless sensors.
- Pendulums fitted with sensors to identify cable position in a cable guide to ensure tight loop control of cable tension.
- Rollers available in a variety of materials, including plastic, cast iron and hardened steel.

Panzerbelt

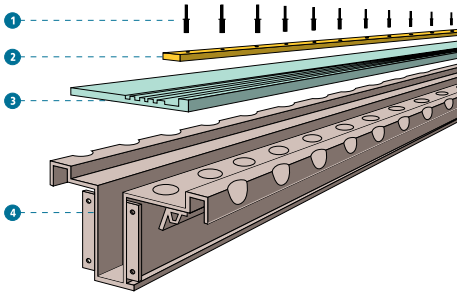
Panzerbelt is a cable protection system incorporating a continuous semi-flexible belt, fabricated from rubber with inlaid steel reinforcement, which lies over a channel cast in the quay.

The belt is riveted to the quay surface along one edge, while the other remains free to be raised by a cable guide and belt-lifting device fitted to the crane. Steel reinforcement has been incorporated to retain directional strength and flexibility of the belt.

Panzerbelt extends the lifetime of crane cables, and reduces downtime of cranes. It improves operational efficiency, and improves berth safety.

Panzerbelt offers several advantages over conventional systems, including:

- Full cable protection.
- Optimal operational safety.
- Low installation cost.
- Cleaner channels, reduced obstructions.
- Wide operational capacities.
- Improved crane speeds.
- Wide alignment tolerances.
- Readily integrated with existing systems.



The main components of the Panzerbelt system are:
1. Stainless steel rivets
2. Pre-drilled fixing strip
3. Panzerbelt steel reinforced rubber cover
4. Stainless steel channel profile

RTG electrification

Cavotec has developed a wide range of RTG electrification technologies: from conventional manual connection, to front-end automated technologies. Our solutions can be integrated on new E-RTG/A-RTG or RTG retrofits. Our engineering and local project management capabilities make Cavotec the ideal partner for turnkey RTG retrofits.

AUTOMATED CONNECTION – Automatic Plug-In System (APS)

APS automatically connects and disconnects E-RTGs to electrical power. It is the world's first cable connection system that allows cranes fitted with cable reels to automatically connect to an electrical power source. APS can be used in low or medium voltage applications, and includes fibre optic connectivity. It offers the following benefits:

- Reduced CAPEX: limited yard modification and easy integration with existing equipment, requiring limited civil works.
- Low OPEX: automation backed by the high reliability and low maintenance cost of cable reel technology.
- Improved productivity due to higher throughput.
- Fibre optic ensuring reliable high data volume transmission and system redundancy.
- Safer operations: unmanned connection.

MANUAL CONNECTION – Power Units and Double Anchor Openable system (DACO)

Manual connection is ideal for terminals with a low number of daily relocations of the RTGs between different blocks. DACO speeds the connection and disconnection sequence ensuring rapid anchoring operations and provides the following benefits:

Improved efficiency

- Fast manual connection/disconnection of E-RTG, with Cavotec power units and junction boxes.

Safe, easy handling

- Easy lift function - with counterweight opening mechanism - allows for single operator operation.
- No underground electrical cable connection ensuring improved system reliability.
- Drum system to ensure optimal positioning and alignment of cables during operations, and reduced mechanical stress on cables.

Power units

Cavotec has developed a standard range of power units, made with 2mm stainless steel plate, for ports and terminal applications.

These include outlet panels for 150A to 630A, with a voltage range of 380V to 12kV. Low Voltage power units are equipped with molded case circuit breakers interlocked via pilot contacts.

E-RTG BATTERY PACKAGE

To meet growing hybrid cargo handling equipment demands, Cavotec has developed an AC/AC battery package that replaces E-RTG on-board auxiliary diesel engines. This enables disconnection from the grid and block changing during normal operations. This plug and play solution can be supplied in different energy ratings, up to 60kWh.

Other mobile equipment electrification

Our connection technologies are used to connect and charge a variety of other mobile equipment such as electric and hybrid vehicles, trucks and AGVs.

We provide manual and automatic connection systems that withstand challenging port environments, and ensure safe operations.

Manual connection

IN-GROUND HATCH AND POP-UP PITS

Our hatch and pop-up pits system provide the following benefits:

- Full protection of the system against damages and environmental conditions thanks to the possibility to close the pit, even in operation mode.
- High flexibility: possibility to include multiple points of connection and sockets types, and to combined several utilities. Options available for sand proof design, EX environment and reinforced cover for vehicle passing over the pit.
- High reliability: mechanical maintenance free system.

Automatic connection

APS CHARGING STATIONS

Our APS charges electrical and hybrid vehicles without the need for direct human interaction. Its automatic plug and socket system provides the following benefits:

- Safe operations thanks to electrical interlocks.
- Quick charging time.
- Limited infrastructure costs.
- Robust design for reduced maintenance costs.

HUMAN OPERATOR INTERFACE (HOI)

To support automation in ports, Cavotec has developed a comprehensive range of wireless radio remote controls, tablets, video systems, screens, control chairs and joysticks. These advanced HOI systems enable remote-controlled, tele-operations and semi-autonomous operations.

Cavotec's HOI technologies offer the ports and maritime sector a number of benefits, including:

- Greater efficiency and safer working conditions by removing operators from hazardous areas.
- Improved productivity due to safer and faster movement of materials.
- Real-time process monitoring, and data storage, on remote displays and in control rooms.

Integrated operating centres

Cavotec integrates several types of operating centres:

- Ergonomic control desk: pre-wired and equipped with monitors.
- Cabins: complete cabin with integration of the control chair, joysticks, RRC, monitors.
- Containers: complete container equipped with all control desks & chair, video, air-conditioning.

Visualisation devices

Our RRC units are readily integrated with rugged screens and cameras. These are sealed to IP66, and are fully HD1080P-compliant.

Radio Remote Controls

Cavotec RRC comply with all relevant international standards, including IEC 61508, (SIL3) and EN13849, (Cat3 PI d and Ple).

Our RRC are available in a wide variety of terminal designs and receiver options, ranging from hand-held solutions, to full belly packs with colour display screens and receivers that work as a stand-alone mini plc through to fully plc integrated solutions.

AUTOMATED MOORING
MoorMaster™

MoorMaster™ is a vacuum-based automated mooring technology that eliminates the need for conventional mooring lines. Remote controlled vacuum pads recessed in, or mounted on, the quayside, moor and release vessels in seconds.

The technology dramatically improves safety and operational efficiency, and in many cases enables ports to make infrastructure savings.

This automated ship-to-shore interface system has moored 80-metre Ro/Ro, Ro/Pax, e-ferries and bulk lakers, container vessels of up to 390m, and bulk carriers of more than 300m. A compelling and extensive track record unmatched by any other automated mooring technology.

Key advantages of the system include:

Improved productivity
- Vessels moored in less than 30 seconds.
- More than 90% reduction in time taken to moor and detach vessels (to less than one minute).
- Improved operational efficiency due to reduced vessel motion from swell, surge and passing ships.
- Reduced operating times for tugs and harbour pilots.
- Reduced OPEX (mooring teams not needed).

Improved flexibility
- Any vessel can use the berth, even vessels that are longer than the berth.
- Mooring can be undertaken from any location, thereby removing the reliance on personnel present at the berth.

Reduced environmental impact
- More than 90% reduction in emissions during ship berthing due to reduced use of tugs and ship engines.
- Fast and simple connection to shore power.

Reduced infrastructure investment
- Improved pier utilisation due to closer vessel spacing.
- Quay length can be 'virtually' extended as vessels' bows can overhang the end of the quay.
- MoorMaster™ can reduce breakwater extension requirements.

Improved safety
- Reduced risk of mooring accidents as personnel are removed from hazardous working areas.
- Real-time monitoring of mooring processes and forces.

> *I was a captain of a container ship, and frequently moored my vessel at the Port of Salalah using Cavotec MoorMaster™. Despite challenging berthing conditions due to long waves, Cavotec MoorMaster™ makes mooring safe, easy, and fast.*

Capt. Vasileios Velmachos
COSTAMARE

MoorMaster™ for container terminals

MoorMaster™ closes the technological gap between container ships and today's highly automated facilities, and is increasingly seen as part of fully automated port design.

MoorMaster™ secures even Super-postpanamax vessels with a capacity up to 19,200 TEUs, in a matter of seconds, enabling loading operations to begin more quickly.

MoorMaster™ for dry and liquid bulk

MoorMaster™ is installed at major bulk handling applications in Australia and Europe, where its use has improved productivity and reduced infrastructure costs considerably.

MoorMaster™ for passenger terminals

Cavotec has developed a number of MoorMaster™ systems for a wide variety of Ro/Ro applications, including at berths subject to challenging tidal and weather conditions, and where space for conventional mooring is restricted.

MoorMaster™ for locks

MoorMaster™ 200LS (Lock System) is designed for use in lock systems, as well as in harbours and inland waterways, and ensures reduced vessel transit times.

Automated mooring & charging System

MoorMaster™ can be integrated with our APS to automate the connection of battery-powered vessels to electrical power and ensure optimal recharging times.

APS ensures the optimal deployment of electrical plugs for safe and fast connection, maximising operational efficiency and minimising emissions.

Cavotec has also partnered with Wartsila to combine MoorMaster™ with Inductive Power Transfer for recharging vessels.


HYBRID
MoorMaster™
Vacuum Mooring System

SHORE POWER SYSTEMS

Shore power technologies, also called cold ironing or Alternative Maritime Power (AMP), enable the connection of ships in port to shore side electricity to power on board services. This enables ships' diesel generators to be switched off, thereby reducing noise and emissions, (such as particulate matter, nitrogen oxides, sulphur oxides, carbon oxides, and volatile organic compounds).

Since 2012, an international standard on shore power has been in place to ensure worldwide compatibility between ports and vessels. Shore connection is included in California's CARB regulations, which require 80 per cent of vessels' power to come from shore power by 2020. EU Directive 2014/94/EU on the Deployment of Alternative Fuel Infrastructure requires European ports to progressively equip berths with shore power connection technologies, and for all ports, with certain exceptions, to be shore power-ready by 2025.

Cavotec is the world's leading supplier of shore power cable management systems. Cavotec pioneered the AMP technology with the supply of the world's first operational system in Sweden in 1985. Since then, Cavotec has continued to develop innovative fixed, mobile, shore-based and ship-based shore power interface systems compliant with international standards. The group supplies systems for new ships and retrofits existing vessels.

Shore power for passenger vessels

Shore power for Ro/Ro vessels and ferries

According to the international shore connection standard, shore power cables for Ro/Ro and passenger vessels must be connected from the shore to the ship, rather than using on board systems.

Based on 40 years' experience of designing and manufacturing cable management solutions, Cavotec has developed a wide range of AMP cable management systems optimising OPEX and CAPEX, while ensuring optimum safety standards.

AMPTelescopic

- 30 seconds to connect and disconnect.
- High operational flexibility and safety with telescopic boom, operated with radio remote control system.
- Able to connect vessels' different hatch positions.
- Adjusts to tidal, weather conditions.
- Highly accurate hatch connection.

AMPDispenser

- 30 seconds to connect and disconnect.
- No onshore personnel requirement. Fully radio remote controlled from on board ship.

Shore power for cruise ships

The receiving panel of the socket outlet is typically stored in a dedicated room on the cruise ship lower decks, which is accessible from the shore via a watertight hatch, and get connected to AMPMobile.

AMPMobile

AMPMobile is a mobile shore power system that connects cruise vessels to shore power quickly and safely. It offers the following benefits:

- Reliability: proven technology with a large number of units successfully operating for many years at cruise terminals worldwide.
- Limited civil works costs: this above ground solution does not require the digging of trenches along the quayside.
- High operational flexibility along the berth: accommodating a wide range of vessels, regardless of connection point location.
- Easy storage: when not in use, AMPMobile can be moved from the quayside and parked elsewhere.

Shore power for container/bulk vessels

– Ship-side

Cavotec shore power systems for container and bulk vessels comply with international standards.

AMPTainer

Cavotec AMPTainer is a semi-fixed shore power system housed in a 40ft shipping container, and mounted onto the vessel. This self-contained solution includes an AMPReel, shore connection panel and other electrical equipment needed for shore connection. In addition, a step down transformer can also be housed in the AMPTainer for low voltage vessels.

AMPTainer provides the following benefits:

- Low CAPEX retrofit solution.
- Highly flexible.
- Optimised footprint to enable implementation of shore power in vessels with space constraints.
- AMP cable range of up to 45m.

AMPReel

Cavotec AMPReel is a fixed shore power system mounted on a chassis and fixed on the vessel. This solution consists of a motorised cable management system including AMP connectors and cables, a cable drum with a slip ring, a motor reducer, an optical fibre accumulator, an electrical control panel and a pivotable hydraulic cable guide.

AMPReel provides the following benefits:

- Ideal for new-build vessels.
- Easy and fast to operate.
- AMP cable range of up to 55m.

Retrofit solutions

With the development of regulations and the growing number of terminals equipped with shore power, several shipping lines are steadily retrofitting their vessels for shore power connection.

Cavotec provides a variety of turnkey solutions, port and/or starboard side, for retrofitting vessels, including:

- Fixed wire AMPTainer, with change over panel in one of the two containers or in the steering room.
- Plug-in AMPTainer, with ship junction box and change over panel in steering room.

Cavotec designs systems that:

- Minimise CAPEX and optimise OPEX.
- Ensure fast project execution for a reduced operation interruption.
- Ensure flexible and trouble free Shore Connection System.
- Enhance operational efficiency with faster connection to the grid.

Shore power for container/bulk vessels

– Shore-side

AMPVault

To power on board shore power cable management systems, a shore power pit or vault needs to be installed on the quayside to connect to the power grid. Some 250 Cavotec AMPVault units are installed at ports worldwide.

The Cavotec AMPVault consists of:

- Spring loaded cover for easy access.
- Stainless steel junction box.
- AMPSockets fully compliant with IEC standards.
- Optical fibre connectors.
- Prefabricated fibreglass pit.

AMPVault offers the following advantages:

- Minimum footprint.
- Minimum CAPEX due to fibreglass pre-formed enclosure, making substantial savings in terms of on-site labour and civil works.
- Easy operations: AMP Easy Lift Cover Assembly allows operators to easily open the cover with a lift weight of only 15kg (35lbs).

AMPCaddy-B

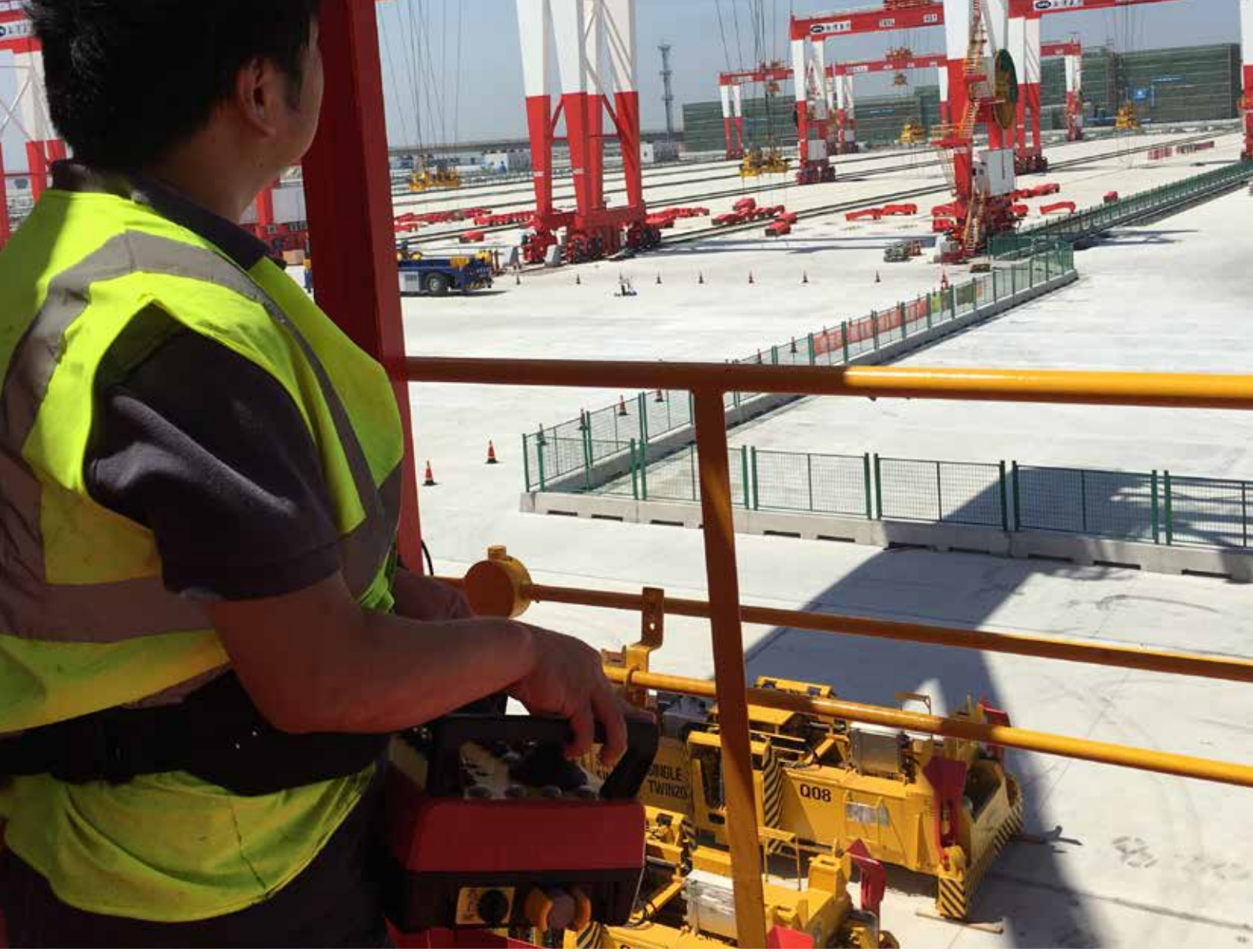
AMPCaddy-B is a self-propelled battery-powered mobile unit. It enables safe connection to shoreside electrical power even if a vessel's power cables are unaligned with, or do not extend to a shore power unit.

- Limited number of shore power pits reduces CAPEX.
- Narrow design allows navigation between wharf face and STS crane without disrupting operations.
- Movable system enabling use at different connection points and berths.
- Self-propelled, battery driven unit that recharges when connected to the AMPVault.
- No additional equipment required to move the unit.
- Complies with shore connection standards.
- Zero emission solution.

AMPTrailer

AMPTrailer is a manual mobile shore power cable management system. It offers the flexibility to move the point of shore power connection away from crane operations.

- Long cable length outreach.
- Movable system, towable by truck.
- Easy implementation, no civil works required on berths.
- Improved operational safety.



POWER CONNECTION AND TRANSMISSION

To support customers with fully integrated solutions for various applications including E-RTG, ASC and shore power, Cavotec manufactures a broad range of power connection and transmission technologies that ensure the fast and safe connection of mobile equipment to electrical power.

Cavotec works with customers worldwide to engineer and supply junction boxes and power units, integrating power connectors, plug and circuit breakers. Our range in this segment also includes flexible cables that are used in a large number of terminals worldwide.

Furthermore, to support the marine industry in developing more efficient propulsion systems, Cavotec has developed a set of slip rings offers.

Power units

Our comprehensive range of power units include:

- LV, up to 1100V, and MV Power connectors (3 Phases + PE + pilots), up to 25kV.
- Multi-pin outlets for control cables have up to 50 pins and up to 40 Amp.
- Two different operating systems available: Push & Pull and Screw Ring.
- Options for higher amperage, mechanical interlocking and fibre optics.
- Pilot pin mechanism for electrical interlocking ensures safe operation.
- Available auxiliary contacts or FO connector ensure reliable communication.

Key benefits:

- Easy connection and disconnection due to Multi-Way lamellar contact technology that optimises contact between the male pin and female contact.
- Safe operations due to interlocking pilots ensuring that disconnection under load is not possible.
- IP66 connector protection.

Flexible cables

Cavotec supplies a wide range of flexible cables from standard to highly advanced power and signal cables.

On request, cables are supplied terminated with lugs or connectors, (MV and LV) for easier application. Spreader and festooning cables are also available.

Marine slip ring systems

Cavotec has extensive experience of slip ring systems for marine propulsion and data transmission, including:

- Data, controls and power phase tensions of up to 6 kV.
- Slip ring design range from mA data and signals to 6000Amp power phase currents.
- Hydraulic swivel joint design range from low pressure pneumatic or hydraulics to 350 Bar pressure.

Cavotec slip rings provide the following benefits:

- All in one, complete slip ring with hydraulic joint and auxiliary equipment, supplied in one easily mounted unit.
- Simple installation using standard mechanical, electric and pipe interfaces.
- Carefully designed bus-bar system with symmetric current flow and multi contact point carbon brush system.
- Self-cleaning ring and brush system.
- Basic design test at resonance frequencies of up to 2G and at shock loads of up to 5G.
- Low maintenance with easy and fast replacement of rings and brushes if required.
- Customised design.
- Client-specific auxiliary equipment available, for example: steering feedback, control and support equipment.

After-sales service

Cavotec's Services division helps customers to maximise the availability of their assets, reduce operating costs and extend equipment lifespan.

With 70 service experts in more than 30 countries, Cavotec supports customers with a range of service offerings, including:

- inspection, training and preventive maintenance
- spare parts
- repair and replacement
- equipment renovation and upgrades

Furthermore, four service level agreements have been developed to support the maintenance of the 18,000 Cavotec units currently in service worldwide:

- Cavotec Care
- Cavotec Care Enhanced
- Cavotec Care Enhanced Plus
- Total Cavotec Care

References

Ports and terminal operators:

Port of Antwerp
APM Terminals
Port of Bergen
Port of Buenos Aires
Port of Busan
Port of Chennai
Contship/Eurokay
DP World
Port of Dubai
Port of El Callao
Port of Everglades
Port of Felixstowe
Port of Gioia Tauro
Port of Gothenburg
Port of Guanghzou
Port of Hamburg
Port of Helsinki
Port of Ho Chi Minh
Port of Hong Kong
Port of Long Beach
Port of Los Angeles
Port of Manzanillo
Port of Marseille
Port of Miami
Port of Mumbai
Port of Ningbo
Port of Piraeus
PSA
Port of Qingdao
Port of Rotterdam
Port of Salalah
Port of San Antonio
Port of Santos
Port of Singapore
Port of Shanghai
Port of Shenzhen
Port of St Laurence
Port of St Petersburg
Port of Stockholm
Port of Tianjin
Port of Vancouver
Port of Virginia
TIL
Transnet

Shipping lines:

APL
BP
China Shipping Lines
CMA CGM
Cosco
Evergreen
Hapag-Lloyd
Italia Marittima
Maersk Line
Matson Shipping
Mitsui
MOL
MSC
Norled
NYK
Qatar Petroleum Co
Stora Enso
Yang Ming

Port and marine equipment manufacturers:

ABB
Aker
Cargotec
Hyundai Heavy Industry
Impsa
Koch
Konecranes
MacGregor
Mitsubishi Heavy Industry
Noell
Samsung
Schneider Electric
Seawell
Siemens
STX Shipyard
Sumimoto
Techint
ZPMC

We are present in:

Australia
China
Denmark
Finland
France
Germany
Hong Kong
India
Italy
The Netherlands
New Zealand
Norway
Singapore
Spain
Sweden
Switzerland
Turkey
UAE
UK
USA

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