E-RTG™

RTG Electrification

CONDUCTIX wampfler

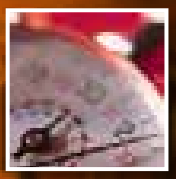
DELACHAUX GROUP

Environmental

Eco-friendly,
low emissions

Economical

Reduced fuel costs
of up to 65%



Efficient

Quick and easy to maintain,
reduced downtimes,
automated operation

We add the "E" to your RTG

Electrification of Rubber-Tired Gantries

RTGs will remain the primary machines for moving containers in terminal yards worldwide

RTGs represent more than 50% of the total fuel consumption at a typical port

Conventional rubber-tired gantry cranes (RTGs) are equipped with diesel gensets that transform diesel fuel into electrical energy. This energy powers the electric motors that are necessary for the movement and positioning of containers in the port.

Electrification of the RTG

Converting a conventional RTG into a fully electric RTG (**E-RTG™**) means shutting down the diesel genset and powering the RTG with electric power directly from the power grid.
The **E-RTG™** conversion can be accomplished with one of two different unique electric power supply systems developed by Conductix-Wampfler: **Motor Driven Cable Reel System** or **Conductor Rail System.**

E-RTG™: A Crucial Contribution to Fuel Savings and Clean Ports!

Low energy costs and minimal environmental impact are key concerns of modern port logistics. With the consumption of many liters of diesel fuel per day and rising diesel fuel prices, powering of RTGs represents a substantial cost factor for port operators.

The conversion of diesel to electric powered RTGs results in a reduction in diesel fuel consumption of about 95%.

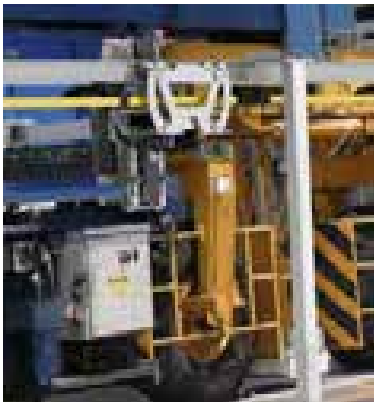
The remaining diesel engines are only used to transfer the RTG from one container lane to another or from the container lane to the maintenance area. During normal operation they remain switched off, which drastically reduces the emission of greenhouse gases such as CO_2 or NO_x into the port environment.

Conductix-Wampfler's core competency is in the development, production, consulting, and installation of tailor made, engineered solutions that provide energy supply and data transmission for our customers' moving machinery.

If you seek a turnkey solution to add the "E" to your **RTG**, look no further than Conductix-Wampfler – we have the answers!

Motor Driven Reel Solution

Plug-In Solution



Drive-In L Solution

Motor Driven Cable Reel Solution

Speed and Performance for the **E**-RTG™

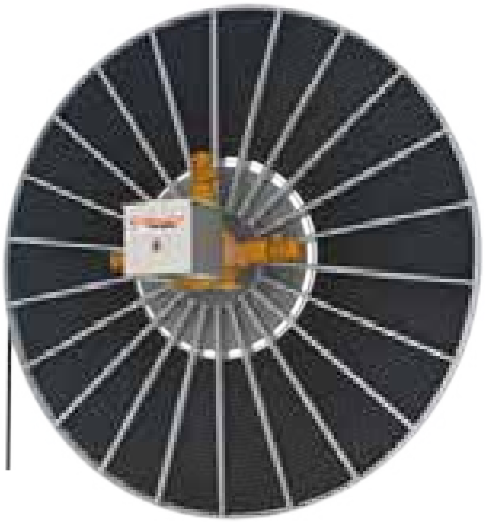
To add the "**E**" with a power cable, a motorized cable reel is mounted on the RTG. Each RTG has its own reel system that operates independently. For this approach, Conductix-Wampfler offers two different technologies:

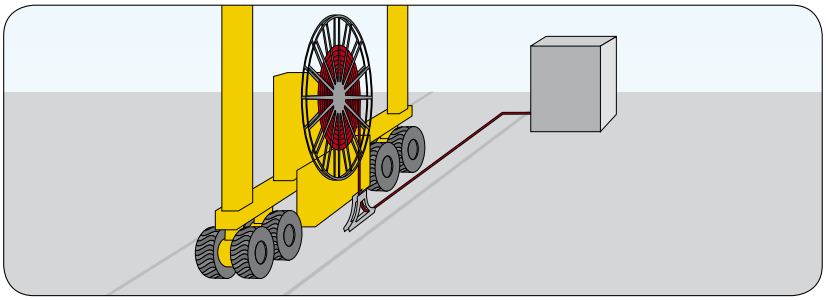
- **Modular Motorized Cable Reels with Permanent Magnetic Couplers**
  Conductix-Wampfler offers a unique "plug & play" system based on inter-changeable electrical and mechanical components.

- **Frequency Controlled Motorized Cable Reels**
  Conductix-Wampfler offers an extensive array of control units. We can supply pre-programmed hardware controls mounted on a panel or in a control cabinet. We can also supply a software program designed to integrate with existing PLC units.

Our range of systems covers low voltage and high voltage applications. A fiber optic core and transmitter can be integrated into the reel and cable. Both technologies are precisely adjusted to the dynamic requirements of the storage applications in container terminals. One to several blocks in the same lane can be covered by the same reel system.

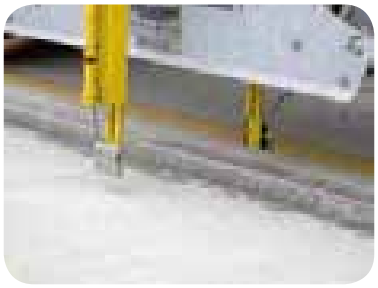
Most worldwide operators already use our reel systems on RMG and STS cranes.





Video cameras monitor the cable trench to assure that the cable remains free to pay out and wind up

A **special "wide" cable guide** is used, designed to accommodate lateral movements of the RTG



Since there are no guiding beams, two **optical sensors**, one on each side of the trench, control the travel deviation of the crane

Yard Junction Box with circuit breaker protection, providing the interface to connect the cable reel to the yard power supply

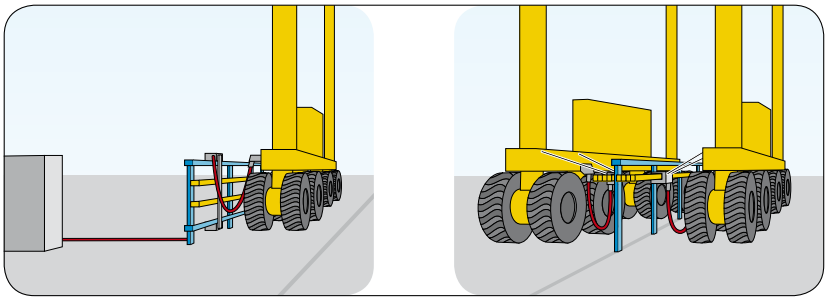
Plug-In Solution
Reliability for the **E-RTG™**

With the “plug-in” system, conductor rails are mounted on a steel structure system bolted on top of a concrete base. Depending on the terminal conditions or customer requirements, this base is either put on top of or imbedded into the terminal surface. Electrical energy is picked up from the conductor rails using a collector trolley connected to the RTG crane. A steel cable pulls the trolley along the steel framing.

A power cable with a plug and socket connector link the collector trolley electrically to the RTG.

Safety is of paramount importance. Pilot pins are used to assure that the plug will remain powerless during the unplugging process. Two sockets may be installed on either side of the RTG to enable flexible crane operation when changing blocks. Limit switches are installed on the collector trolley to prevent the crane operator from accidentally leaving the block while still connected to the conductor rails.

The steel structure which holds the conductor rails may be installed at various predetermined heights. This allows easy access to the RTG during maintenance, service, or repair procedures.



Steel structure and conductor rails for **one container block** to provide the electrical current – the **2+2 version**

Steel structure and conductor rails for **two container blocks** to provide the electrical current – the **4 parallel version**

Collector trolley including cable and plug for connection to the RTG crane. The socket connector is mounted on the crane side

Standardized concrete foundation and **steel structure** to mount conductor rails

Drive-In L Solution

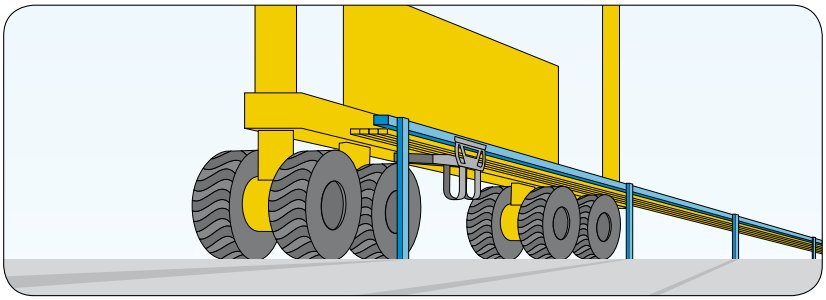
High Flexibility for the E-RTG™

With the “Drive-in L” solution, the current collector system is installed on the RTG. Once engaged in the structure and conductor rails, the trolley runs freely.

Drive-in process is fully automated – requiring no additional ground staff. All movements of the RTG are fully electrically driven – no additional hydraulics or pneumatics.

The design is very compact to fit into the very narrow installation space on the RTG.

The modular concept allows integration of data transmission systems as a next step towards RTG automation.

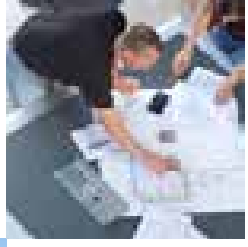


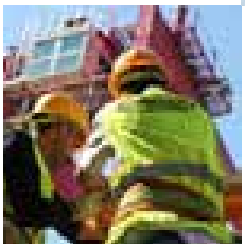
The unique **track profile** serves as the running beam for the collector trolley and also carries the conductor rail system, thus allowing full control of tolerances

The **very compact** system is the **lightest system on the market** and suitable for any kind of RTG

The short **Drive-In zone** allows the E-RTG to run with electrical power from the very first container row. It only takes 20-30 seconds to drive in or drive out.

The Drive-In L provides the **highest compensation of RTG working tolerances**





Conductix-Wampfler's specialists provide complete support from the initial programming and design to the final assembly on site – worldwide!

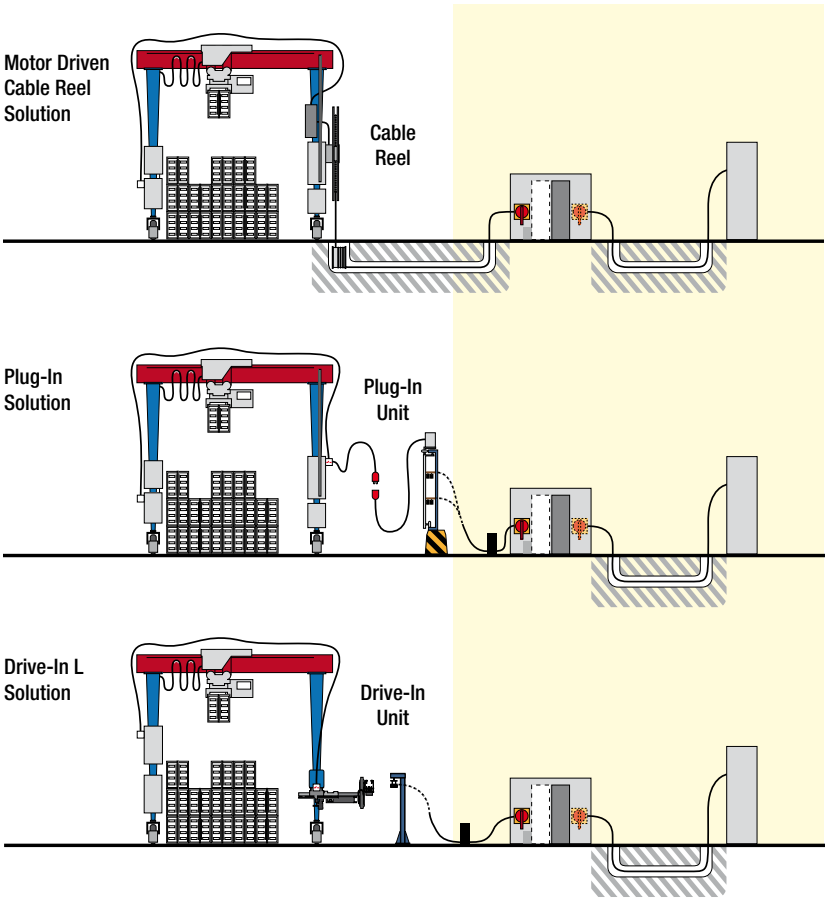
Custom Services!

The Turnkey Solution

As a system supplier, Conductix-Wampfler offers a complete turnkey solution to all customers. This includes the delivery of all necessary parts to complete the project.

We can also provide auto-steering technology for RTGs as well as data transmission via fiber optic cable or contactless data transmission with our iDAT^{Plus} system.

Important elements of Conductix-Wampfler's business activities include qualified consulting, project engineering of the complete system, the choice and selection of the right components, optimizing the accessories, the adequate logistic concept, and commissioning on site.



RTG Modification

Yard Modification

Planning and Development

- Definition of the application parameters
- Selection of the right components for the required system – optimized to fulfill our customers' requirements, application parameters, and environmental targets
- Selection of the optimum energy supply solution in cooperation with our customers, considering cost, service life, operating parameters, installation, and site conditions

Final Assembly

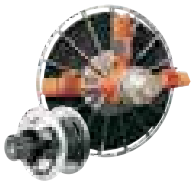
- Supervision of construction, assembly, and mounting on site, or
- Complete installation by our trained specialists

Service Agreement

- Regular maintenance and inspections to increase the operational life of the facility, and to ensure long-term performance and availability
- All services required on site in the event of an incident, including spare parts and replacement materials
- Conductix-Wampfler service agreements: The **"Worry-Free Package"**

Your Applications – our Solutions

E-RTG from Conductix-Wampfler represent only one of the many solutions made possible by the broad spectrum of Conductix-Wampfler components for the transport of energy, data, air, and fluids. The solutions we deliver for your applications are based on your specific requirements. In many cases, a combination of several different Conductix-Wampfler systems can prove advantageous. You can count on all of Conductix-Wampfler's Business Units for hands-on engineering support – coupled with the perfect solution to meet your energy management and control needs.

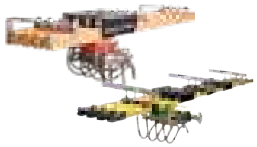


Cable Reels

Motor driven reels and spring reels by Conductix-Wampfler hold their own wherever energy, data and media have to cover the most diverse distances within a short amount of time – in all directions, fast and safe.

Festoon Systems

It's hard to imagine Conductix-Wampfler cable trolleys not being used in virtually every industrial application. They're reliable and robust and available in an enormous variety of dimensions and designs.



Conductor Rails

Whether they're enclosed conductor rails or expandable single-pole systems, the proven conductor rails by Conductix-Wampfler reliably move people and material.

Non-insulated Conductor Rails

Extremely robust, non-insulated conductor rails with copper heads or stainless steel surfaces provide the ideal basis for rough applications, for example in steel mills or shipyards.

Energy Guiding Chains

The "Jack of all trades" when it comes to transferring energy, data, air and fluid hoses. With their wide range, these energy guiding chains are the ideal solution for many industrial applications.

Slip Ring Assemblies

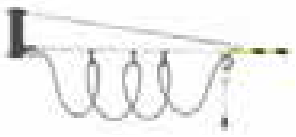
Whenever things are really "moving in circles", the proven slip ring assemblies by Conductix-Wampfler ensure the flawless transfer of energy and data. Here, everything revolves around flexibility and reliability!

Inductive Power Transfer IPT®

The no-contact system for transferring energy and data. For all tasks that depend on high speeds and absolute resistance to wear.

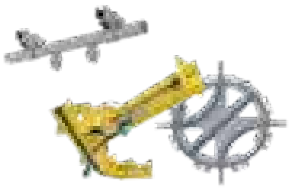
Reels, Retractors and Balancers

Whether for hoses or cables, as classical reels or high-precision positioning aids for tools, our range of reels and spring balancers take the load off your shoulders.



Jib Booms

Complete with tool transporters, reels, or an entire media supply system – here, safety and flexibility are key to the completion of difficult tasks.



Conveyor Systems

Whether manual, semiautomatic or with Power & Free – flexibility is achieved with full customization concerning layout and location.

www.conductix.com

Conductix-Wampfler has just one critical mission: To provide you with energy and data transmission systems that will keep your operations up and running 24/7/365.

We add the „**E**“ to your **RTG**!

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www.conductix.com

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