

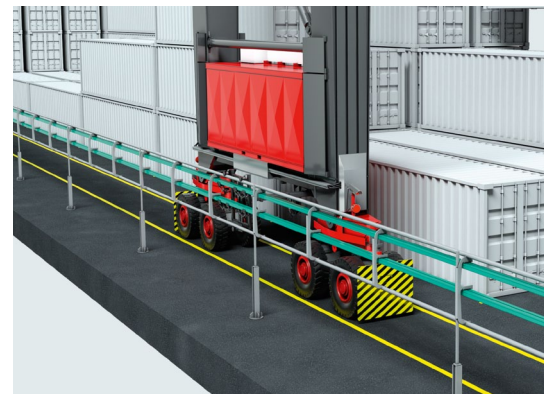
INDUSTRIAL CRANES
NUCLEAR CRANES
PORT CRANES
HEAVY-DUTY LIFT TRUCKS
SERVICE
MACHINE TOOL SERVICE

CONTAINER HANDLING

KONECRANES[®]
Lifting Businesses[™]

Power options for RTGs

LET'S THINK ABOUT POWER



A FULL RANGE OF POWER OPTIONS

We provide a complete range of power options for RTGs: Diesel Fuel Saver technology that is further enhanced by our new Hybrid Power Pack, and two fully electric power options, Cable Reel or Busbar.

The path you take — diesel or electric — is a basic part of your business plan. With Konecranes you are covered either way. Our Hybrid Power Pack and Diesel Fuel Saver technologies provide the flexibility of diesel power, while significantly reducing diesel fuel consumption. The two fully electric options eliminate diesel fuel consumption completely while providing the convenience of electricity — no diesel, less maintenance, less noise, lower emissions. These are always important considerations, especially if your terminal is near a residential area.

DIESEL-ELECTRIC PATH



HYBRID POWER PACK

DIESEL FUEL SAVER

Konecranes power options for RTGs are modular. They can be retrofitted in the genset enclosure (1) while the necessary modifications to the electrical systems are made in the e-house (2) above it. When we install a new power package, we make sure it is integrated with the mechanical and electrical systems.

NOBODY KNOWS YOUR CRANES BETTER THAN KONECRANES

We designed and built your Konecranes RTGs, we maintain and modernize them, and we know them inside out. When we upgrade the power supply, we also look at the big picture, to make sure the power system is fully integrated with the software, and the mechanical and electrical systems. So you won't have any surprises down the road.

KONECRANES RTGs HAVE ENERGY-EFFICIENCY BUILT IN. THESE POWER OPTIONS MAKE THEM EVEN MORE ECO-EFFICIENT.

FULLY ELECTRIC PATH



CABLE REEL



BUSBAR

Fully electric operation requires less maintenance, produces less noise and reduces emissions. These are particularly important considerations if the container terminal is near a residential area.

FOR MORE INFORMATION ABOUT POWER OPTION RETROFITS, PLEASE VISIT WWW.KONECRANES.COM

DIESEL-ELECTRIC PATH

A NEW KONECRANES SOLUTION FOR RTGs: HYBRID POWER PACK

FULL POWER, FULL MOBILITY, FEWER STOPS FOR REFUELING

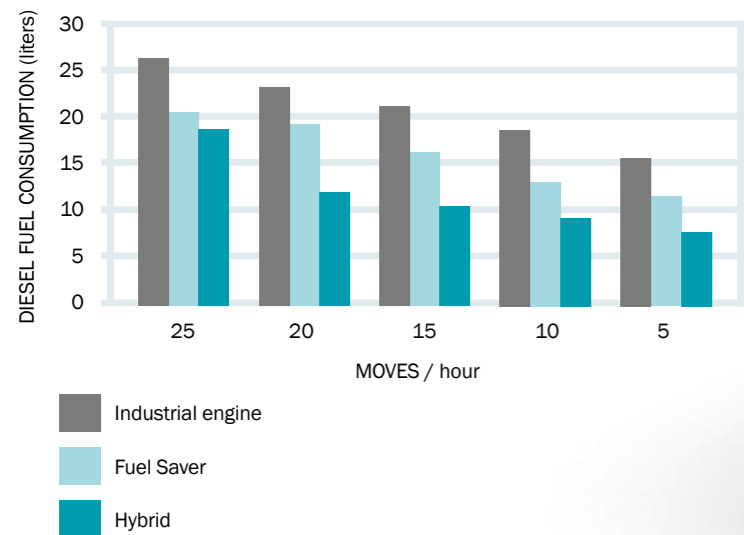
The Konecranes Hybrid Power Pack turns a diesel RTG into a diesel-electric hybrid RTG. Whenever possible, the crane is operated with electrical power drawn from the energy store. Like a hybrid car, it takes the energy generated during braking and converts it into electricity to recharge the energy store.

This solution can reduce diesel fuel consumption dramatically. The RTG can operate much longer on every tank of diesel fuel, so it's spending more time moving containers.

This power option is a proven Konecranes solution from your OEM supplier.

WITH THE HYBRID POWER PACK YOU CAN REDUCE DIESEL FUEL CONSUMPTION DRAMATICALLY

Diesel fuel consumption moving 20-ton containers
RTG with diesel-electric power options compared with conventional engine



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DIESEL-ELECTRIC PATH

KONECRANES DIESEL FUEL SAVER

HIGH RPMs WHEN YOU NEED THEM, LOW RPMs WHEN YOU DON'T

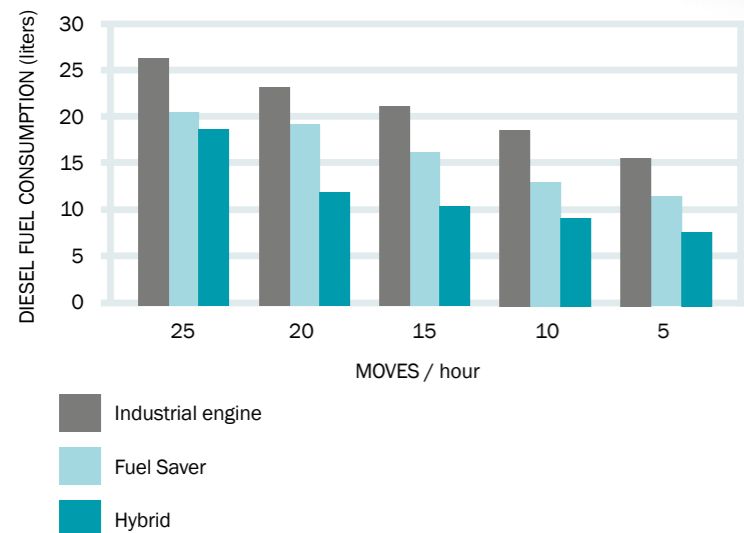
You don't need to run the RTG diesel engines at high RPMs, nonstop. The Konecranes Diesel Fuel Saver provides power-on-demand, matching the RPMs to the work the machine is doing. It ensures that the diesel engine is running at optimal efficiency at all operating points, without high-speed idling.

The Konecranes Diesel Fuel Saver cuts fuel consumption dramatically, without compromising crane performance. This can amount to savings of tens of thousands of Euros a year per RTG, depending on operations.

This solution is 100% modular, from your OEM supplier, and can be retrofitted to existing Konecranes RTGs. The package includes replacement of the old diesel engine with a variable speed engine and installation of an active bridge inverter.

SAVE TRUCKLOADS OF FUEL

Diesel fuel consumption moving 20-ton containers
RTG with diesel-electric power options compared with conventional engine



**WITH THE
KONECRANES
DIESEL FUEL SAVER
YOUR DIESEL ENGINE
ALWAYS RUNS AT
MAXIMUM EFFICIENCY**

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FULLY ELECTRIC PATH

CABLE REEL

WE HAVE DELIVERED OVER 250 YARD CRANES WITH A CABLE REEL

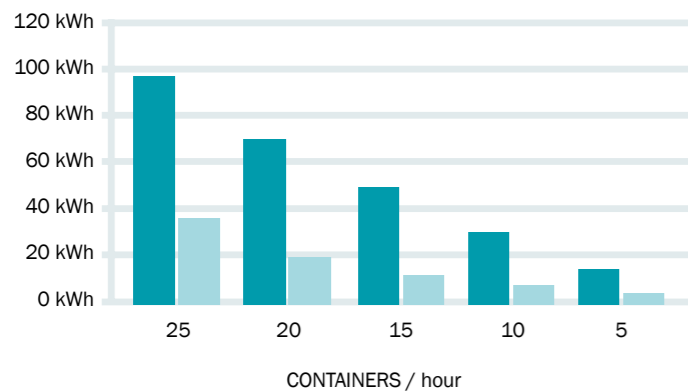
This solution equips the RTG with a cable reel, a feeding cable and a transformer, feeding electricity from the grid to the crane. The feed point can be either at one end of the operating area or at the center.

A fixed or portable auxiliary diesel generator is used to move the RTG between stacks. When the RTG is in its new position, the electrical power is reconnected.

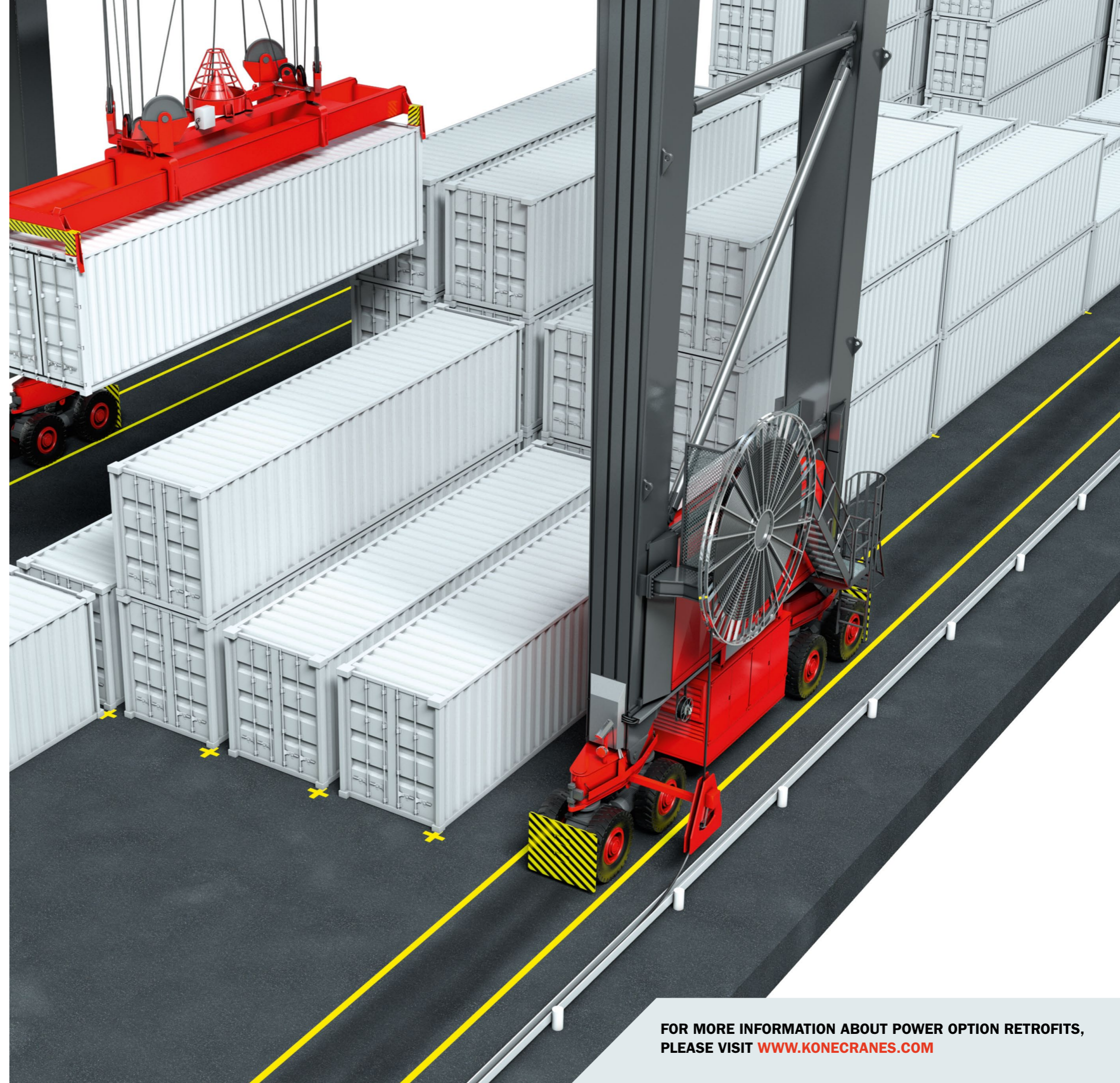
This solution is 100% modular and can be retrofitted to existing Konecranes RTGs.

Energy consumption

Fully electric RTG (Cable Reel)



■ Fully electric
■ Fully electric with network braking



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FULLY ELECTRIC PATH

BUSBAR

100% MODULAR**RETROFIT TO EXISTING KONECRANES RTGs**

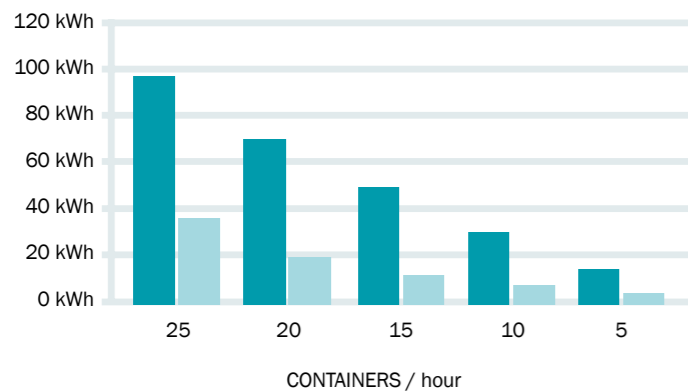
Like the cable reel, the Busbar option converts the RTG to fully electric operation. The power is supplied by a low electrified fence that provides the physical contact. RTG operation is quiet and there are no diesel emissions. Since there is no refueling, the RTG spends more time shifting containers and its availability increases.

With this solution, we convert the diesel RTG to Busbar operation by replacing the diesel engine with a power collector, making the machine fully electric. Depending on the voltage, a transformer may be required.

**WITH THE BUSBAR,
THERE'S NO REFUELING,
SO YOUR RTGs SPEND MORE
TIME SHIFTING CONTAINERS**

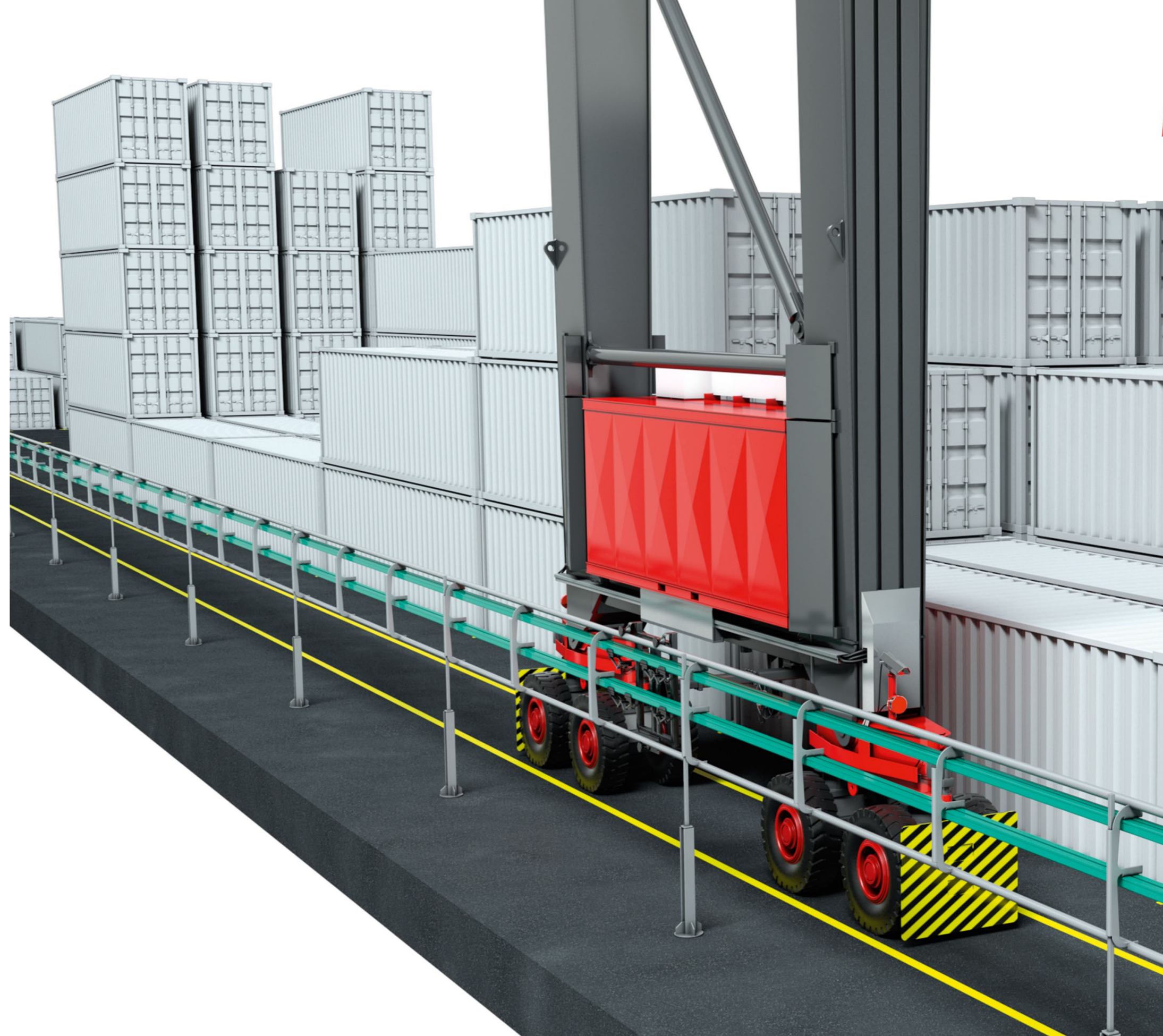
Energy consumption

Fully electric RTG (Busbar)



Fully electric

Fully electric with network braking



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HEAVY-DUTY
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SERVICE



MACHINE
TOOL
SERVICE



Konecranes is a world-leading group of Lifting Businesses™, offering lifting equipment and services that improve productivity in a wide variety of industries. The company is listed on NASDAQ QMX Helsinki Ltd (symbol: KCR1V). With over 11,500 employees at more than 600 locations in almost 50 countries we have the resources, technology and determination to deliver on the promise of Lifting Businesses™.

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SET FOR TOMORROW

Konecranes continues developing the sustainability of its lifting equipment by, for example, improving the design of cranes and crane components, and by enhancing software for fleet management. Maintenance is a crucial part of the whole package for the equipment to function efficiently.

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