The Yard REVOLUTION
AUTOMATED RTG
AUTOMATED RTGs: A HUGE NEW
Automated container handling is well-established in Automated RMG (ARMG) container yards around the world. The benefits of automating a container terminal operation are well-known: increased safety, greater productivity and better predictability. It’s time to bring these important benefits to your RTG-based container terminal operation. Now you can factor automation into your business planning; the future of your RTG container terminal just got brighter.

Join the yard revolution with Konecranes Automated RTGs (ARTGs). You can use your existing yard infrastructure, including the yard surface.
ARTG SYSTEM OVERVIEW

WE HAVE THE TECHNOLOGY

Automated RTG operation is within your reach.

If you already have Konecranes RTGs with Active Load Control, we offer an upgrade package that contains everything needed to move to Automated RTG operation. You don’t have to make heavy investments in infrastructure. You can use your current yard, starting with one or more container stacks. If you’re planning a new RTG container terminal, this is a great opportunity to build an Automated RTG operating model with us.

THE ARTG SYSTEM COMPRISSES:

- Konecranes 16-wheel RTG with Active Load Control and Autosteering
- RTG power option: one of cable reel, busbar, diesel fuel saver
- Process study of yard set-up
- Automation hardware
  - Remote Operating Station (ROS)
  - Truck guidance system (lights)
  - Intelligent gate
  - Yard infrastructure as needed
- Automation software
  - Operating system for ROS
  - IT architecture with TOS interface

INTELLIGENT GATE that acts as traffic controller of the ARTG container stack.
**KONECRANES ARTG** is based on the Konecranes 16-wheel RTG, equipped with Active Load Control and Autosteering.

**REMOTE OPERATING STATION (ROS)** with ergonomic operating layout and advanced graphical user interface.

**IT ARCHITECTURE** that can be seamlessly interfaced with your TOS.
IT’S ABOUT TOLERANCE…

Time will tell, but the Konecranes RTG is probably the only RTG in the world that can be automated successfully for full-scale commercial terminal operation.

Konecranes 16-wheel RTGs have the built-in tolerance to handle a rough yard surface in automated operation. This ability is the result of the holistic design of the Konecranes RTG, which brings together an intelligent steel structure that can flex like no other, and our Active Load Control system that eliminates container sway.

…OF LOCAL VARIATION

The Konecranes ARTG is built to handle the technical challenges of container positioning and measurement in automated operation.

TOLERATING VARIATION IN THE RUNWAY SURFACE
- Slope variation
- Differences in height
- Bumps and obstacles

TOLERATING VARIATION IN THE STACKING AREA
- Container bays can be at different angles to the crane
- Each container ground slot can have variations in stacking angle and height

TOLERATING THE RUBBER TIRES
Variations in tire condition and inflation
ARTG SYSTEM FUNCTIONALITY

HERE IS THE PROCESS

THE BASIC ARTG CONTAINER STACK LAYOUT. ARTG stack operations are side-fed. ARTG gantry movement is limited as much as possible. The truck drives to meet the ARTG for loading/unloading operations.

The design of truck traffic, safety fencing and gates can be terminal-specific based on a modular solution.

Stacking inside the container stack is fully automated.
Truck loading and unloading is done by the remote operator in the Remote Operating Station (ROS). One remote operator can handle up to 6 ARTGs.

Konecranes ARTG technology is field-proven in a number of important Automated RMG (ARMG) reference terminals. Our ARTG technology and operating methodology are similar to those employed in these ARMG terminals.
JOIN THE YARD REVOLUTION

ARTG PERFORMANCE

<table>
<thead>
<tr>
<th>Dimensions with max. 1 over 5 and max. 7 + truck lane, mm</th>
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<tbody>
<tr>
<td>Max. lifting height 1 over 5 / Max. span 7 + truck lane</td>
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<tr>
<td>Crane width over bogie guards/wheel spacing in bogie</td>
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<tr>
<th>Max. speeds, m/min.</th>
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<tr>
<td>Hoist with 50-ton load/empty spreader</td>
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<tr>
<td>Trolley traversing standard OPTIONAL</td>
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<tr>
<td>Gantry travel with empty spreader/50-ton load</td>
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**KONECRANES’ PATENTED ACTIVE LOAD CONTROL (ALC) TECHNOLOGY**
Eliminates container sway and enables automation thanks to its ability to adapt to rough yard surfaces.

**THE INTELLIGENT STEEL STRUCTURE**
Provides exceptional tolerance to rough yard surfaces.

**POWER OPTIONS**
Cable reel shown as default here. Bus-bar and diesel engine with Diesel Fuel Saver technology also available.

**GANTRY TRAVELING**
- Dual antenna DGPS Autosteering
- Twin base station with automatic switch-over for redundancy

**ANTI-COLLISION**
Real-time relative positioning, lasers

**SPREADER, CONTAINER, TRUCK TRAILER**
Scanning system

**TRUCK GUIDANCE SYSTEM**
Integrated scanning and guidance light system
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 OMX Helsinki Ltd (symbol: KCR1V). With over 12,000 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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