

## HOW DO Octopi pick locks, store tools, solve puzzles and open jars?

Each arm has **evolved** a semi-autonomous brain for swifter more informed decision-making.

## Automation Retrofits

A set of adaptations that enable each crane in your yard to operate automatically and remotely.

**Control. Evolved.**



### ADAPT AND THRIVE

Konecranes is the premier **port services** provider to brownfield terminal developments.

Our range of retrofit products will enable your fleet to adapt to a fast-changing environment.

Welcome to your **evolution**.

Small, incremental changes that enable existing fleets to continue to adapt and thrive.

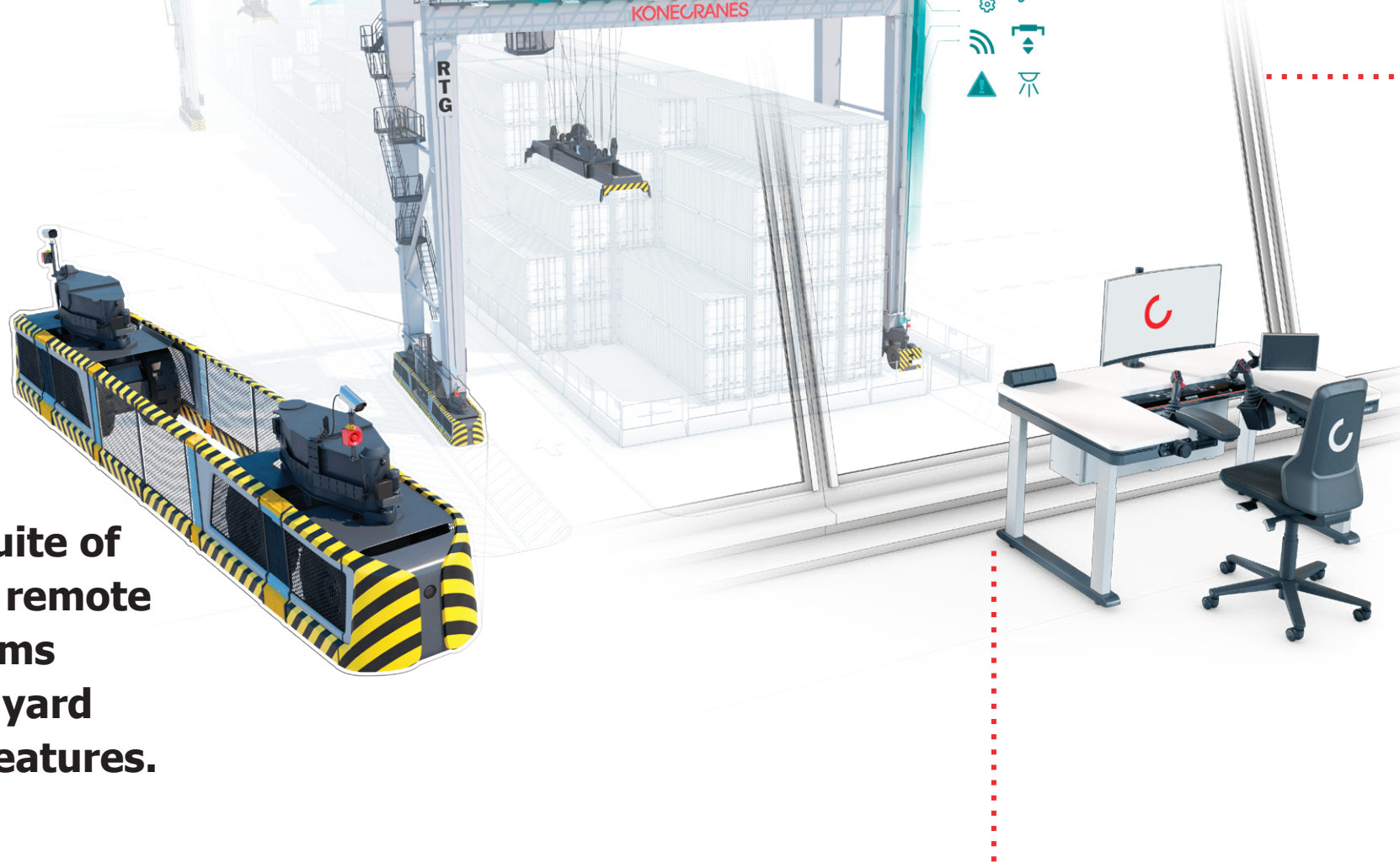
**AB**

Any Brand

**This technology can be applied to any brand of yard crane.**

## Automation Retrofit

The complete suite of smart features, remote operation systems and automated yard infrastructure features.



### WHY KONECRANES AUTOMATION?

- Our automation system comes with a performance guarantee – an industry first
- Konecranes has the most field-proven retrofit/ brownfield automation concepts
- Our proprietary Active Load Control technology is a huge advantage in converting manual yards to automated
- Deep technical support by way of a remote Crane Management System, as well as augmented reality technology in the field



### EQUIPMENT

This technology can be applied to all Konecranes RTGs as well as **any other crane brands**.

**AB**

Any Brand

**AY**

Any Yard

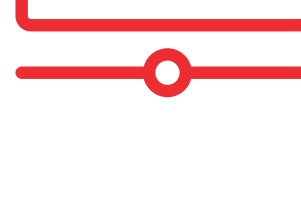
**AT**

Any TOS

**RTG**

Rubber-Tyred Gantry

**Watch video at this link**

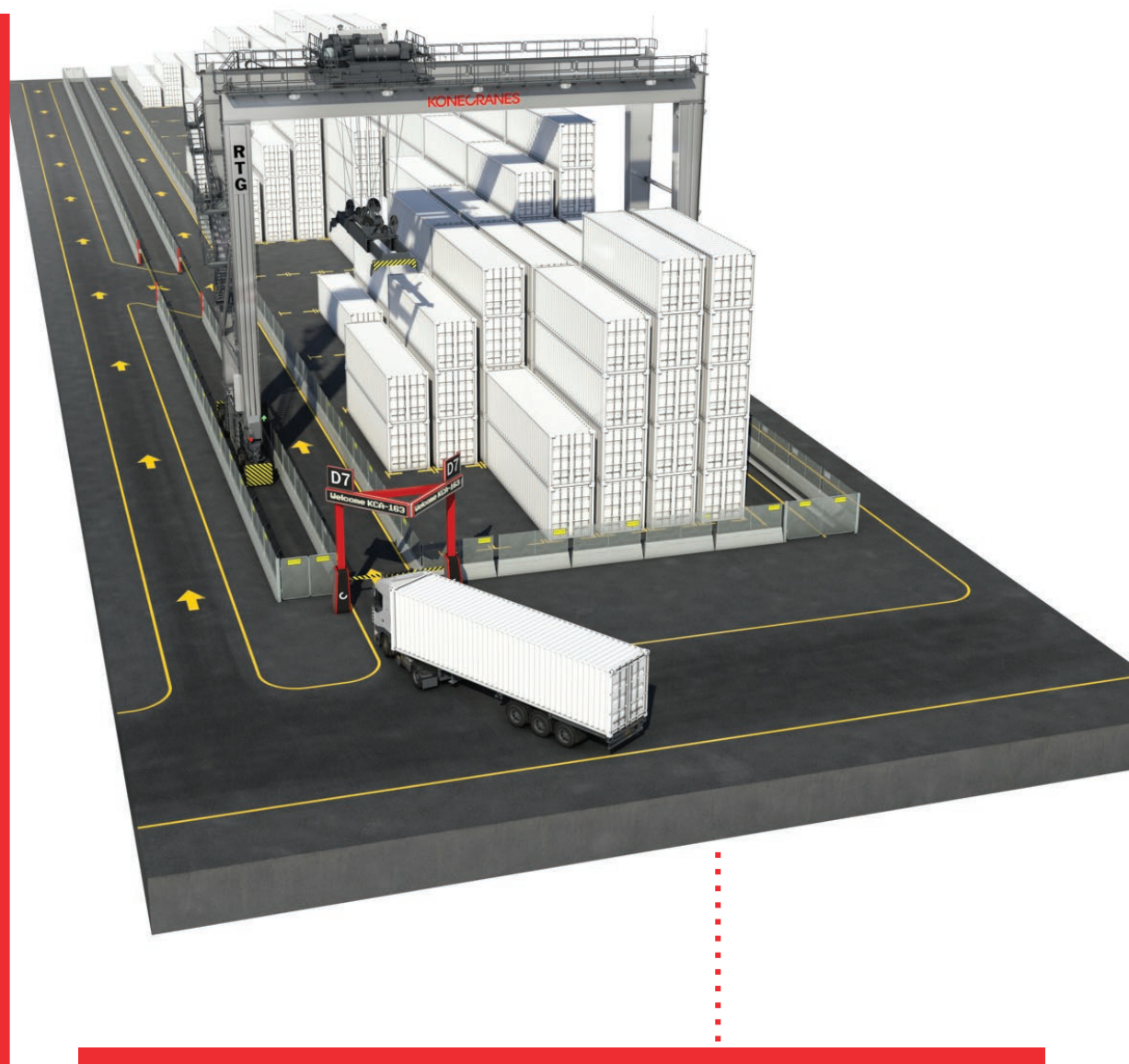


### BENEFITS

- Operator idling time dramatically reduced, one operator: up to 5 cranes per shift
- Container moves are executed automatically across planned usage patterns 24/7
- Less terminal traffic
- Decreased operational cost
- Reduced environmental impact
- Our ARTG system can be introduced in controlled phases, at reasonable cost, with minimal interruptions to terminal operations.

### HOW IT WORKS

- A fully-automated crane requires a fenced-off stacking area/block.
- But does **not** necessarily require a fenced-off truck lane – we have fenced and unfenced truck lane options.
- When inside the fenced stacking area/block the crane will **automatically** move into position, pick up and drop off container based on instructions directly from the TOS.
- 1 to 2 Automated RTGs can operate in a block at a time.
- Operators **only** handle exceptional moves and truck loading and unloading.
- Truck lanes have entry and exit gates that use RFID tags to identify the correct truck, and use LED screens to issue instructions to the driver.
- Once verified the truck's movement triggers the work instruction from the TOS to the ARTG, which moves the crane and container into position above the truck.
- The crane then pings the operations centre and requests a remote operator to complete the lift or delivery of the container from or to the truck.
- When outside of the fenced area (for maintenance etc.) the crane is handled via remote operation or via the cabin.

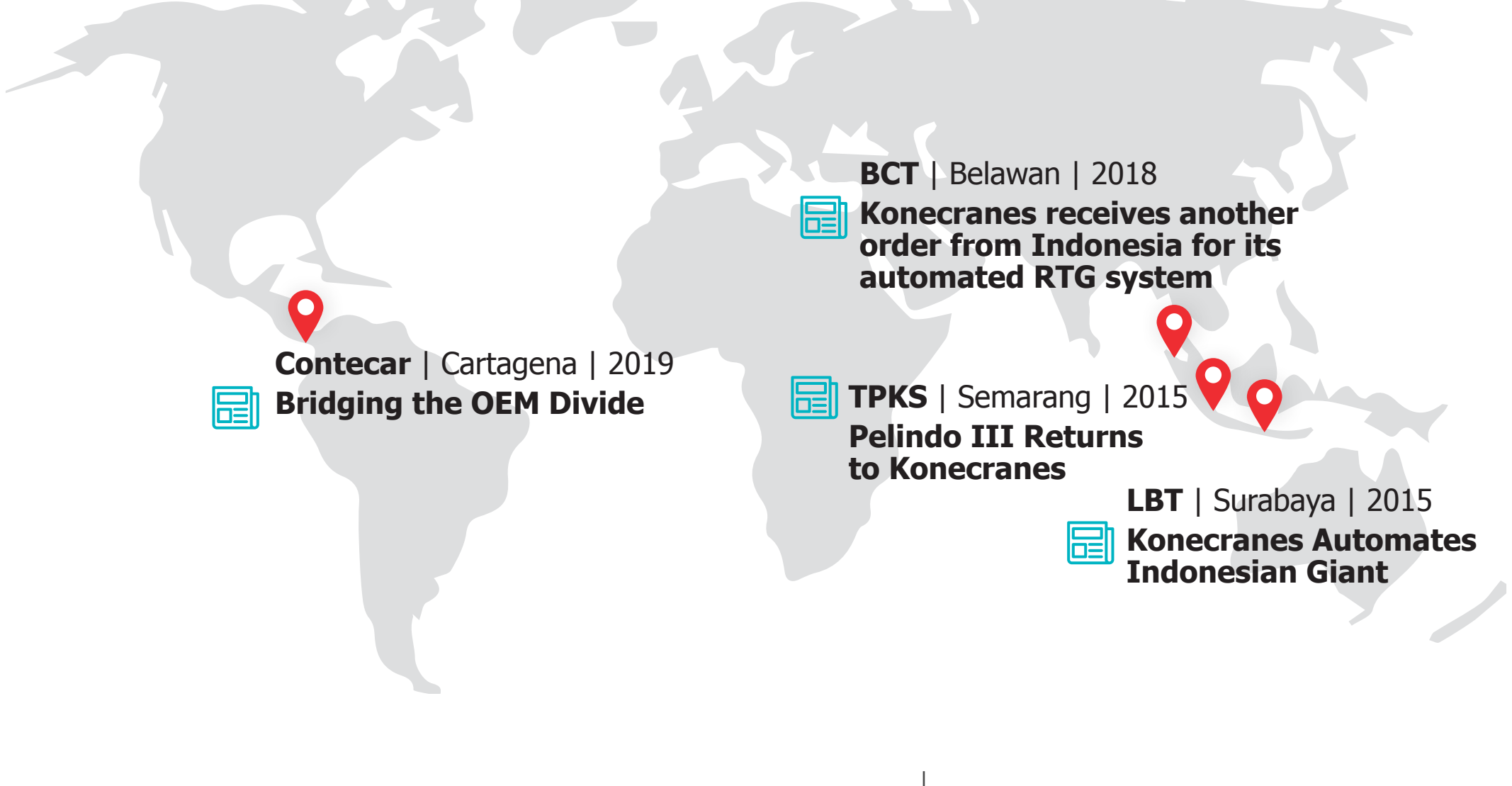


### WHAT YOU NEED TO KNOW

- Converting to an automated yard is a systemic change – we recommend a strong planning partnership with our system engineer.
- Infrastructure and preparation by customer.
  - Network between crane and ROS is to be created by customer
  - Remote operating centre location and infrastructure
  - Fencing of stack
  - Cabling stacking area components
- Certain changes may need to be made to customer's TOS.
- It is advised that early on in the discussions the customer's existing IT network is reviewed with Konecranes engineers.

### SELECTED REFERENCES

Click on  for the full case study.



**Contecar** | Cartagena | 2019  
**Bridging the OEM Divide**

**BCT** | Belawan | 2018  
**Konecranes receives another order from Indonesia for its automated RTG system**

**TPKS** | Semarang | 2015  
**Pelindo III Returns to Konecranes**


**LBT** | Surabaya | 2015  
**Konecranes Automates Indonesian Giant**

**Ports. Evolved.**

**KONECRANES**



Konecranes is a world-leading group of **Lifting Businesses™**, serving a broad range of customers, including manufacturing and process industries, shipyards, ports and terminals. Konecranes provides productivity enhancing lifting solutions as well as services for lifting equipment of all makes. The Group has more than **16,000 employees at 600 locations in 50 countries**. Konecranes shares are listed on the **Nasdaq Helsinki (symbol: KCR)**.

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