

The logo features a square icon on the left containing a stylized black crane hook and a white figure. To the right of the icon, the word "KALMAR" is written in a large, bold, white, sans-serif font. Below "KALMAR", the words "CRANE UPGRADES" are written in a smaller, bold, white, sans-serif font.

KALMAR
CRANE UPGRADES

Any Crane, Any Job, Anywhere

Kalmar a Specialized Company in Crane Upgrades



Intermodal Africa 2015 – Maputo, Mozambique 23.01.2015

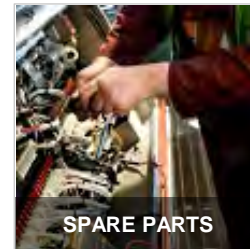
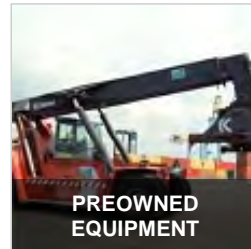
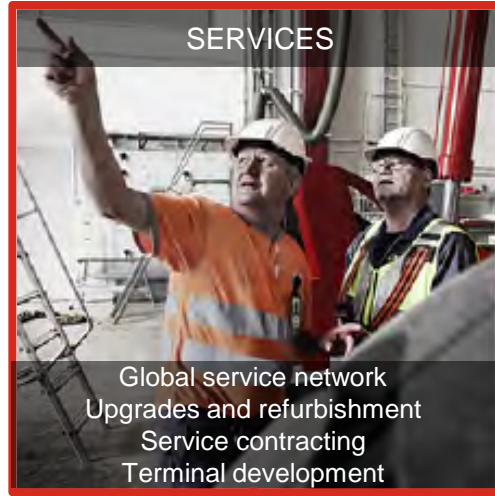
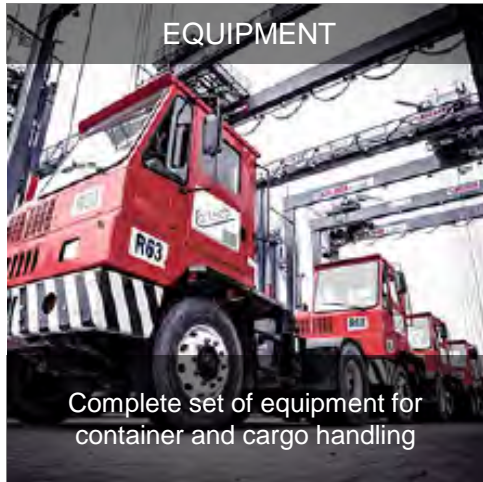
Anton Burchell, Managing Director, Kalmar Industries South Africa

Any Crane, Any Job, Anywhere

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- n **Anywhere**

Crane Upgrades is part of Kalmar Services



What are crane upgrades?

- n Crane Upgrades are sizeable projects that enhance the use of existing cranes
- n They are performed on large cranes capable of lifting containers or other heavy loads in yards or ship loading/unloading operations
- n Typical products include STS cranes, RTG cranes, ASC cranes and straddle carriers
- n Upgrades aim to improve either crane productivity, safety, physical dimensioning or physical operating location
- n Our projects are based on over 80 years of experience and our key resources include engineering, project management and/or site management



Why upgrade?

Increasing container volumes

Challenge: increasing wear and tear for cranes

Solution: inspections, repair and refurbishment

Increasing terminal competition

Challenge: increasing demands on crane performance

Solution: consultancy and inspections, upgrades, modernisation and relocation

Increasing vessel sizes

Challenge: technically competitive cranes become physically too small

Solution: consultancy and inspections, upgrades

Increasing need for sustainability

Challenge: being receptive to green values, with acceptable ROI

Solution: upgrades and modernisation



Any Crane

Kalmar's expertise covers the full range of container handling cranes.

- n 80% of our crane upgrade projects are on non-Kalmar equipment
- n We mainly upgrade STS, RTG and RMG cranes as well as straddle carriers

Any crane - examples



Hong Kong

Structural visual inspection of four non-Kalmar STS cranes



Port Klang, Malaysia

Refurbishment of 14 non-Kalmar straddle carriers



Yilport, Turkey

Electrification of 18 non-Kalmar RTGs

- Installation and commissioning of pneumatic actuated automatic drive-in units
- Conductor bar system



Marseille, France

Upgrade of three non-Kalmar STS cranes

- Gantry upgrade
- SPMT relocation
- Electrical modifications



Rotterdam, the Netherlands

Upgrade of 12 non-Kalmar STS cranes

- 8-metre height increase
- 4-metre boom extension
- Stacker platform
- Lifetime extension



Buenos Aires, Argentina

Boom extension and relocation of two non-Kalmar STS cranes

- 6-metre boom extension

Any Job

A wide range of upgrade services for all brands of equipment.

- n Consultancy and inspection
- n Repair and refurbishment
- n Relocation
- n Upgrade and modernisation
- n Installation and commissioning of non-Kalmar new products

Consultancy and inspection

- n Damage survey
- n Equipment modification study
- n Lifetime analysis and inspection
- n Lifetime extension plans
- n Planning for crane upgrade project



Repair and refurbishment



- n Repair – fixing a broken part to restore the function of the component/system
- n Refurbishment – renewing a part after wear and tear to restore the function of the component/system

Repair and refurbishment – festoon installation



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Repair and refurbishment – changing trolley rails



Any Crane / Any Job / Anywhere



Repair and refurbishment – crane control system and/or motors



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Repair and refurbishment – replacing cable reel



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Repair and refurbishment – power unit refurbishment



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Repair and refurbishment – straddle carrier refurbishment



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Relocation



- n Moving cranes to another location by land, river or sea
- n An increasingly popular choice as terminals adapt to quickly changing needs and seek to optimise their investments

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Relocation – within a terminal



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Relocation – transport by sea



- n Sea transport relocation of STS crane with rail gauge modification for new terminal

Upgrade and modernisation

- n Crane heightening and boom extension
- n Modernisation of main components (control system, electric motors and cabin etc.)
- n Safety additions (stacker platform, boom anti-collision and cameras etc.)
- n Environmental and energy saving options (electrification of RTGs and fuel saving engine controllers etc.)
- n Automation and operator assisting features (spreader soft landing etc.)



Upgrade and modernisation – growing ship sizes and volumes are met in most terminals

STS-crane heightening
and boom extension



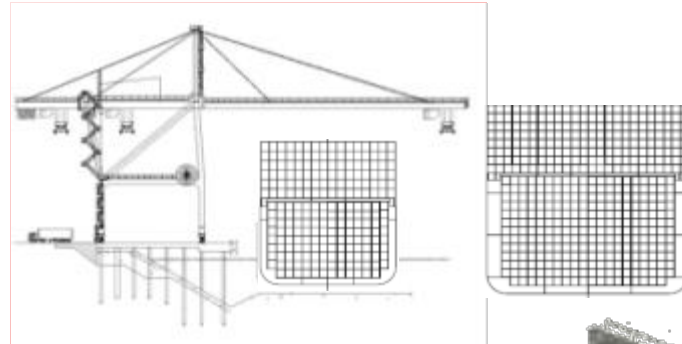
Panamax



New Panamax



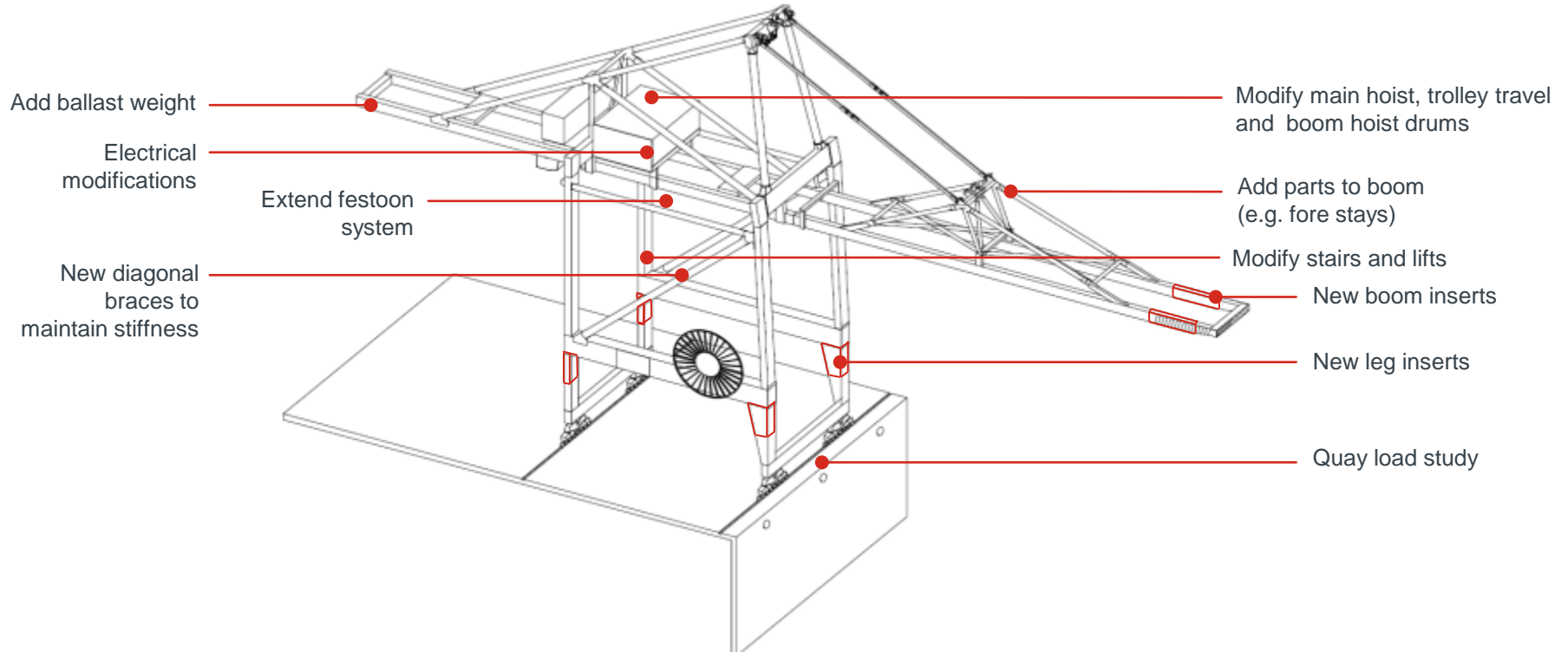
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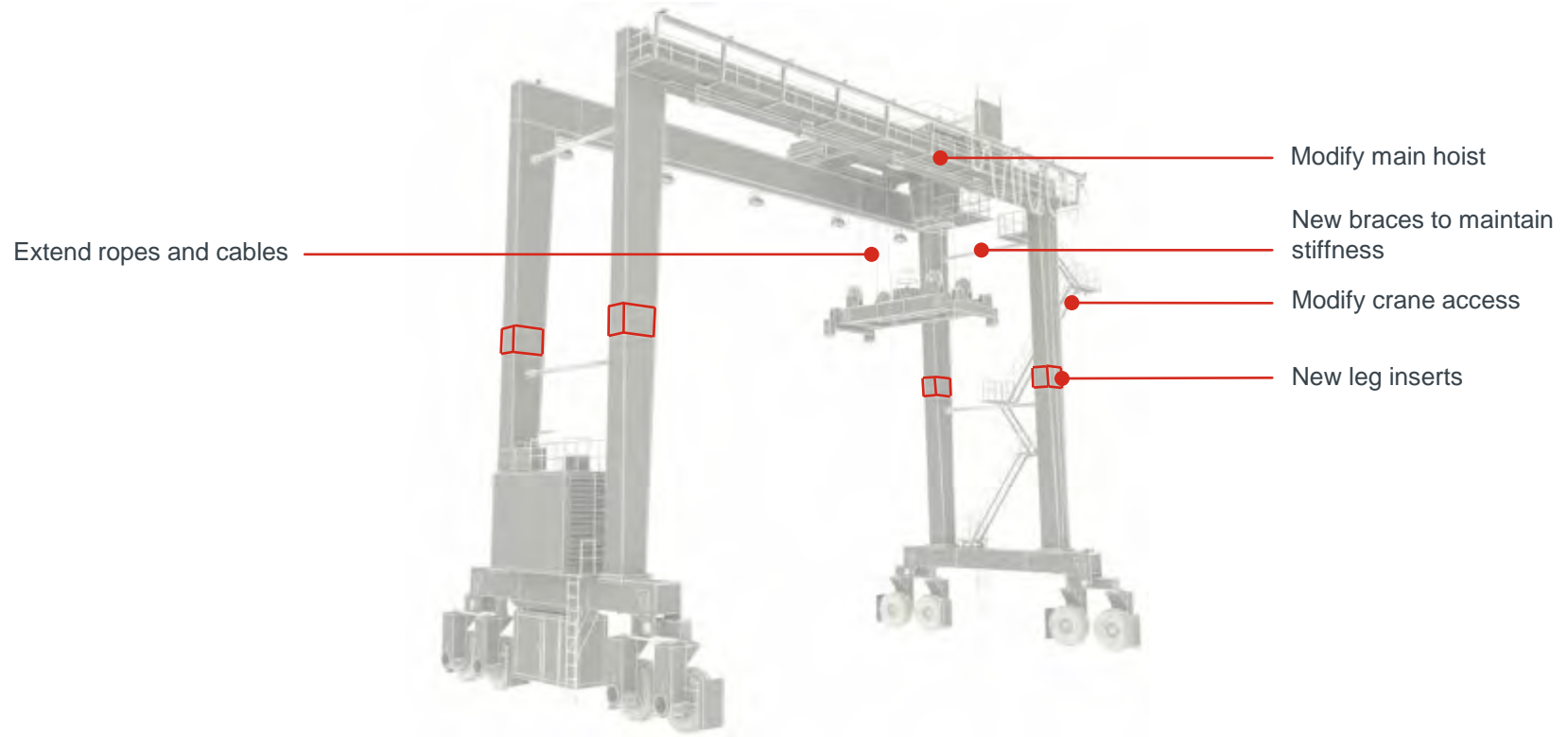
RTG-crane
heightening



Upgrade and modernisation – STS-crane heightening and boom extension



Upgrade and modernisation – RTG-crane heightening



Upgrade and modernisation – budget and time indications

Budget indication (K€/ crane)	
STS boom extension	250 – 1,000
STS crane heightening	750 – 1,250
RTG heightening	75 – 200
Time from order to delivery (months)	
STS boom extension	6 – 12
STS crane heightening	6 – 12
RTG heightening	2 – 4
Crane out of operation (weeks)	
STS boom extension	6 – 10
STS crane heightening	6 – 10
RTG heightening	2 – 4



Upgrade and modernisation – stacker platform



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Upgrade and modernisation – benefits of a stacker platform

- n People work in a dedicated area with safety bars
- n The restricted platform helps people focus on their work
- n Containers are lowered and stabilised on the platform with guiding bars, while taking the twistlocks in or out
- n Easy future automation due to standardised cradle
- n Possible shortening of handling-time



Upgrade and modernisation – two basic ways to electrify RTG cranes



Cable reel



Conductor bar system

Saving of about
35,000 litres of diesel
fuel per year / crane

Zero emissions,
no engine noise

Less maintenance –
increased availability

Upgrade and modernisation – a rapid return on investment

Savings

Diesel Electric RTG (3,000 hours per year)	Electrified RTG (3,000 hours per year)
18.0 litres/hour	40 kW/hour
1.25 €/litre	0.05 €/kWh
54,000 litre/year	120,000 kWh/year
67,500 €/year	6,000 €/year
Approximate savings per RTG per year: €60,000 = US\$ 75,000	

ROI expectation: 2 - 4 years (depending on the scope and fuel price)

Variables: Total container block length; conductor bar structure or cable length / Local price level for labor and hardware structures / Single or double sided connection (conductor bar) / Filtering of electric power / RTG voltage transformation / various other minor technical challenges.

Installation and commissioning of non-Kalmar products

- n Installation and commissioning of new STS cranes
- n Same team to handle bunch-list and warranty work effectively



Any job





Anywhere

Kalmar's global reach means that we can undertake crane upgrade projects in every corner of the world.

- n 5 Regional Business Centres world wide
- n Personnel in 33 countries and sales and service in 100 countries
- n 5,300 Kalmar professionals at your service

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Five regional business centres that cover the world



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Summary

Why upgrade?

- n Maximise the use of your current assets
- n Handle bigger vessels and larger volumes
- n Optimise crane performance
- n Meet your sustainability targets
- n Improve safety

Why choose Kalmar?

- n A trusted partner with a solid track record and service mindset
- n Global reach
- n Any crane, any job, anywhere.





Thank you!