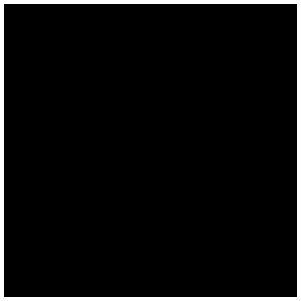
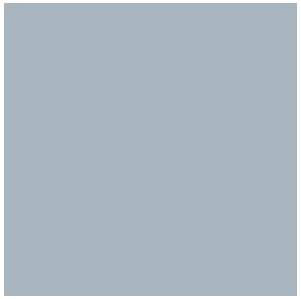
Crane Upgrades a way to extend port cranes life


Eduardo Prat - Vice President EMEA South

10th Indian Ocean Ports & Logistics 2016
27-29 January, Reunion Island

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Any Crane, Any Job, Anywhere

Contents

- What are crane upgrades?
- Why to upgrade?
- Examples of crane upgrade projetcs
- Conclusions

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What are crane upgrades?

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

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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

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Examples of crane upgrades projects

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

Examples of crane upgrades projects

TCB Barcelona – 2014/15

Heightening 6 meters 3 ZPMC STS Cranes

- Total Control of the Project
- Execution the whole works on site - Safety is our priority

Port Said PSCCH – Egypt – 15

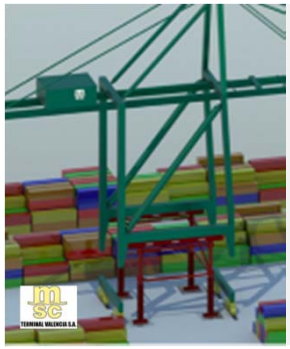
Boom Repair on a Noell STS Crane

- Complete Engineering Works
- Provide right Technical Solution
- Execution and Control of the Works
- Testing Protocol

Paceco Valencia15

Heightening 7 meters 2 Paceco STS Cranes

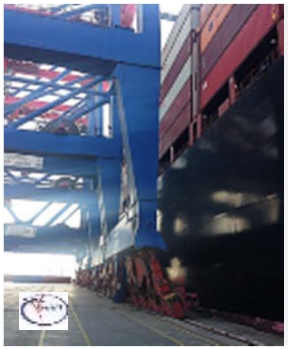
- Subcontractor of OEM (Paceco)
- Skidding the cranes and execution the whole works on site - Safety is our priority



MSCTV Valencia – In execution

6 STS Crane Heightening and 8 STS Boom extension Works

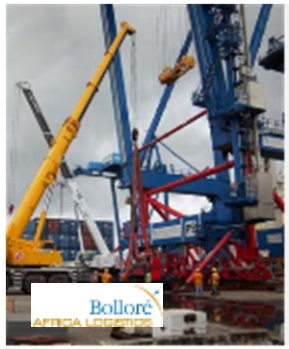
- Manufacturing Control
- Relocate the cranes: Skidding and SPMT
- Crane Heightening and Boom Extension Works
- Testing Protocol
- Certification of the Cranes



Port Said SCCT – In execution

Securing crane after vessel collision

- Complete Engineering Works: Survey and securing proposal
- Provide right Technical Solution
- Manufacturing Control
- Execution and Control of the Works



Abidjan – Ivory Coast15

Repair Kalmar STS Crane after accident

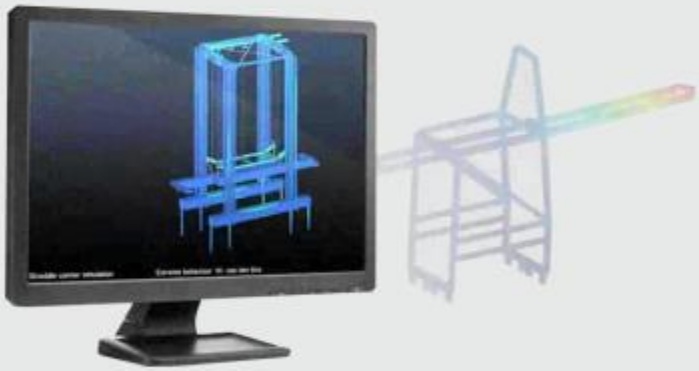
- Complete Engineering Works: Survey and repair proposal
- Provide right Technical Solution
- Manufacturing Control
- Execution and Control of the Works
- Testing Protocol

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

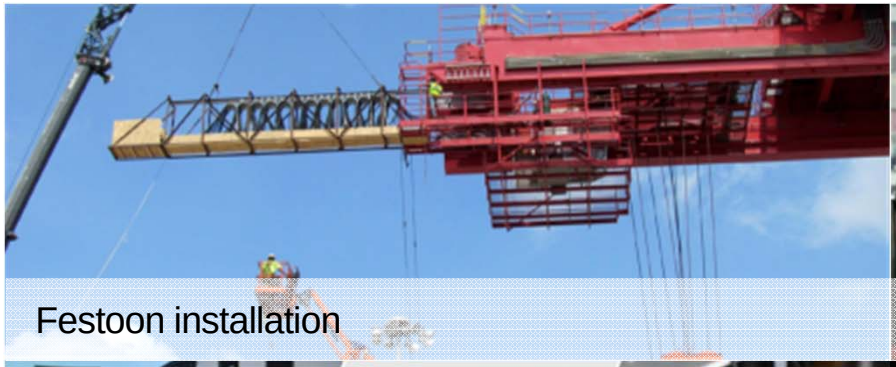
- Consultancy and inspection
- Repair and refurbishment
- Relocation
- Upgrade and modernization
- Installation and commissioning of non-Kalmar new products

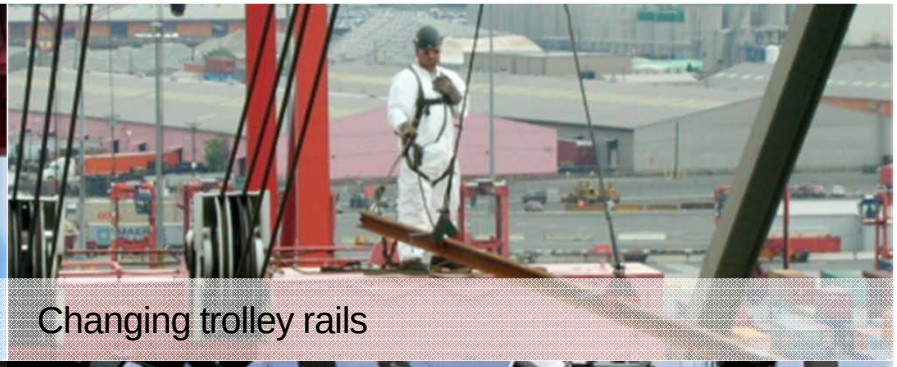
Consultancy and inspection

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

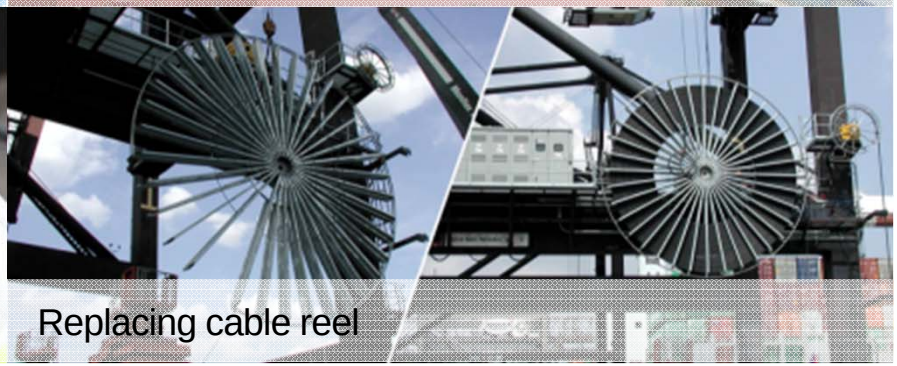


Repair and refurbishment


Festoon installation


Changing trolley rails


Crane control system and/or motors


Replacing cable reel

Relocation

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

Relocation – within a terminal

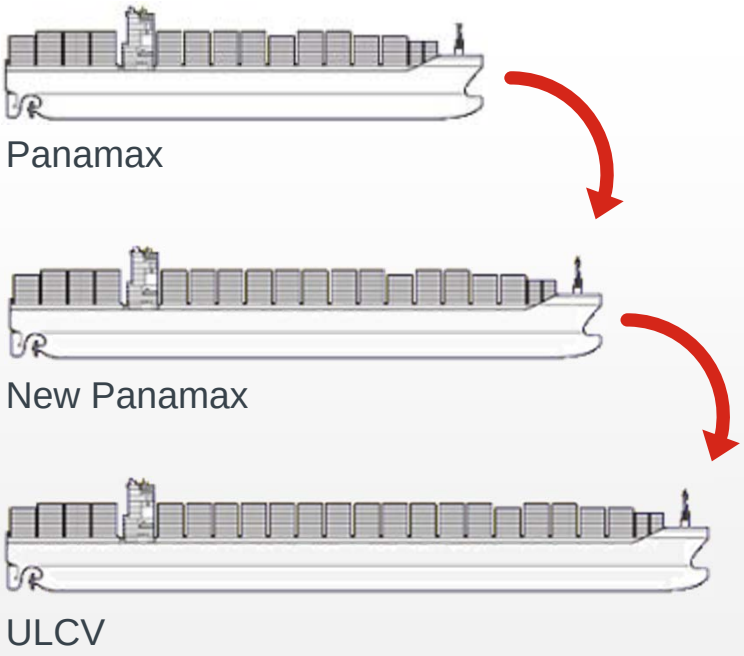
Relocation – transport by sea

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

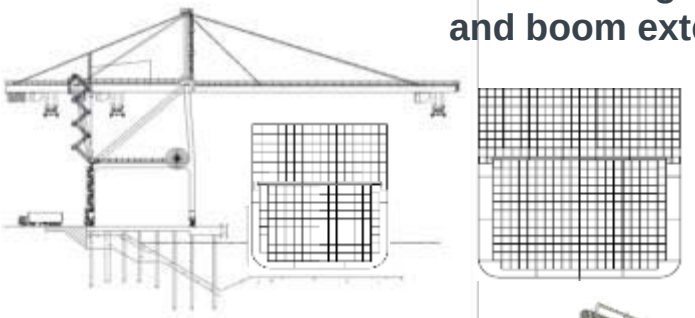
Upgrade and modernisation

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

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

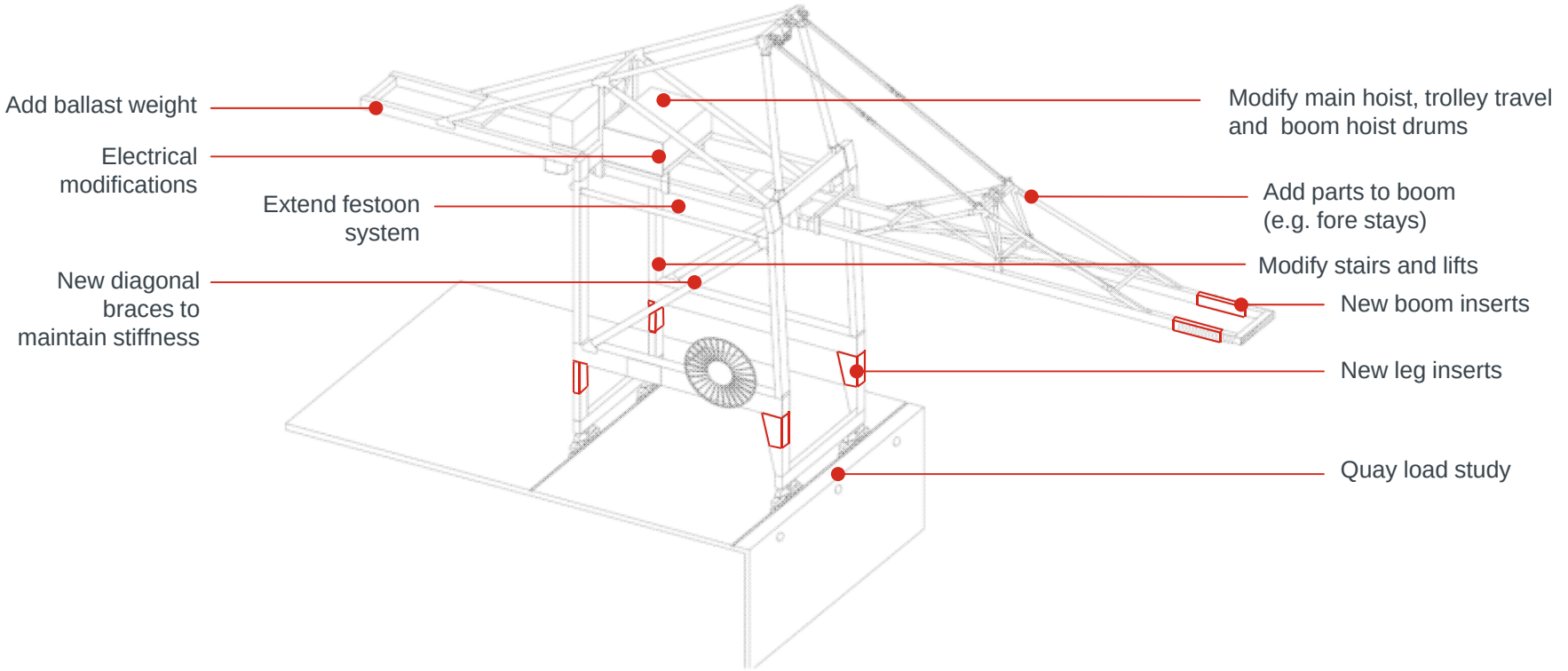


STS-crane heightening and boom extension



RTG-crane heightening

Upgrade and modernisation – STS-crane heightening and boom extension



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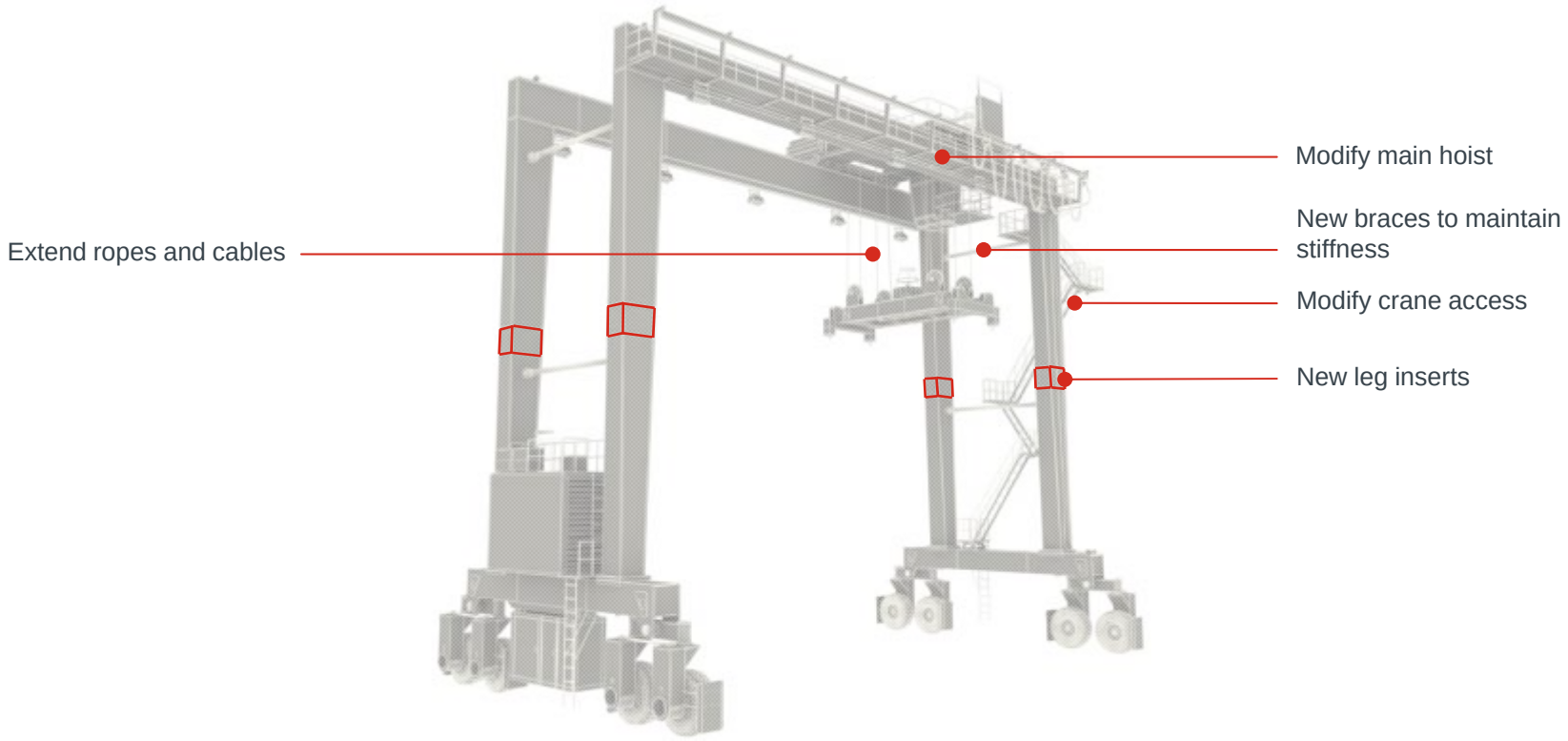
Upgrade and modernisation – RTG-crane heightening



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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

Any Crane / **Any Job** / Anywhere

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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

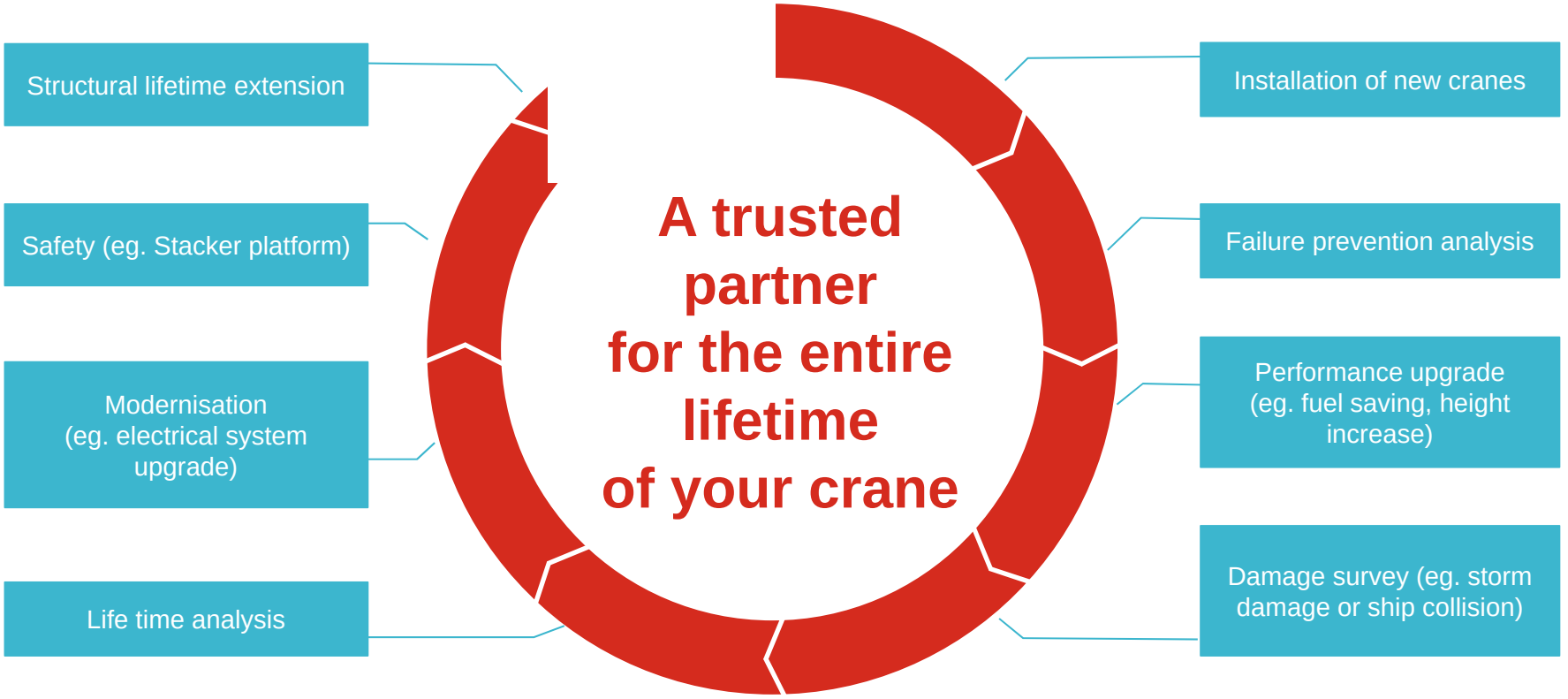
Savings

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.

Any job


Structural lifetime extension
Safety (eg. Stacker platform)
Modernisation (eg. electrical system upgrade)
Life time analysis
A trusted partner for the entire lifetime of your crane
Installation of new cranes
Failure prevention analysis
Performance upgrade (eg. fuel saving, height increase)
Damage survey (eg. storm damage or ship collision)

Five regional business centres that cover the world

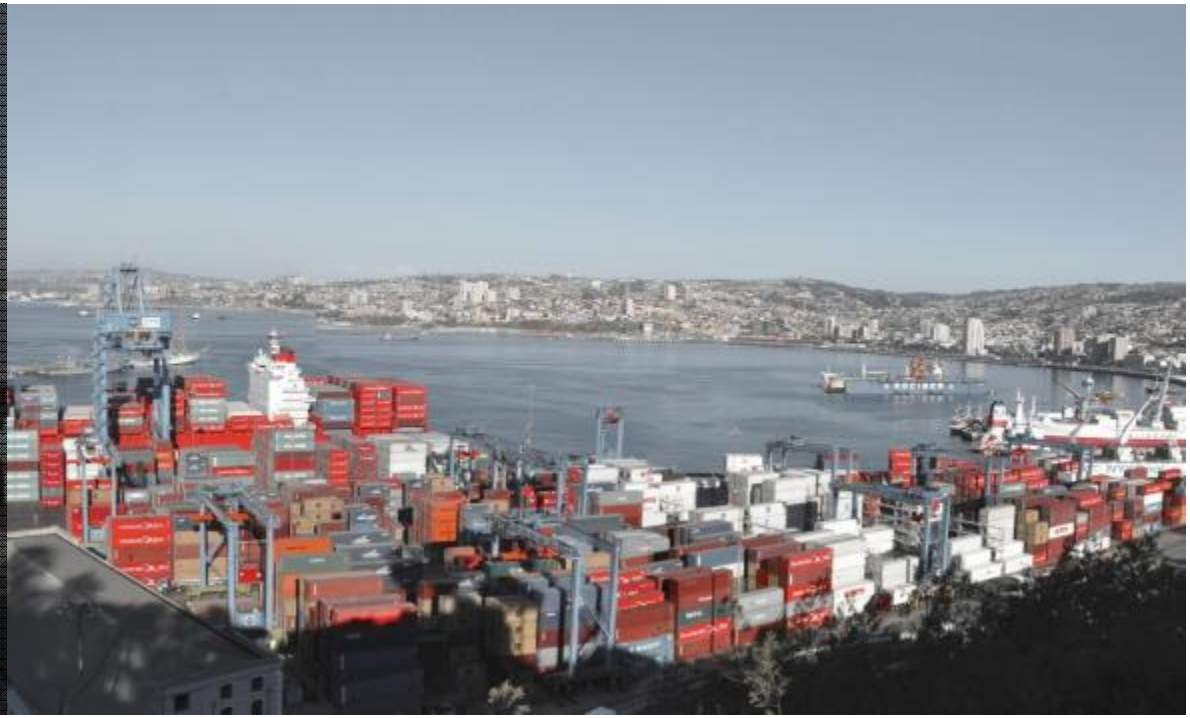
Summary

Why upgrade?

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

Why choose Kalmar?

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



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CRANE UPGRADES

Thank you!

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