



Kalmar a Specialized Company in Crane Upgrades



12th. Intermodal Africa 2014 – Durban, South Africa 24.10.2014

Anton Burchell, Managing Director, Kalmar Industries South Africa

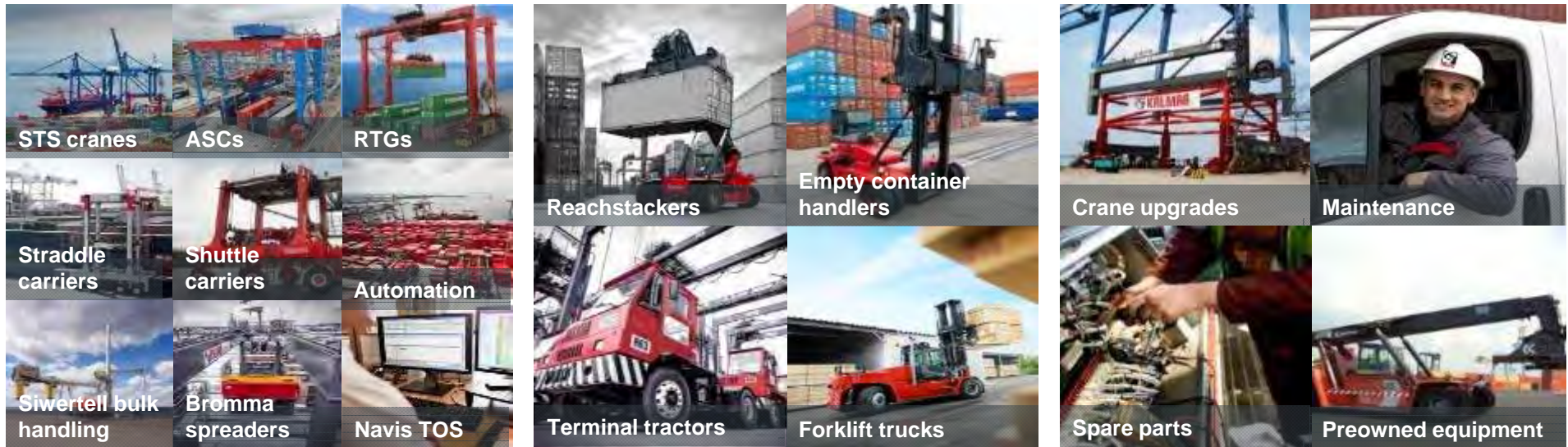


Kalmar – Making your every move count

- Kalmar is part of Cargotec.
Cargotec is listed on the stock exchange with sales totaling EUR 3.181 million in 2013 and employs approximately 10,610 people.
- Approximately 5.300 people are employed in Kalmar Service Centers in more than 100 countries world wide
- Kalmar is market leader in container handling equipment, port automation and services with sales in 2013 of EUR 1.600 million
- One in four container movements around the globe are handled by a Kalmar product.



Kalmar provides the market's widest product portfolio



Kalmar provides a global reach with operations in more than 120 countries. We think global but act local.



Trends in the container terminal segment

- Industry consolidation, P3
- Bigger vessels
- Environmental awareness
- Lack of skilled labour
- Automation



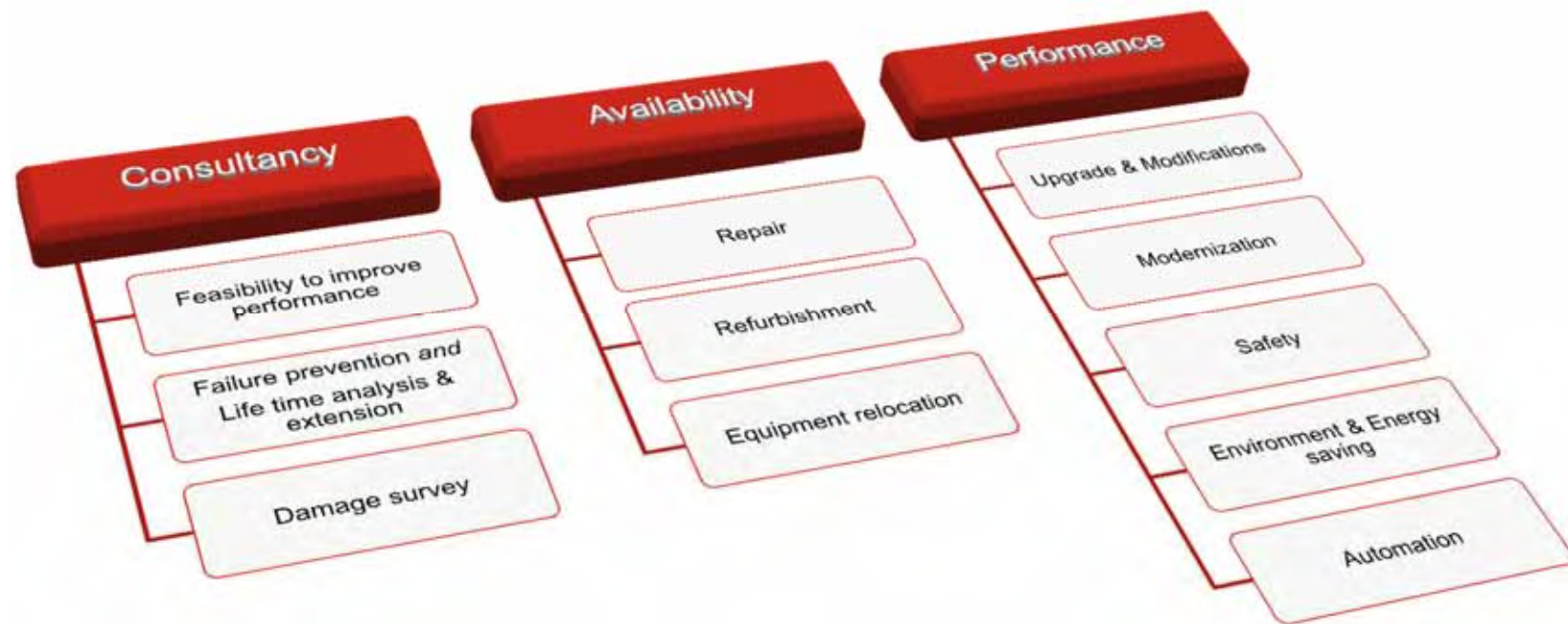
Kalmar Crane Upgrades Service Projects

- A Crane Service Project goes beyond the normal day to day business that we offer to our customers
- Kalmar offers Crane Upgrades Services for all brands of industrial and terminal handling equipment



Cranes Upgrade services

Cranes upgrades services are major structural and design-related modifications, repairs, transportation, modernization for industrial and terminal handling equipment to increase availability and improve performance.



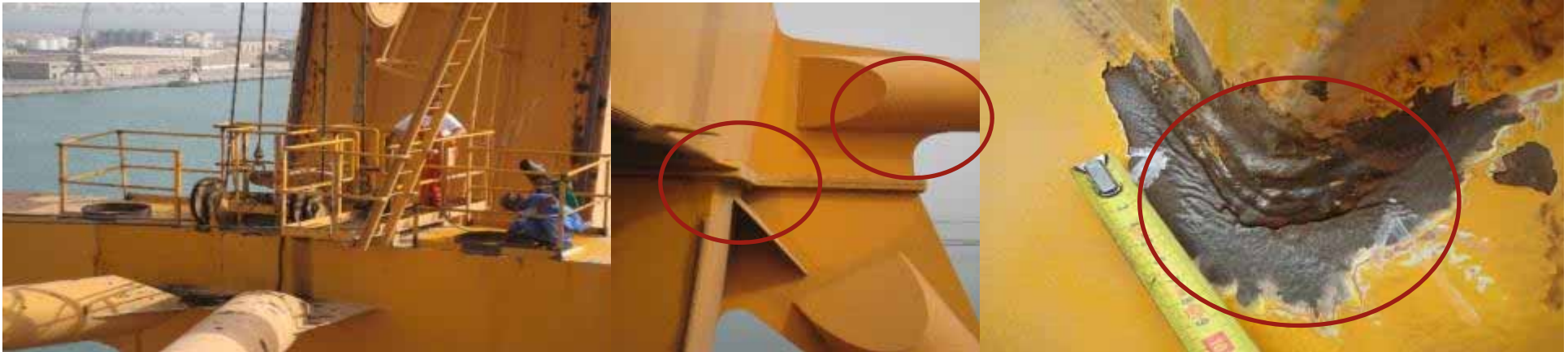
Consultancy

- Damage Survey
- Equipment Modification study
- Life time analysis & extension

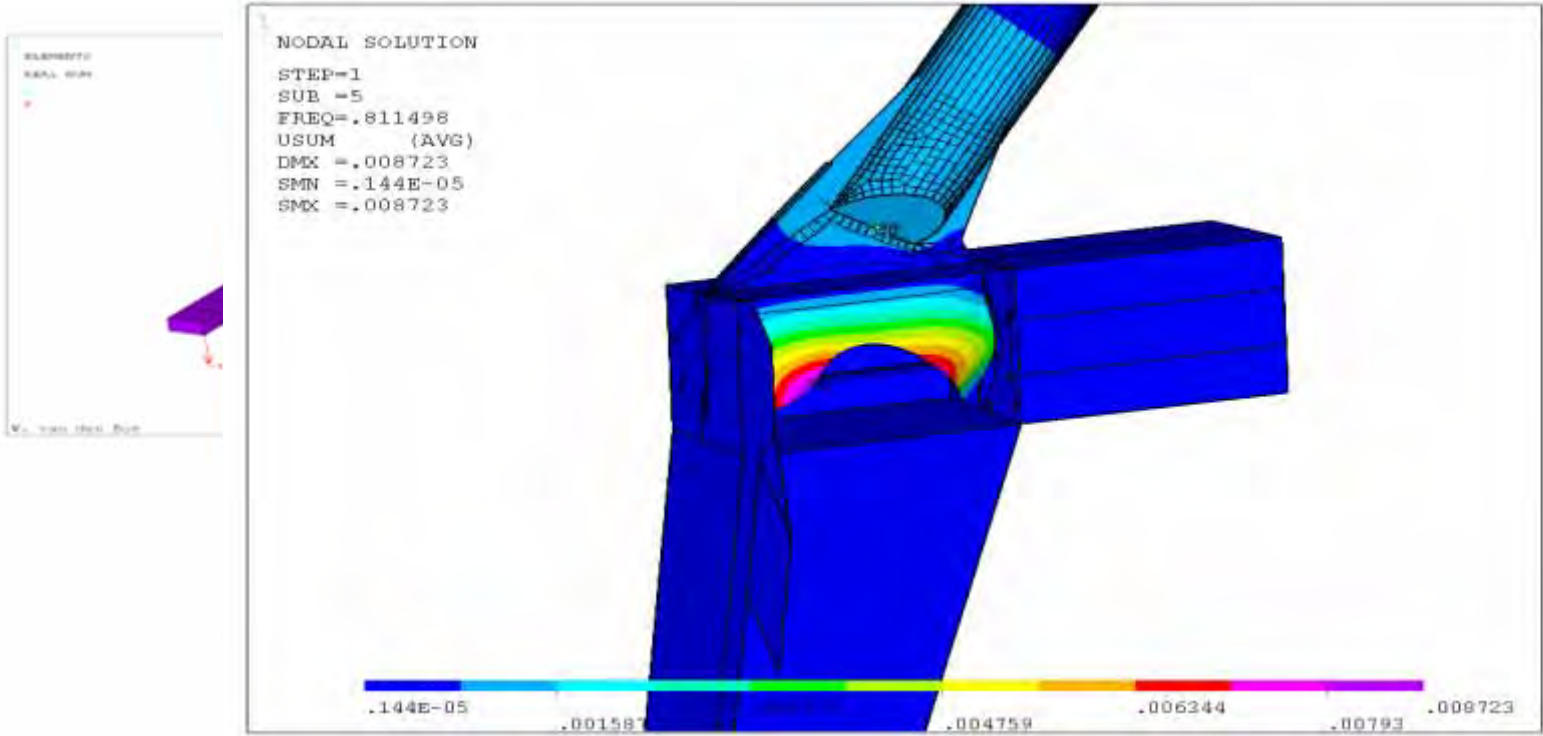


Failure prevention

- **Failure prevention** is recommended after each 5 years of operation.
An assessment will be made of the structural integrity by extensive inspection of critical members of the equipment.
- Critical members are defined and inspected at design engineer's indication and instruction.

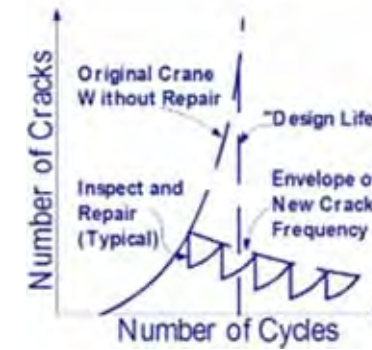
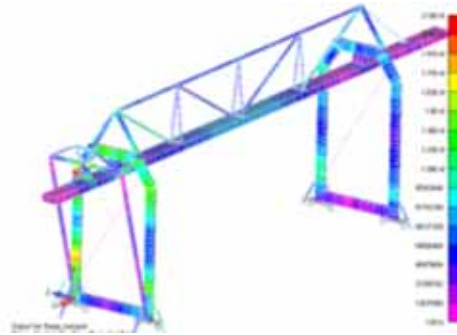
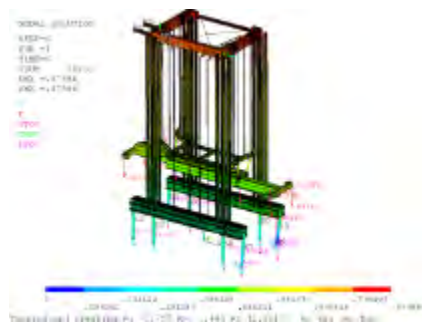


Failure prevention survey, due to design error



Lifetime analysis & extension

- During a **Lifetime analysis** stress and fatigue calculations will be made, based on the actual number of operating cycles and loads.
A report will be delivered evaluating the estimated life.
- **Extension** of the lifetime and number of cycles can typically be achieved by monitoring and repair of cracks as a result of fatigue, the upgrade of critical construction details and reduction of the loads.



Availability

- Repair
- Refurbishment
- Equipment relocation




Performance

- Upgrade & Modifications
 - Crane heightening and/or boom extension
- Modernization
- Safety
 - Stacker platform
- Environment & Energy saving
 - Electrification of RTG's
- Automation



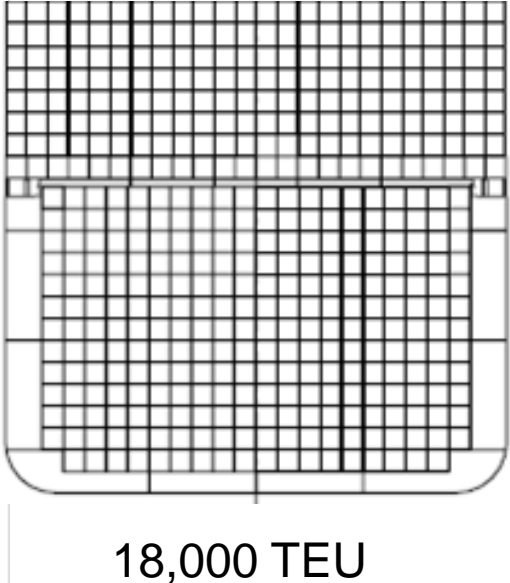
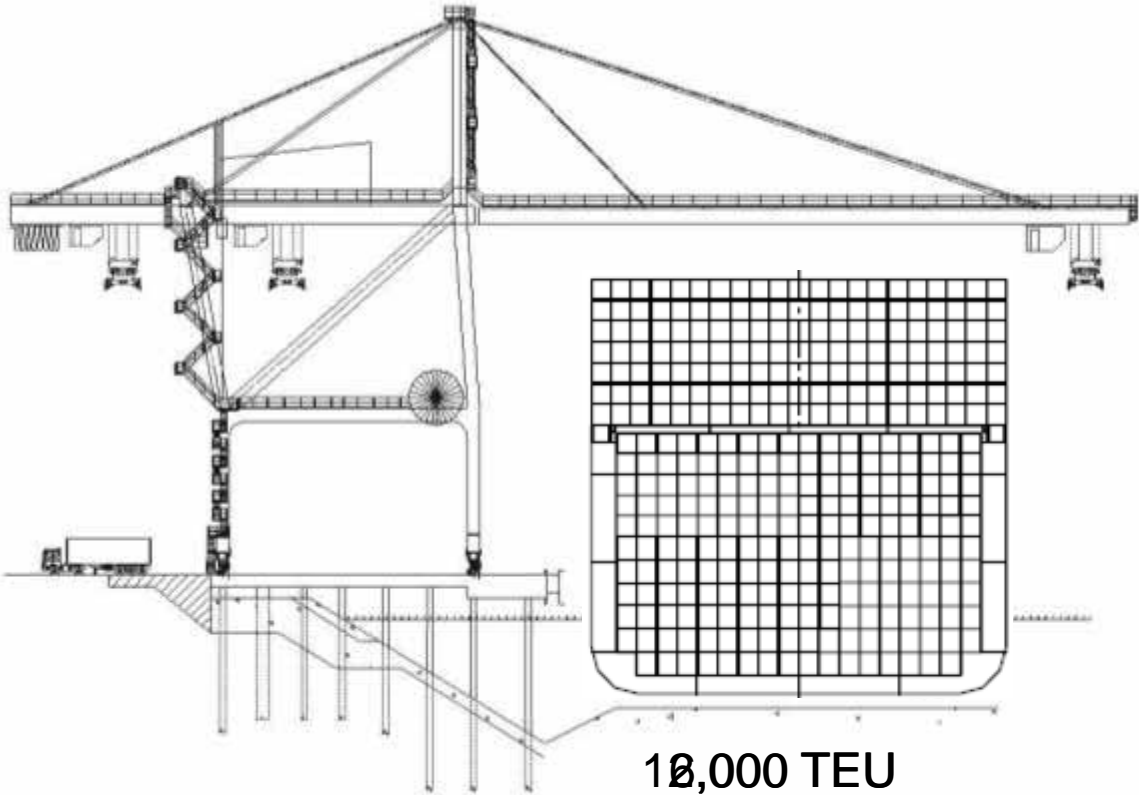
Current ship dimensions



Ship Class	Panamax	New Panamax	ULCV
CONTAINER WIDE	13	19	23
VESSEL WIDTH	32,3 m	49 m	59 m

- **Panamax:** The largest ship that can navigate the current Panama Canal.
- **New Panamax:** The largest ship that can navigate the expanded Panama Canal (operational in 2014).
- **Ultra Large Container Vessel (ULCV):** 18,000 TEU capacity ship based on the Triple-E class ships ordered by Maersk (delivered in 2013).

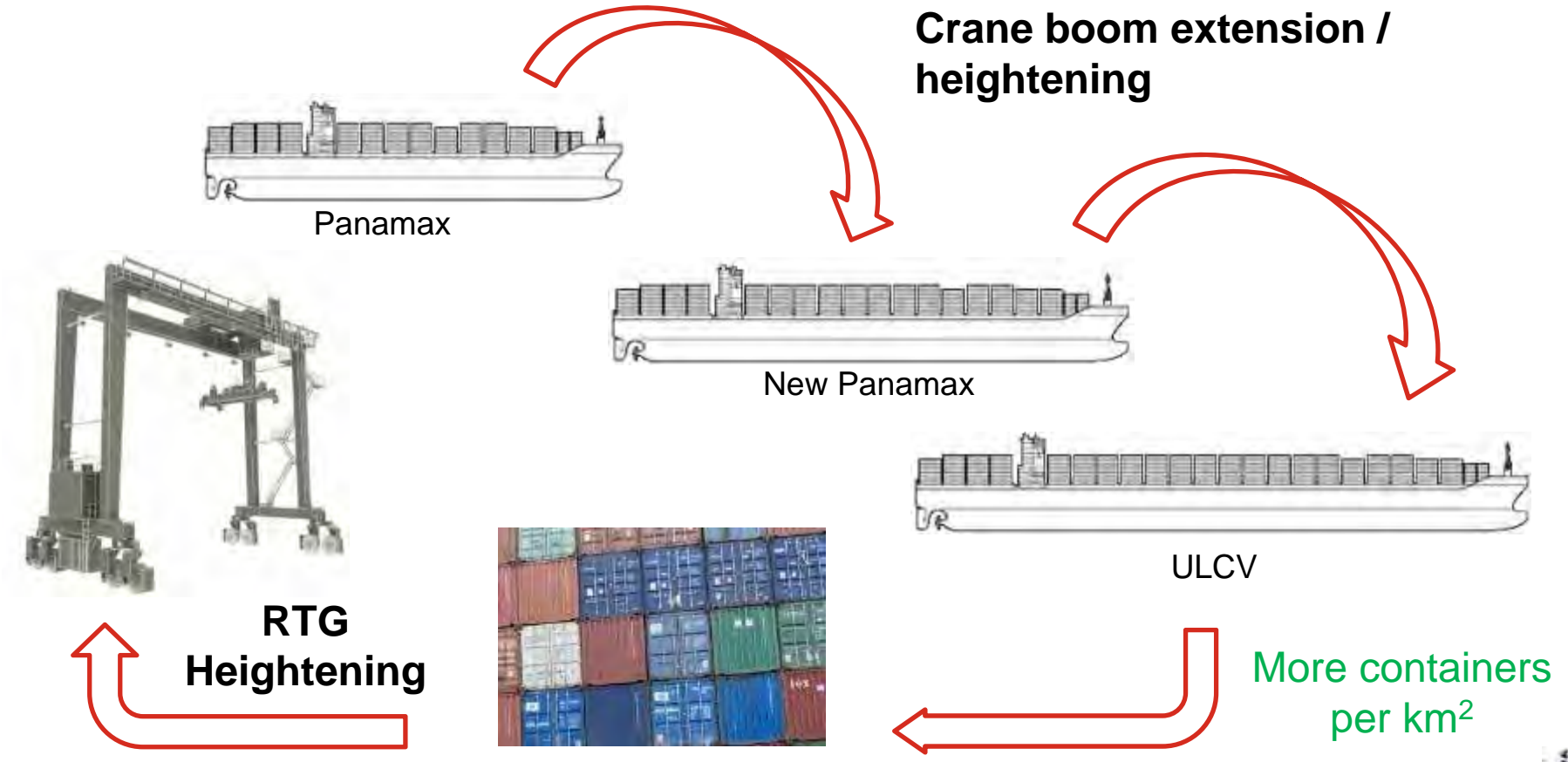
What does it mean?



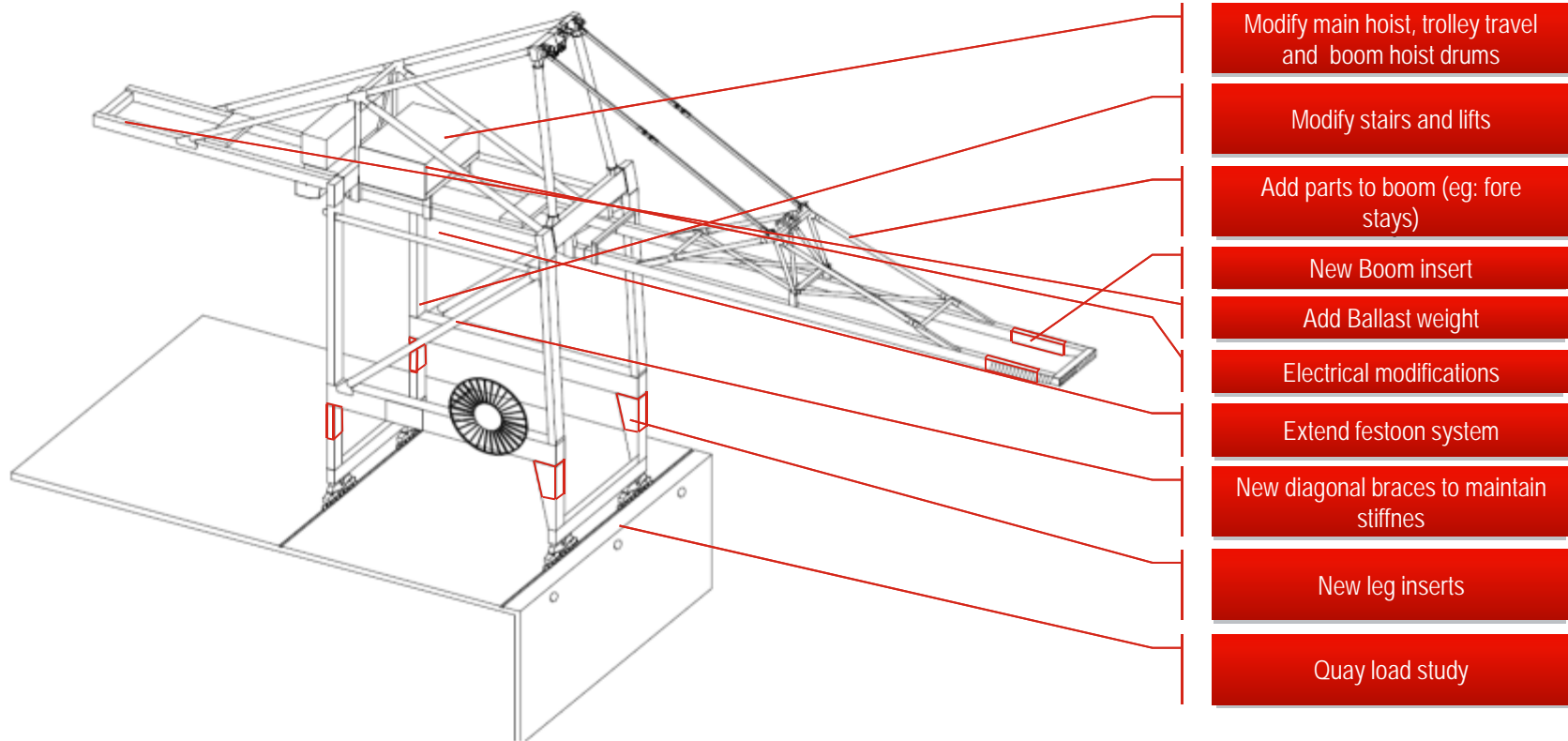
[Click screen to run slideshow](#)



The cascade effect!



STS boom extension & crane heightening



STS crane heightening

- Shorter delivery time compared to new crane
- Kalmar has it's own jacking system
- Cost effective solution



Two quay cranes heightened in Malaysia with Kalmar's advanced jacking system

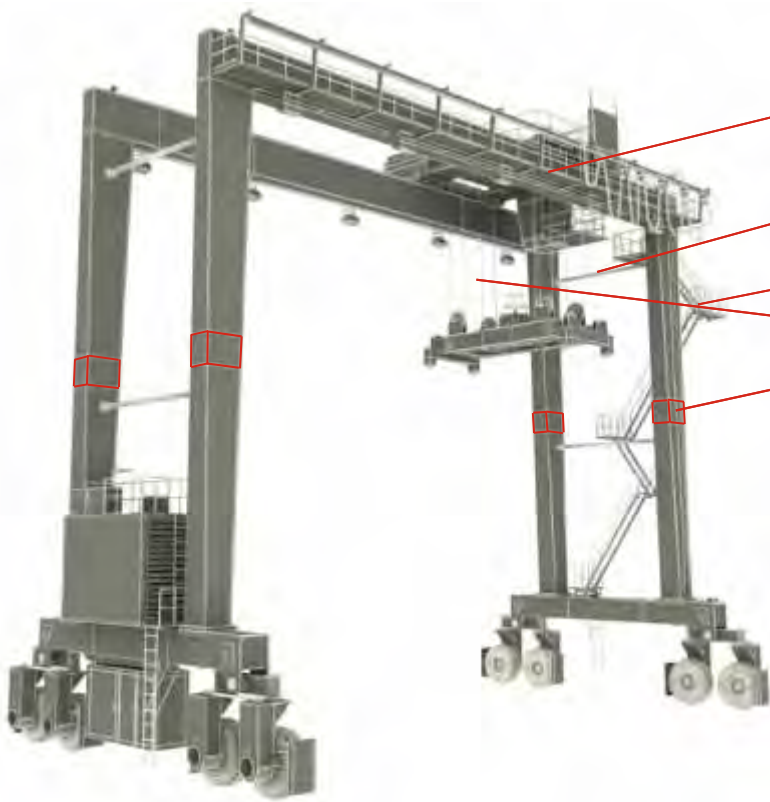


STS boom extension

- Shorter delivery time compared to new crane
- Cost effective solution



RTG heightening



Modify main hoist

New braces to maintain stiffness

Modify crane access

New leg inserts

Extend ropes and cables

RTG raise

- Extension increase up to 1 over 6 containers
- Shorter delivery time compared to new RTG
- Cost effective solution



Budget indication

■ STS boom extension	250	-	1,000	K€ / STS
■ STS crane heightening	750	-	1,250	K€ / STS
■ RTG heightening	75	-	200	K€ / RTG

Time from order to delivery

■ STS boom extension	6	-	12	Months
■ STS crane heightening	6	-	12	Months
■ RTG heightening	2	-	4	Months

Crane out of operation

■ STS boom extension	6	-	10	Weeks / STS
■ STS crane heightening	6	-	10	Weeks / STS
■ RTG heightening	2	-	4	Weeks / RTG

Multi brand system integrator

Upgrade of 12 STS cranes, brand Nelcon

- Height increase of 8 meters
- Boom extension of 4 meters
- Stacker platform
- Life time extension
- Electrical system m



Upgrade of 6 STS cranes, brand Ka

- Height increase of 4 meters
- SPMT relocation

Major repair of 1 STS crane, brand Fige

- Replacement of the boom
- Replacement of the trolley
- Replacement of the pylon



Major repair of 1 STS crane, brand Morris

- Repair of the boom
- SPMT relocation

Upgrade of 3 STS cranes, brand Caillard

- New lightweight trolley
- New extended boom
- Increased lifting height
- Increased lifting capacity



Upgrade of 8 STS

- Height increase of 5 m
- Cargotec own jacking
- Electrical system mod



RTG Diesel - Electric

- Regular extensive maintenance.
- Diesel Electric RTG's produce CO2 and NOX.
- Diesel prices will undoubtedly increase in the future!



Reasons for modification of existing RTG's



Economical

Diesel will become more expensive and alternative power sources such as electricity, will be a much cheaper solution.



Environmental

Authorities are demanding more environmental solutions. Electrification is the solution.



Efficiency

The impact of maintenance on electrical equipment is less than on diesel operated equipment which results in lower operational costs and higher availability

[Click screen to run slideshow](#)



Budget indication

■ RTG modification	25 - 50	K€ / RTG
■ Steelworks & conductor bars	50 - 100	K€ / RTG
■ Port interfaces	30 - 50	K€ / RTG
■ ROI	2 - 4	years

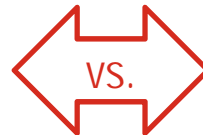
Diesel Electric RTG (2,000 hours per year)	Electrified RTG (2,000 hours per year)
18.0 ltr/h	40 kW/hr
3.5 TL/ltr	0.2 TL/kWh
36,000 ltr/yr	80,000 kWh/yr
126,000 TL/yr	16,000 TL/yr
Savings per RTG per year: TL 110,000 = € 55,000 = US\$ 72,000 Real case in TR: 10 moves per hour	

Variables: Single/double sided connection, filtering of cos phi, VSG, RTG voltage. Total block length per RTG steel, construction height. Local price level for labor and steel structure



Technical solutions for electrification of RTG's

- Cable reel
- Conductor bar system
 - Fast automatic drive-in & drive-out with telescopic arm
 - Manual connection with plug/socket to trolley



Multi brand system integrator

Electrification of 18 RTG's, brand Mitsui

18 Mitsui RTG's. Electrification of RTG and installation and commissioning of pneumatic actuated automatic Drive-in units - Conductor bar system



Electrification of 10 RTG's, brand Kalmar

10 Kalmar RTG's (6x VSG): Electrification of RTG and installation and commissioning of pneumatic actuated automatic Drive-in units - Conductor bar system.



Electrification of 35 RTG's, brand Noell & GPC

27 Noell, 8 GPC RTG's: Electrification of RTG and installation and commissioning of manual plug-in solution (dual sided) - Conductor bar system.

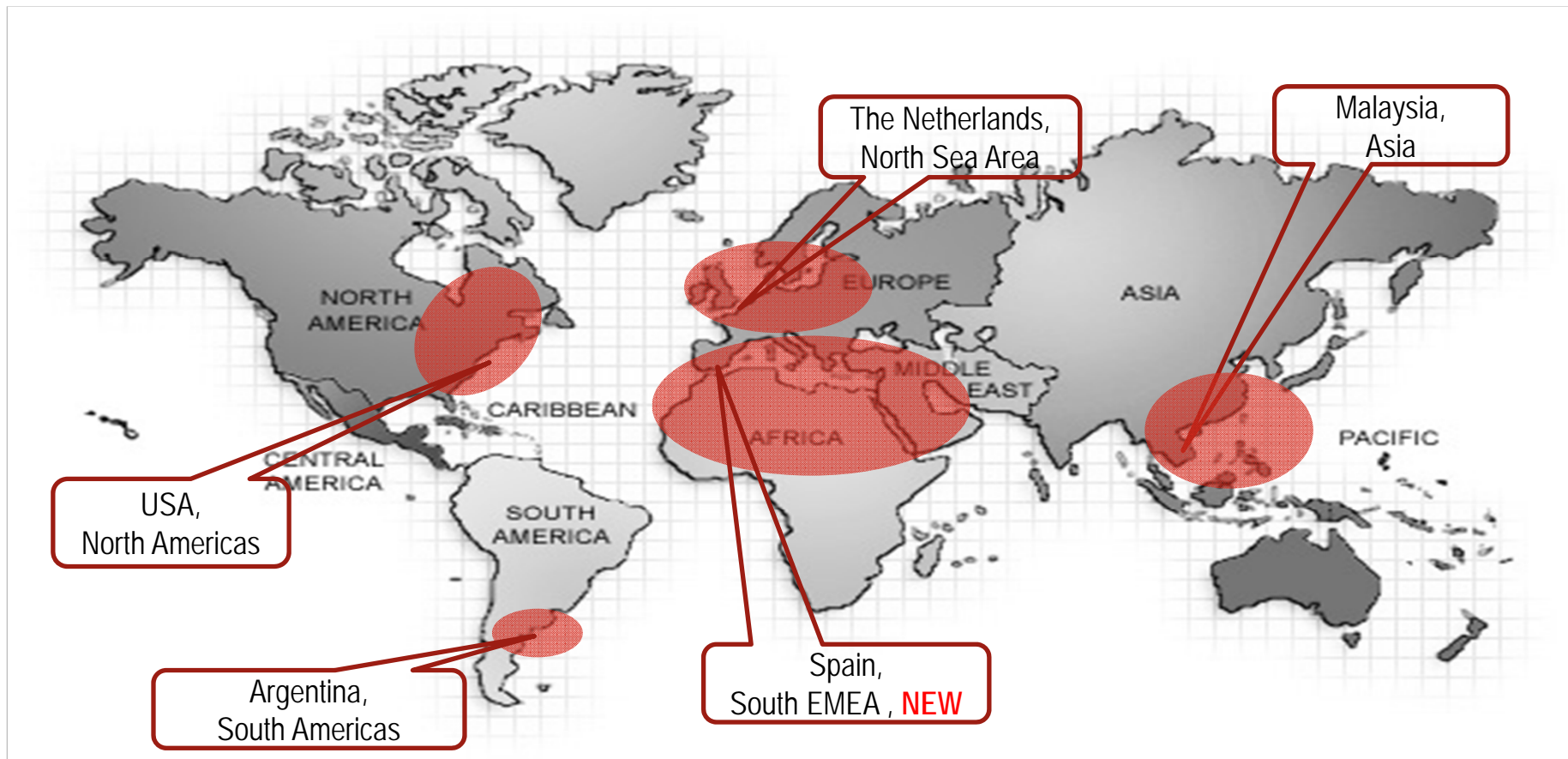


A global network of crane upgrades competence centres

- Best of the industry know-how and methods
- Excellent track record
- Brand neutral
- Mareport acquisition



Crane Services Competence centres. Ability to offer projects globally



Video Crane services projects



Kalmar Global Crane Services Projects
Maximizing port side productivity



Click screen to run video



Making Your Every Move Count.