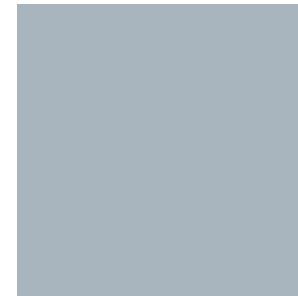




# Kalmar a Specialized Company in Crane Upgrades



**12th. Intermodal Africa 2014 – Lagos (Nigeria) 28.03.2014**

Eduardo Prat, VP Kalmar EMEA South Europe, Middle East & Africa

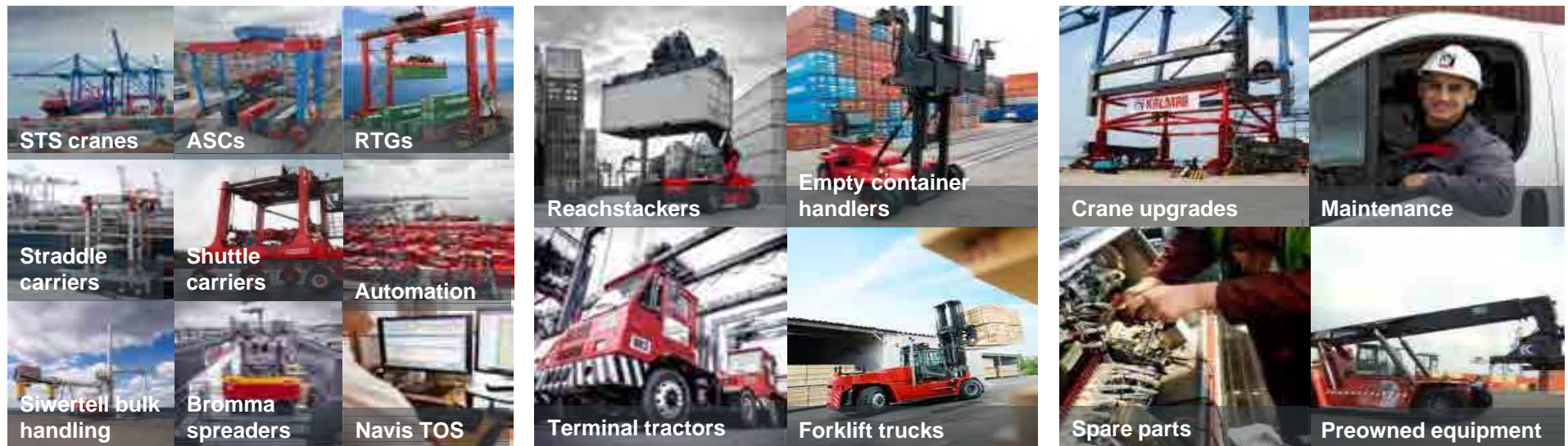


## Kalmar – Making your every move count

- 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



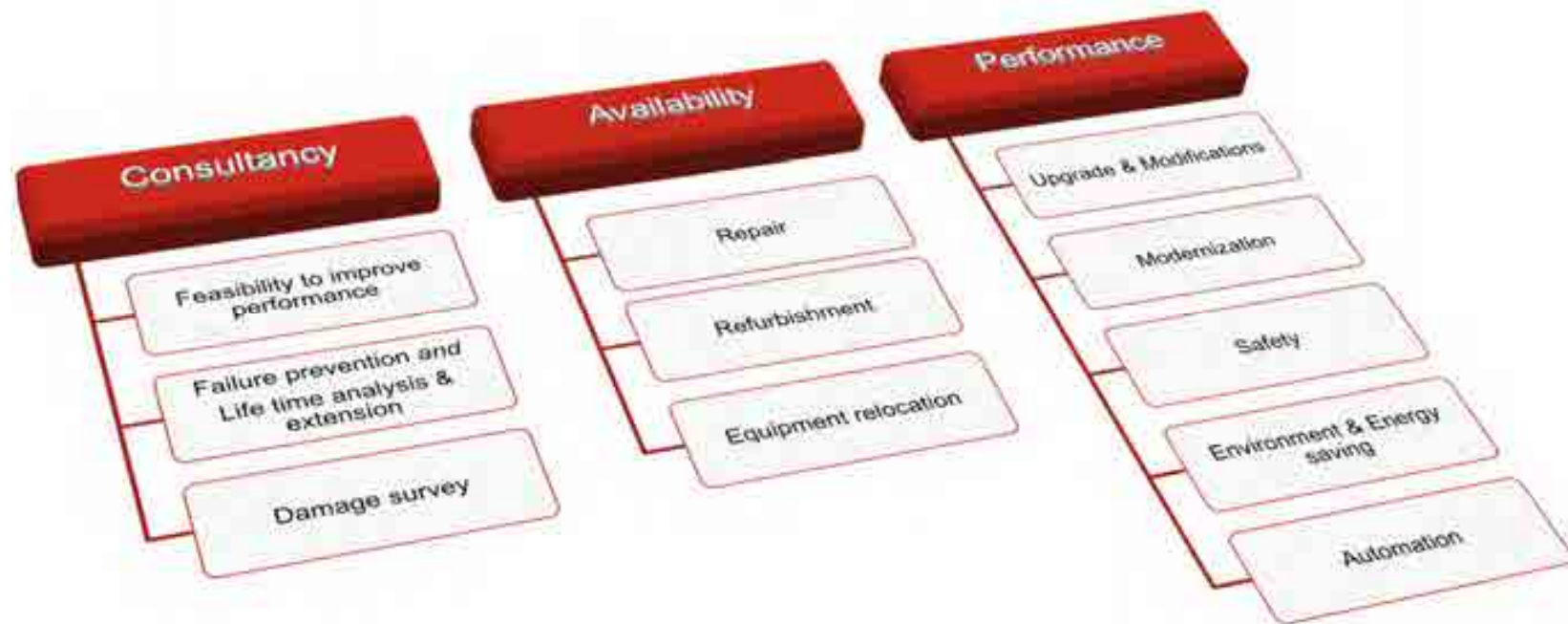
## Kalmar Crane Upgrades Service Projects

- 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.*





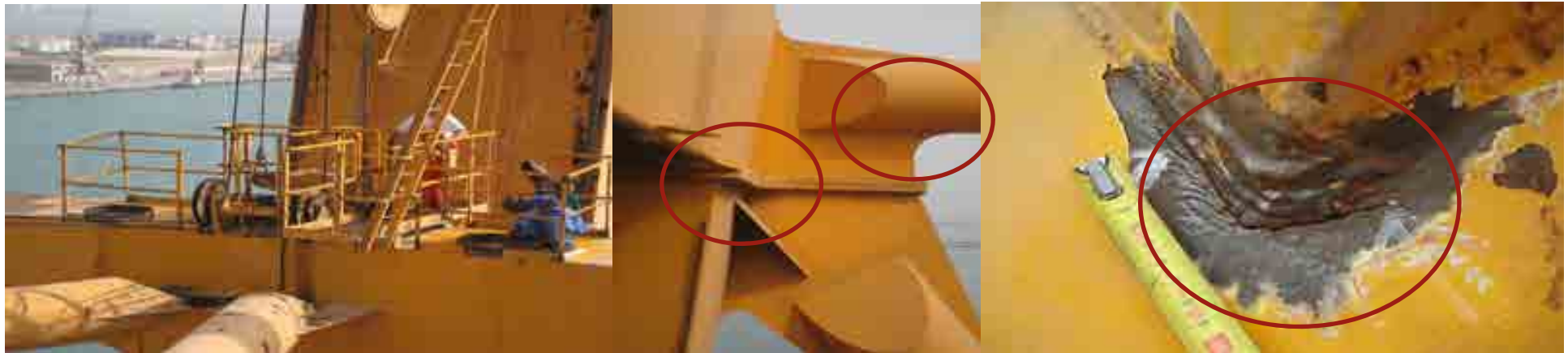
## Consultancy

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



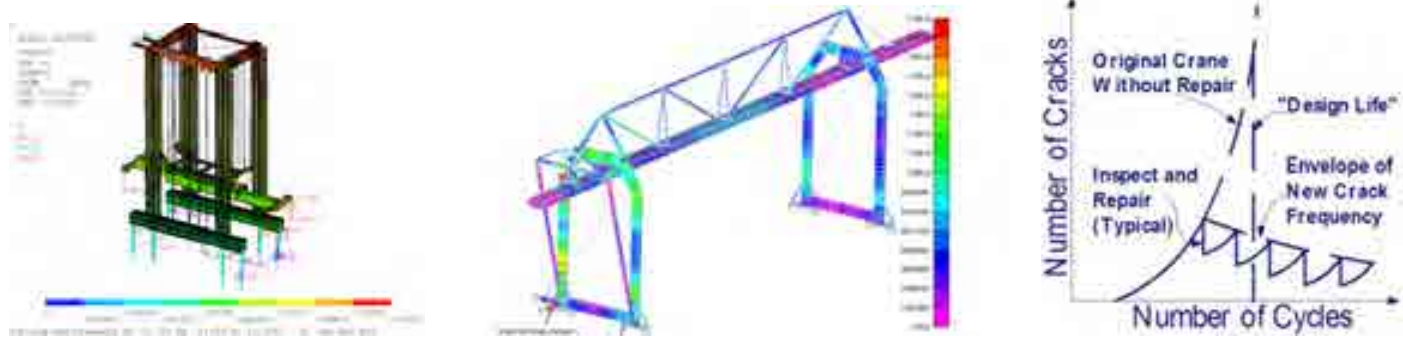
## Failure prevention

- **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.



## 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





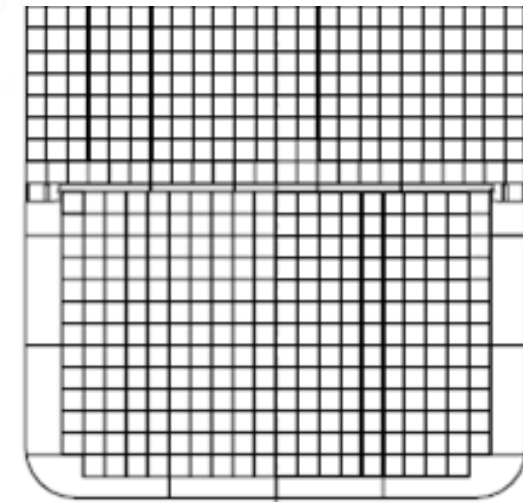
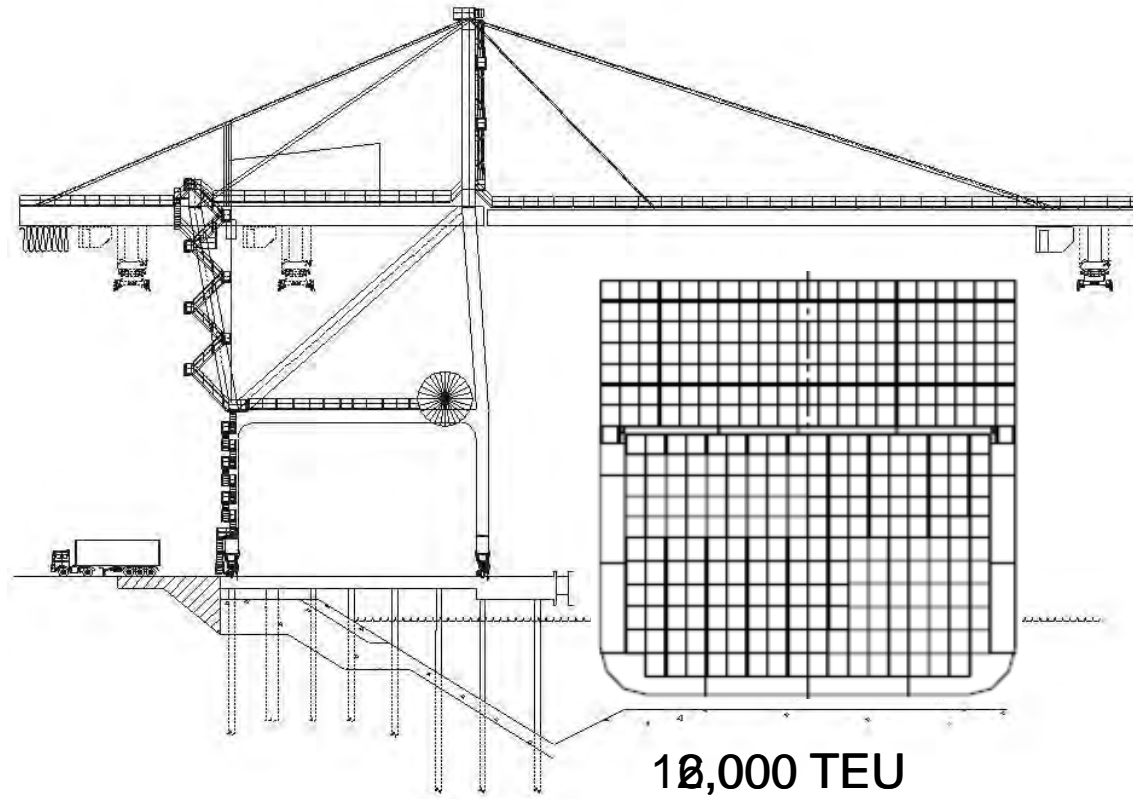
## Current ship dimensions



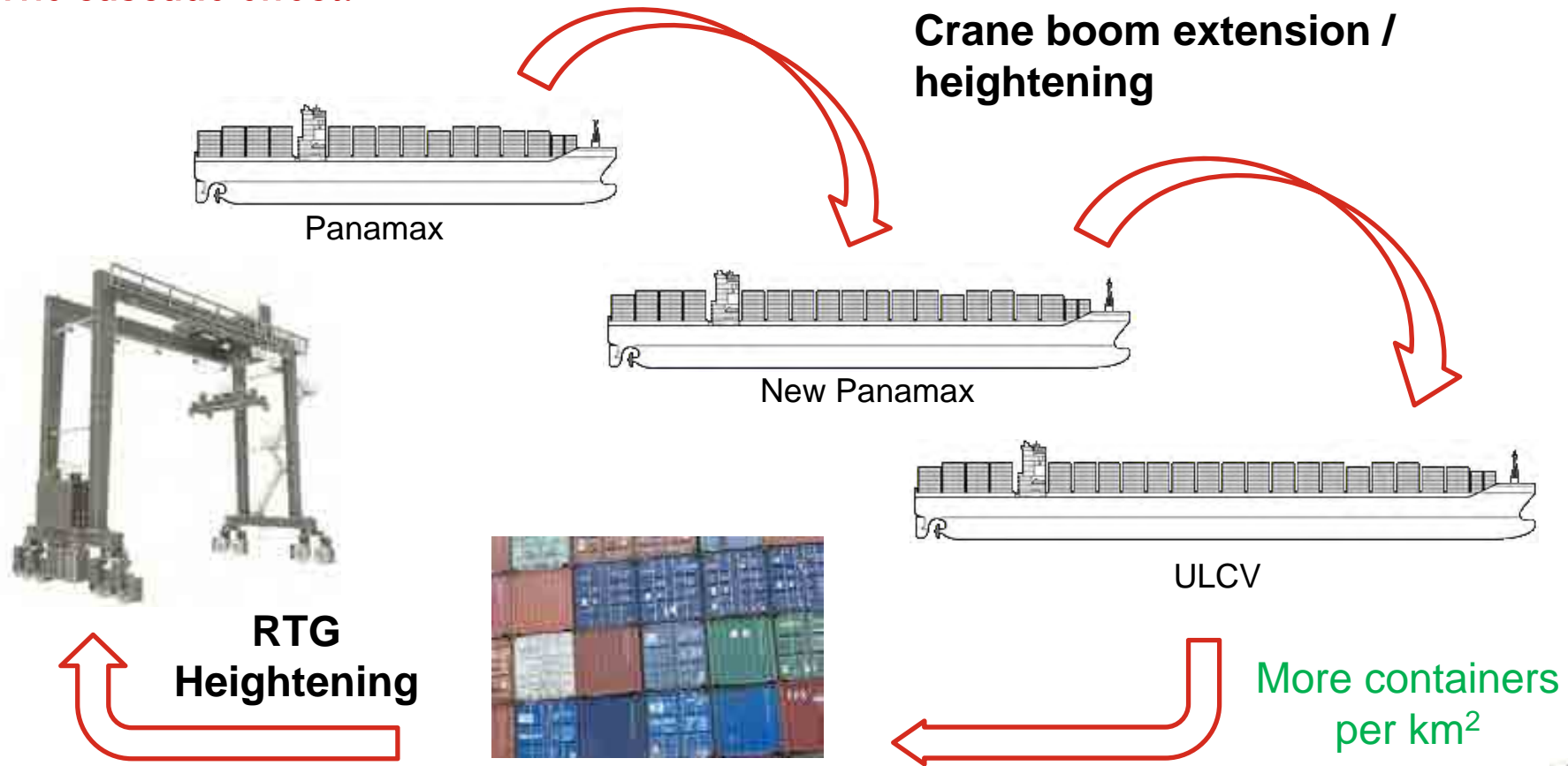
Ship Class	Panamax	New Panamax	ULCV
CONTAINER WIDE	13	19	23
VESSEL WIDTH	32,3 m	49 m	59 m

- **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).

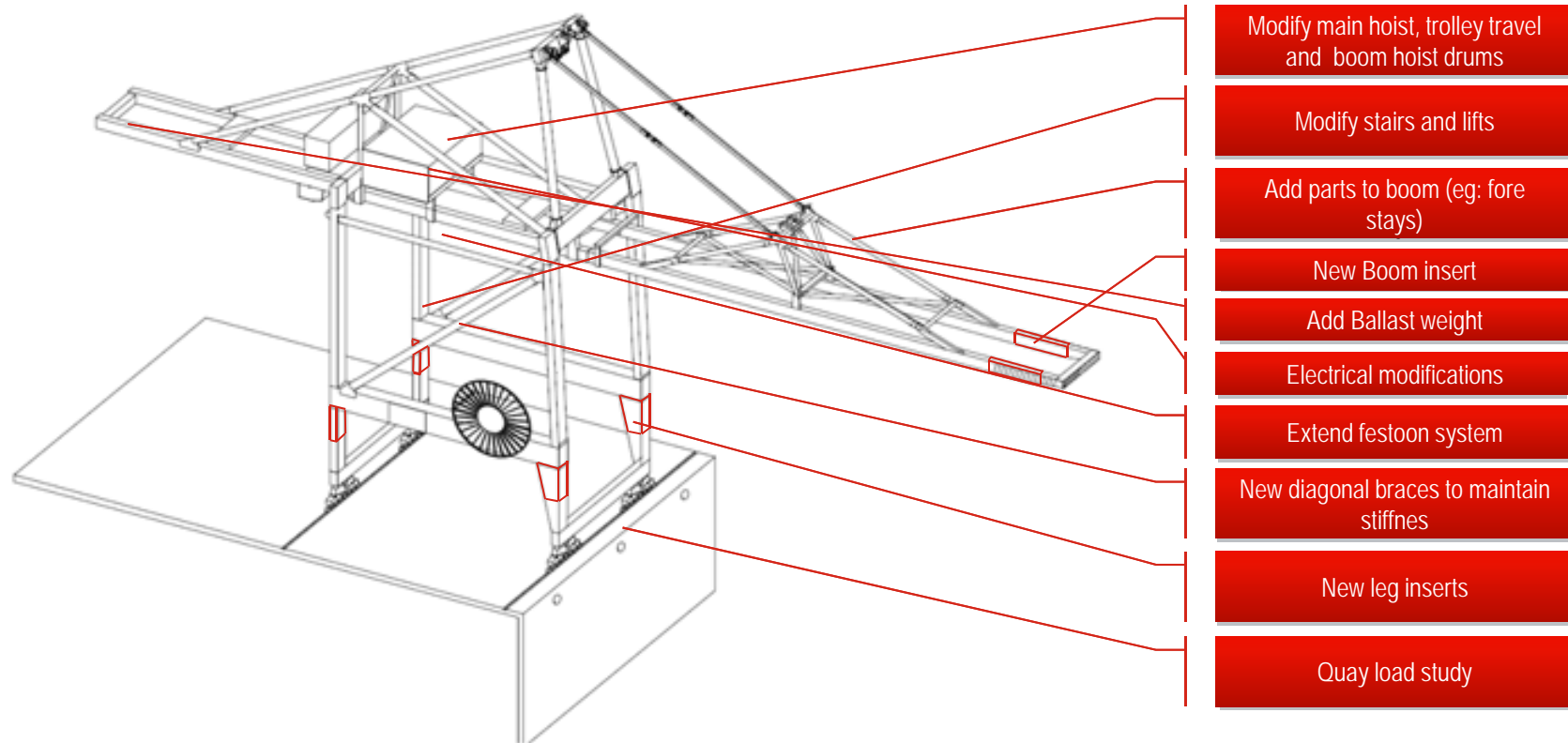
What does it mean?



## 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

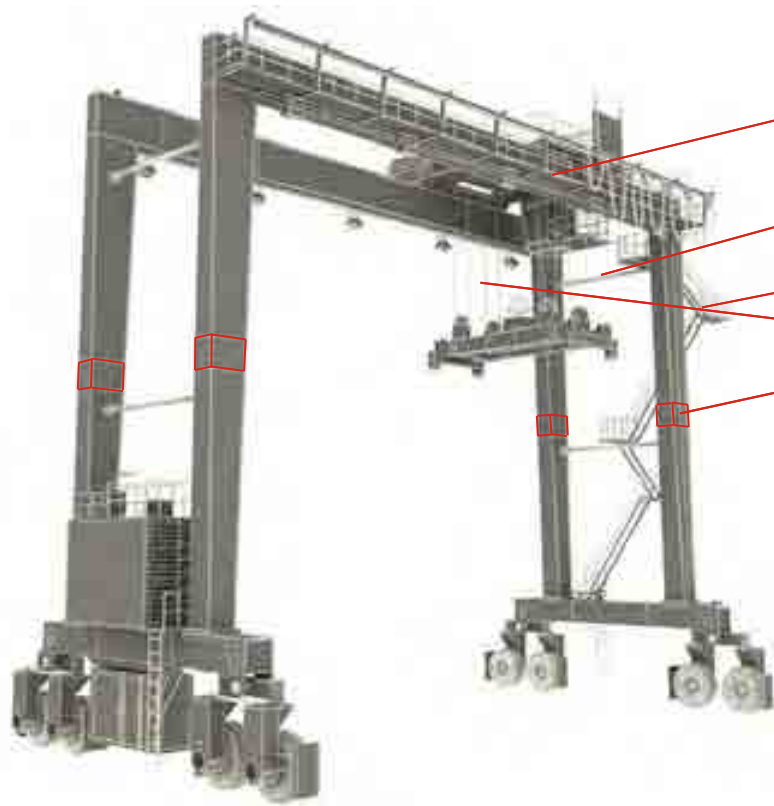


## STS boom extension

- 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 8 STS

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



### Major repair of 1 STS crane, brand Morris

- Repair of the boom
- SPMT relocation



### Upgrade of 6 STS cranes, brand Ka Major repair of 1 STS crane, brand Figee

- Height increase of 4 meters
- SPMT relocation



### Upgrade of 3 STS cranes, brand Caillard

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



omo



**KALMAR**

## 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

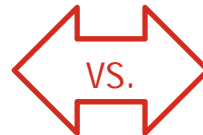
Diesel Electric RTG (2,000 hours per year)	Electrified RTG (2,000 hours per year)
18.0 ltr/h	40 kW/hr
3.5 TL/ltr	0.2 TL/kWh
36,000 ltr/yr	80,000 kWh/yr
126,000 TL/yr	16,000 TL/yr
<b>Savings per RTG per year:</b> <b>TL 110,000 = € 55,000 = US\$ 72,000</b> <b>Real case in TR: 10 moves per hour</b>	

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 (ex-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.



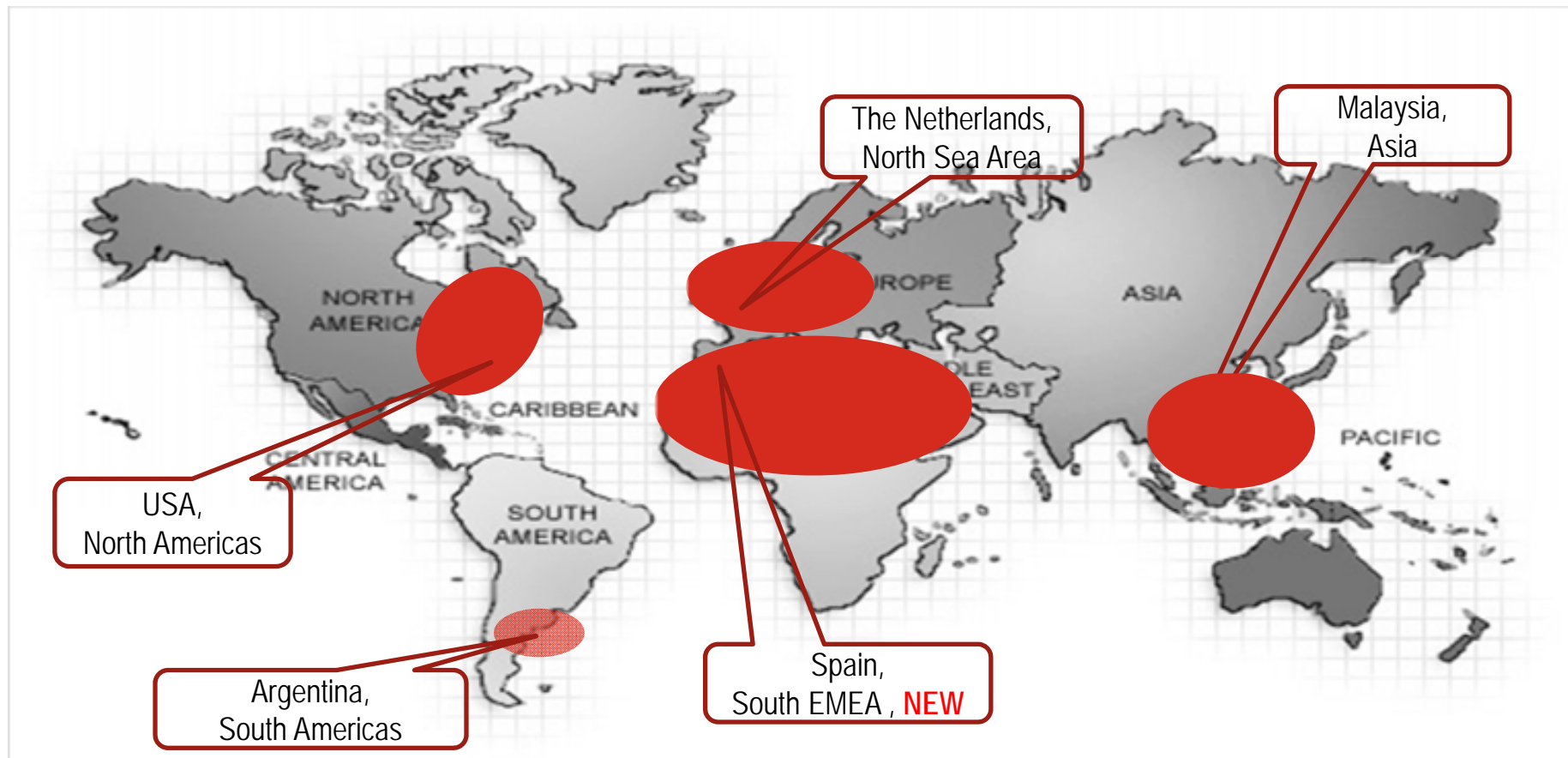


## A global network of crane upgrades competence centres

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



## Crane Services Competence centres. Ability to offer projects globally



Making Your Every Move Count.