



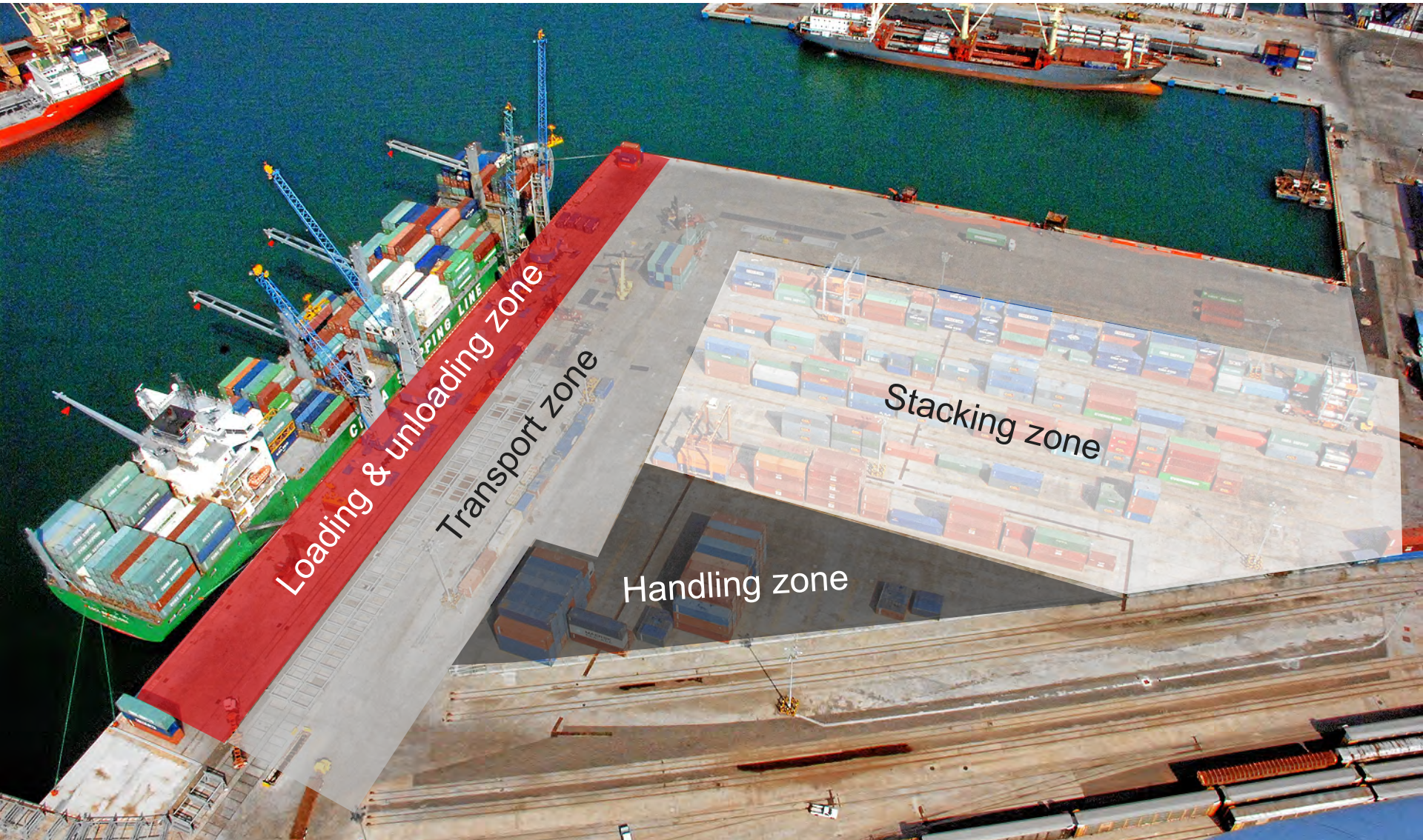
Manual Container Terminals

Solutions from a Single Source



- ▶ Small and medium-sized container terminals operate with manual equipment for
 - Loading and unloading
 - Transport
 - Storage
 - Handling

Manual Container Terminal Layout



Port of Ambarli, Turkey



Loading & Unloading

Transport

Storage

Handling

Ship-to-Shore Crane

Battery Lift AGV

Automated Stacking Crane

Bulk Material Handler

Battery AGV

Hopper

Mobile Harbour Crane

Terminal Tractors

Rail-Mounted Gantry

Reach Stacker

Portal Harbour Crane

Straddle Carriers

Rubber-Tyred Gantry

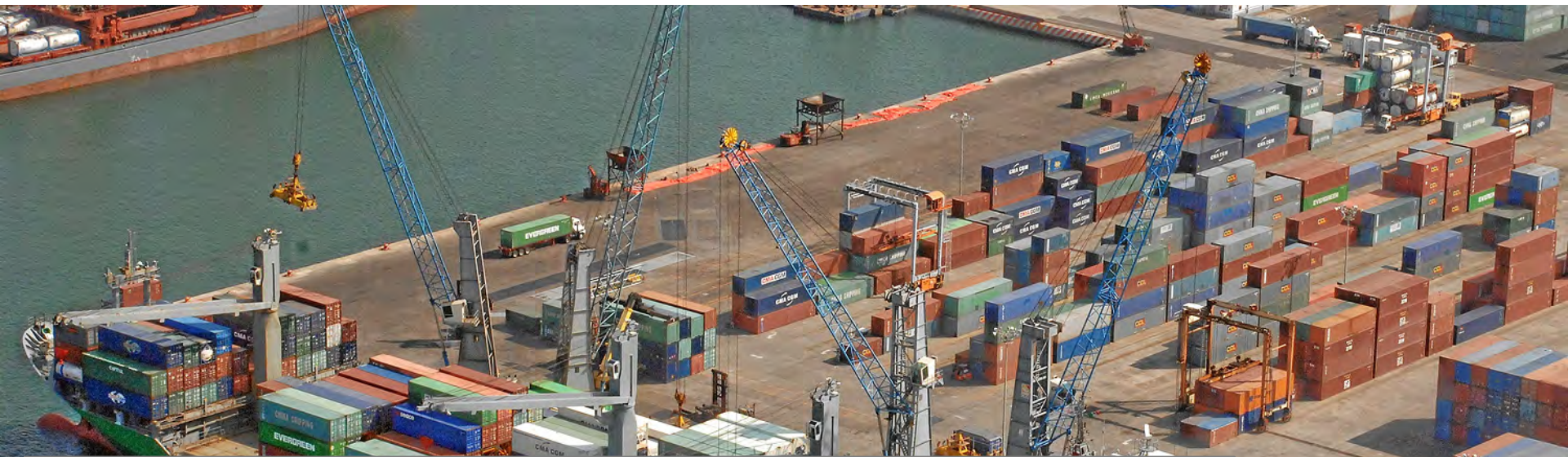
Full Container Handler

Floating Crane

Sprinter Carriers

Empty Container Handler

Port of Veracruz, Mexico



Loading & Unloading

Transport

Storage

Transport & handling

Ship-to-Shore Crane

Battery Lift AGV

Automated Stacking Crane

Bulk Material Handler

Mobile Harbour Crane

Battery AGV

Hopper

Portal Harbour Crane

Terminal Tractors

Rubber-Tyred Gantry

Reach Stacker

Floating Crane

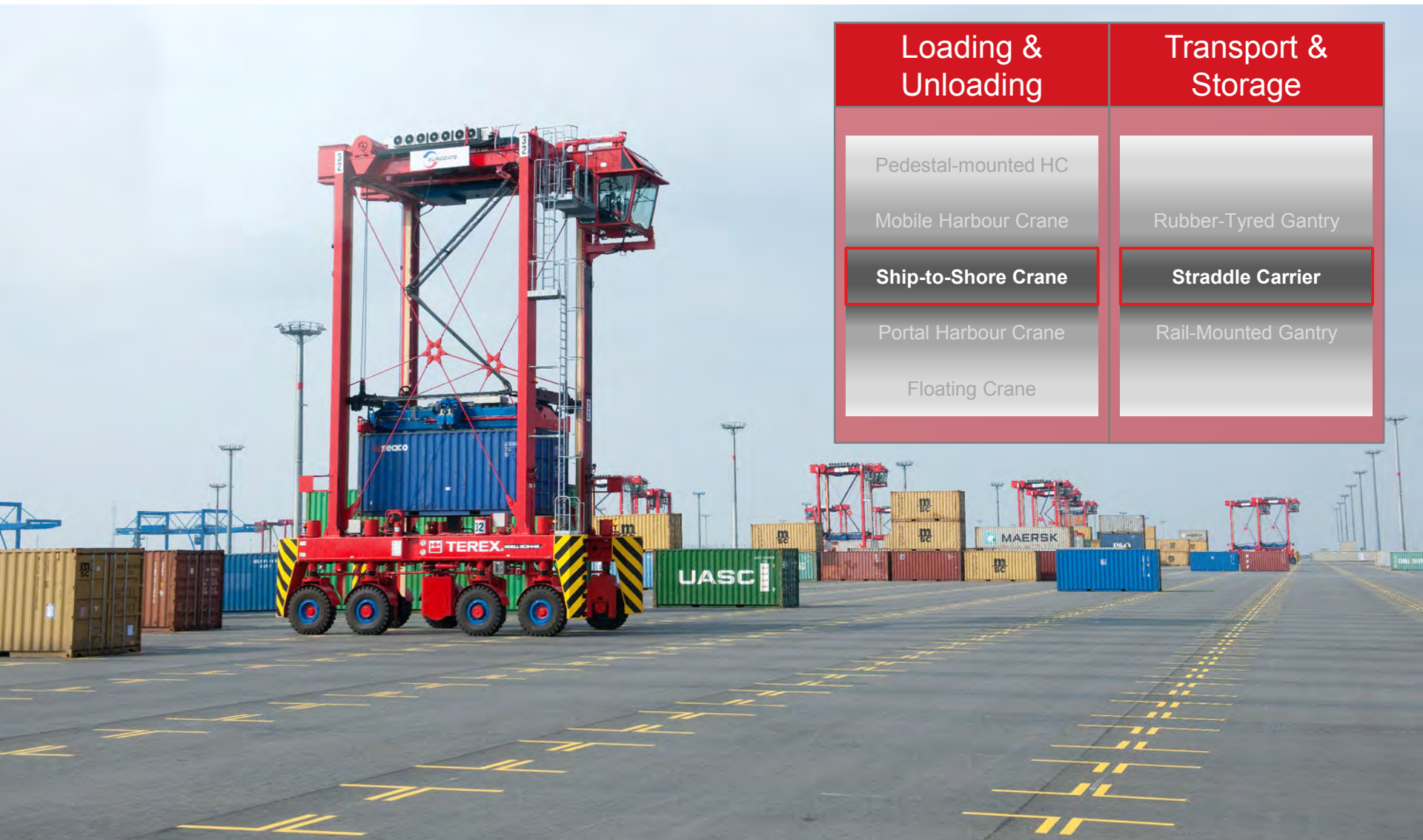
Straddle Carriers

Rail-Mounted Gantry

Full Container Handler

Sprinter Carriers

Empty Container Handler



Loading & Unloading

Pedestal-mounted HC

Mobile Harbour Crane

Ship-to-Shore Crane

Portal Harbour Crane

Floating Crane

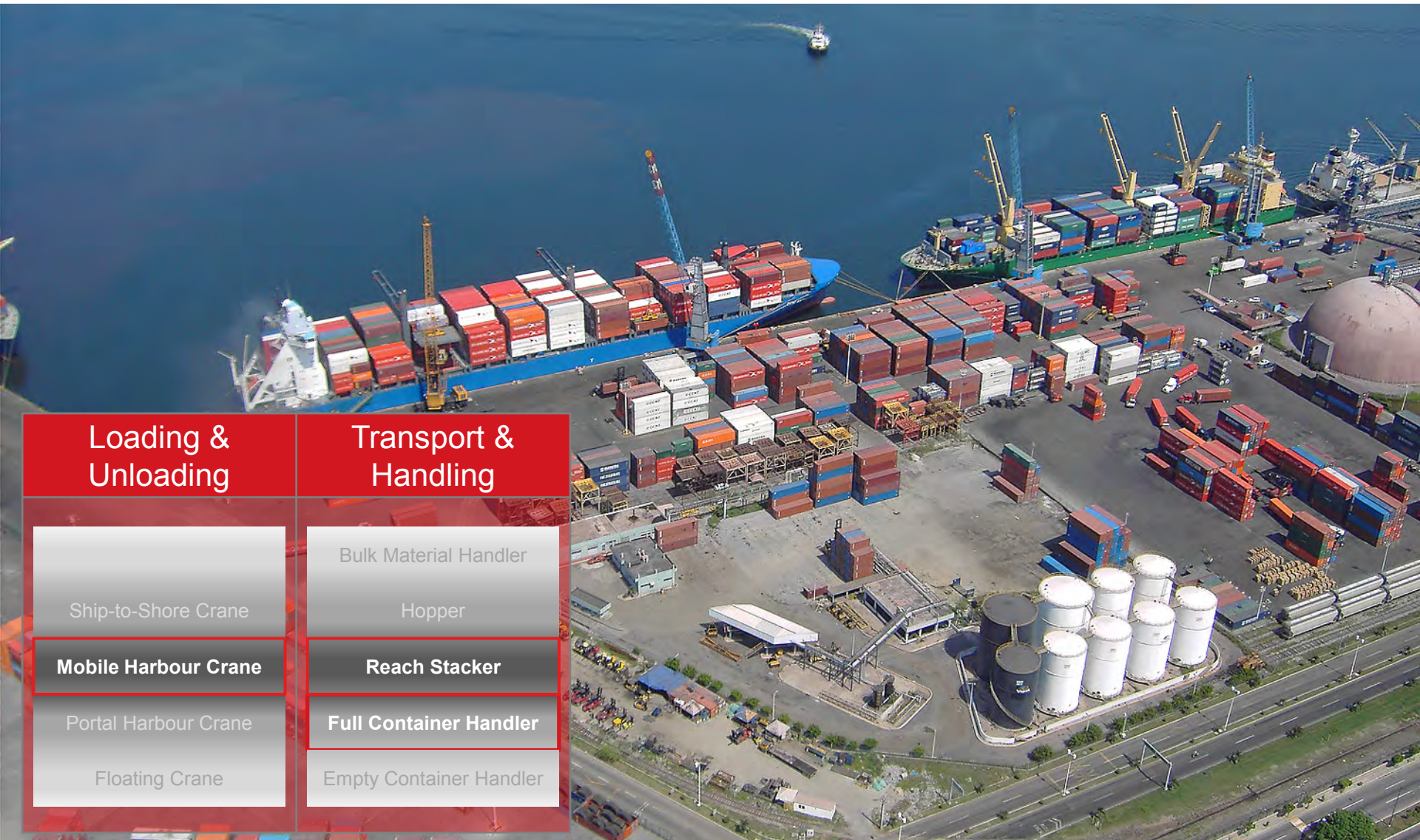
Transport & Storage

Rubber-Tyred Gantry

Straddle Carrier

Rail-Mounted Gantry

Port of Manzanillo, Mexico



Loading & Unloading

Transport & Handling

Ship-to-Shore Crane

Bulk Material Handler

Hopper

Mobile Harbour Crane

Reach Stacker

Portal Harbour Crane

Full Container Handler

Floating Crane

Empty Container Handler

Port of Rauma, Finland

Loading & Unloading

Handling

Ship-to-Shore Crane

Bulk Material Handler

Hopper

Mobile Harbour Crane

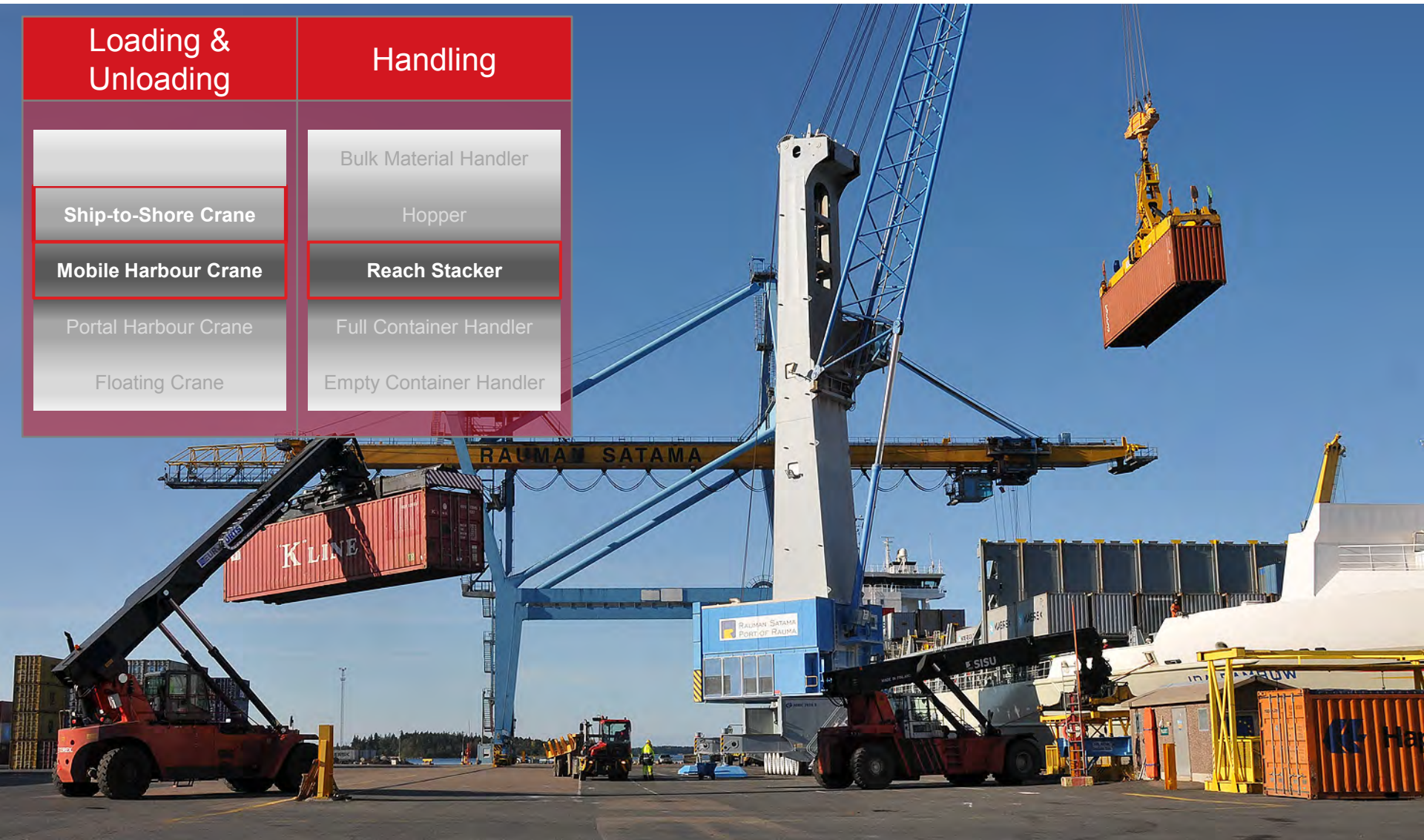
Reach Stacker

Portal Harbour Crane

Full Container Handler

Floating Crane

Empty Container Handler



Loading & Unloading

- ▶ Ship-to-Shore Cranes (STs)
- ▶ Harbour Cranes
 - Mobile Harbour Cranes (G HMK)
 - Portal Harbour Cranes (G HSK)
 - Floating Cranes (G HPK)
 - Pedestal-Mounted Harbour Cranes (G HPK)
 - Rubber-Tyred Portal Harbour Cranes (G HRK)

Transport

- ▶ Terminal Tractors (TT)
- ▶ Straddle Carriers (SC) *
- ▶ Sprinter Carriers *
- ▶ Automated Guided Vehicles (AGV)

** for transport & storage*

System Capabilities

- ▶ Planning & Consulting
- ▶ Software
- ▶ Service

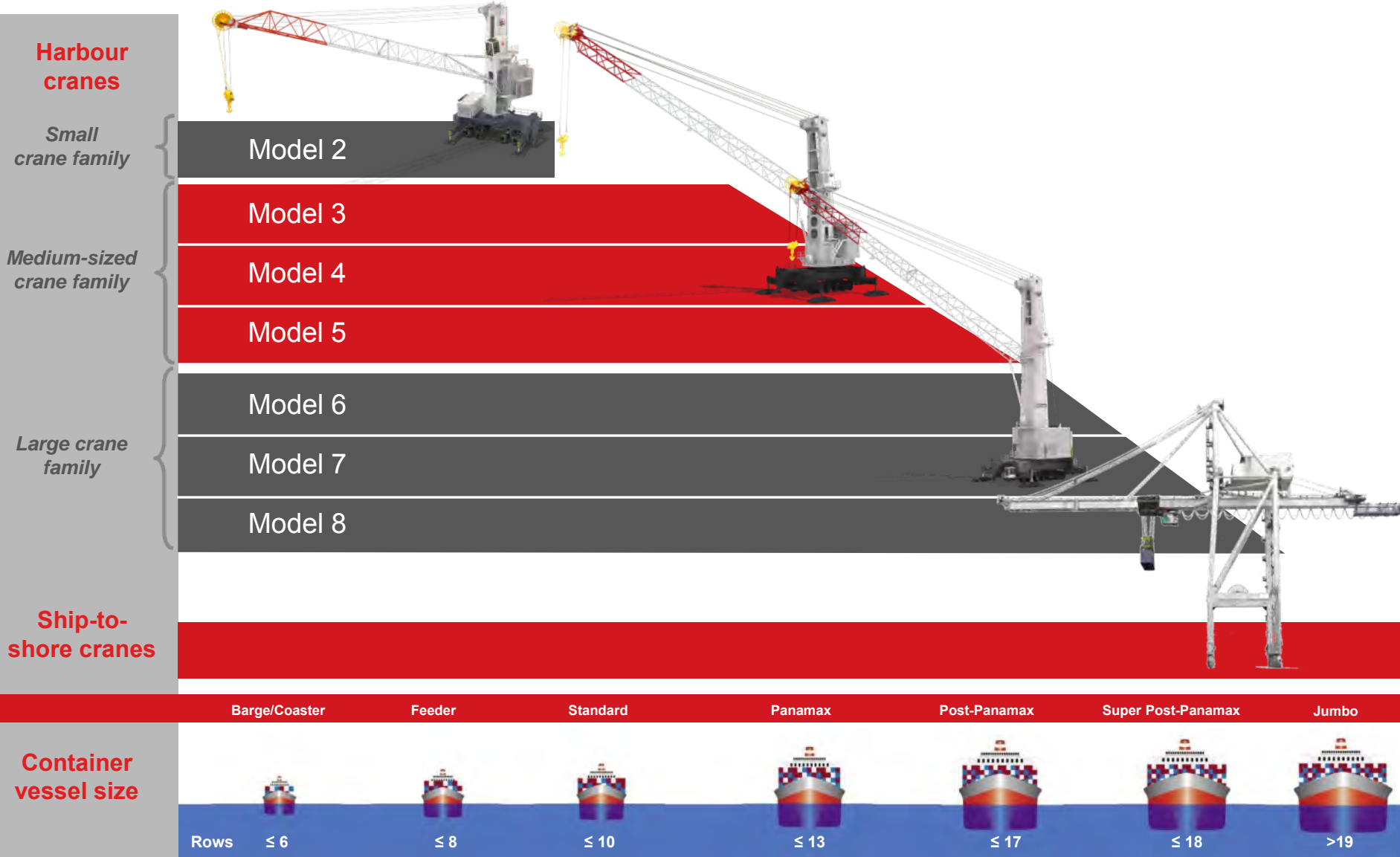
Storage

- ▶ Automated Stacking Cranes (ASC)
- ▶ Rubber-Tyred Gantry Cranes (RTG)
- ▶ Rail-Mounted Gantry Cranes (RMG)

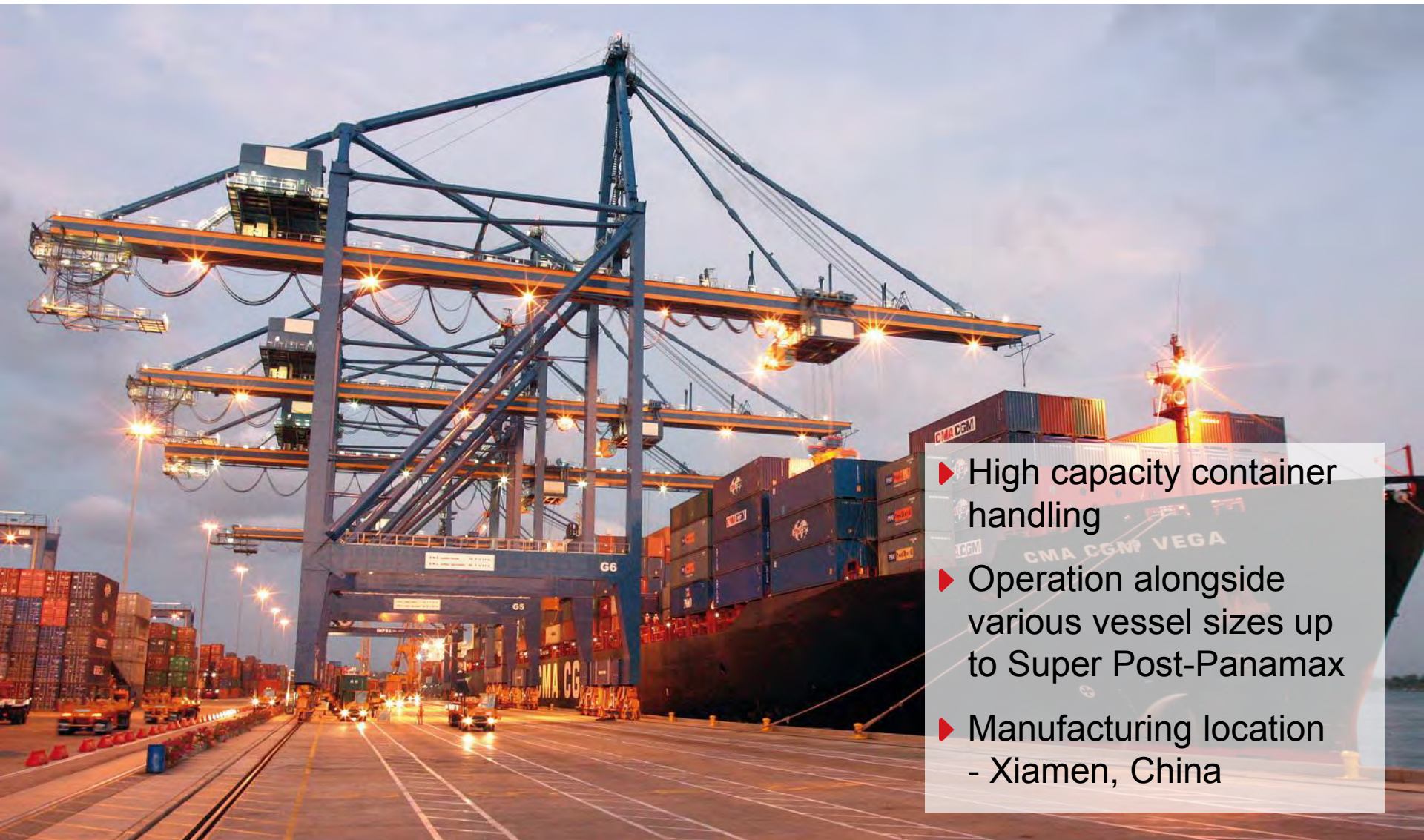
Handling

- ▶ Reach Stackers (RS)
- ▶ Empty Container Handlers (EGH)
- ▶ Full Container Handlers (FCH)
- ▶ Forklift Trucks

Loading & Unloading Equipment



Ship-to-Shore Crane (STS)



- ▶ High capacity container handling
- ▶ Operation alongside various vessel sizes up to Super Post-Panamax
- ▶ Manufacturing location - Xiamen, China

Ship-to-Shore Crane (STS)



► Capacities

- Handling 20' to 45' containers
- Lifting capacities (under spreader)
 - Up to 65 t, single/twin
 - Up to 120 t, tandem

► Dimensions

- Rail span up to 35 m
- Outreach up to 66 m
- Lifting height up to 46 m (from dock level)

► Speeds

- Gantry travel 45 m/min (standard)
- Trolley travel up to 244 m/min
- Hoisting with load up to 90 m/min

► Design

- Trolley: rope towed or self-propelled
- Power supply: port mains or on-board diesel generator

Harbour Cranes

- ▶ Loading & unloading of containers, general, bulk and project cargo
- ▶ Broad range of crane sizes, types and variants
- ▶ All crane types based on proven mobile harbour crane technology
- ▶ Mobile throughout a port – changeable place of operation
- ▶ Low specific invest in equipment and infrastructure
- ▶ Manufacturing location:
 - Düsseldorf, Germany





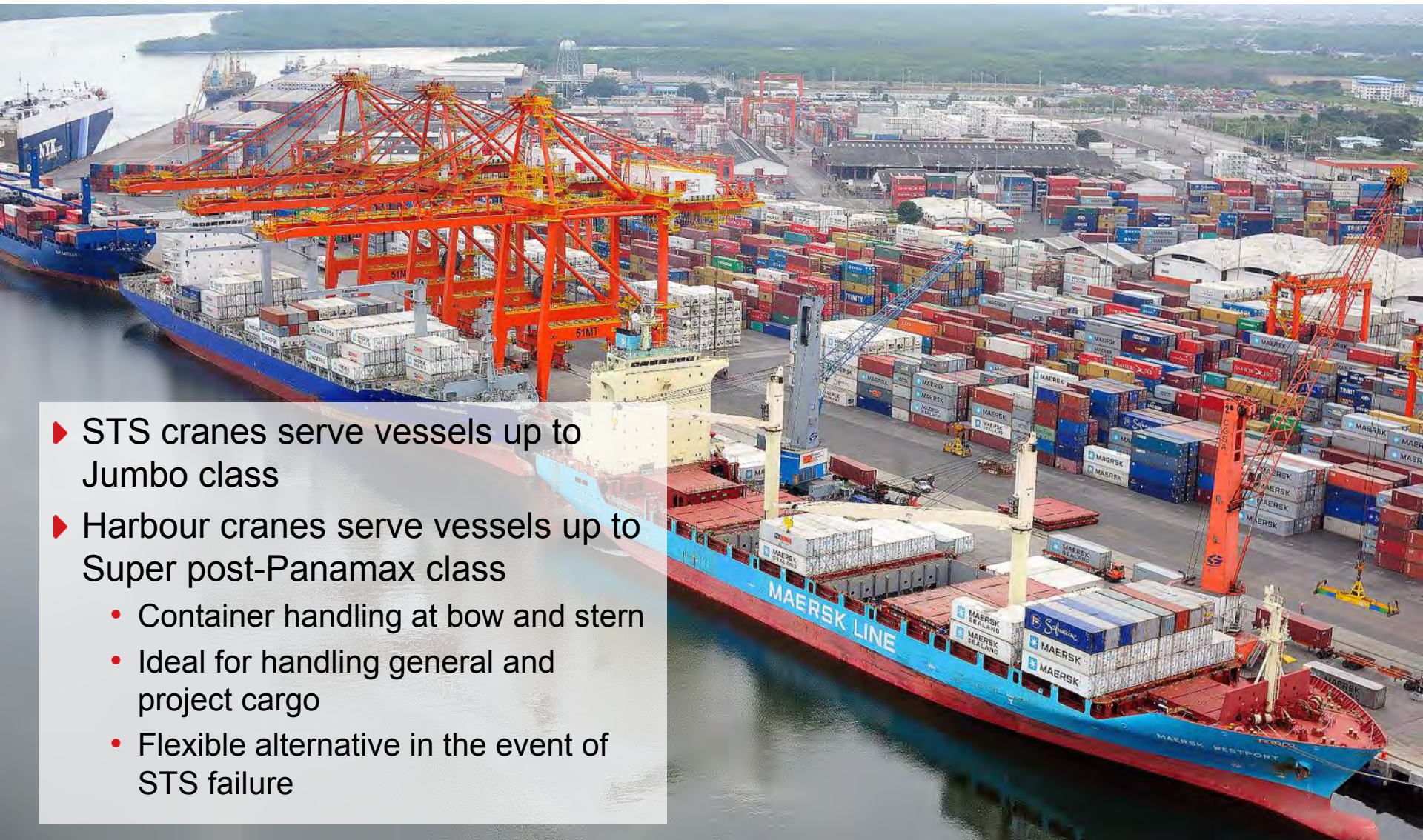
► Capacities

- Lifting capacities up to 200 t
- Radii up to 58 m

► Drive system

- Diesel-electric
- Prepared for external power supply
- Optional hybrid drive

Combination of STS & Harbour Cranes



- ▶ STS cranes serve vessels up to Jumbo class
- ▶ Harbour cranes serve vessels up to Super post-Panamax class
 - Container handling at bow and stern
 - Ideal for handling general and project cargo
 - Flexible alternative in the event of STS failure

Loading & Unloading

- ▶ Ship to Shore Cranes (STS)
- ▶ Harbour Cranes
 - Mobile Harbour Cranes (G HMK)
 - Portal Harbour Cranes (G HSK)
 - Floating Cranes (G HPK)
 - Pedestal Mounted Harbour Cranes (G HPK)
 - Rubber-Tyred Portal Harbour Cranes (G HPK)

Transport

- ▶ Terminal Tractors (TT)
- ▶ Straddle Carriers (SC) *
- ▶ Sprinter Carriers *
- ▶ Automated Guided Vehicles (AGV)

** for transport & storage*

System Capabilities

- ▶ Planning & Consulting
- ▶ Software
- ▶ Service

Storage

- ▶ Automated Stacking Cranes (ASC)
- ▶ Rubber-Tyred Gantry Cranes (RTG)
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Handling

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- ▶ Forklift Trucks

Terminal Tractors (TT)

- ▶ For yard and RoRo applications
- ▶ GCW (Gross Combination Weight) up to 150 t for heavy duty applications
- ▶ Equipped with fixed or liftable 5th wheel
- ▶ Manufacturing location:
 - Lentigione, Italy





- ▶ Capacities
 - Suitable for any kind of trailer
 - Lifting capacity (5th wheel) up to 45 t
- ▶ Dimensions
 - Width approx. 2.5 m
 - Length approx. 5.7 m
 - Lifting height (5th wheel) up to 1,000 mm
- ▶ Travel speeds
 - Unladen up to 47 km/h
 - Laden up to 38 km/h
- ▶ Features / options
 - Fixed or liftable 5th wheel
 - Right-hand or left-hand drive
 - Wheelbase 3,100 mm or 3,300 mm
 - Tyre pressure measurement system
 - Others

Straddle Carriers (SC)

- ▶ Picking, carrying and stacking containers
- ▶ Ability to transfer, lift and stack
- ▶ Hydrostatic or diesel-electric drive
- ▶ Optional EcoCap energy saving system
- ▶ Manufacturing location
- Würzburg, Germany



Straddle Carrier (SC)



► Capacities

- Handling 20' to 45' containers
- Lifting capacity (under spreader) up to 60 t

► Dimensions

- Width approx. 5 m
- Length approx. 10 m
- Lifting height up to 12 m (1 over 3)

► Speeds

- Travel up to 30 kph
- Hoisting up to 24 m/min

► Features / Options

- Single or twin lift
- Automatic spreader positioning system
- Weighing system
- Tyre pressure & oil condition monitoring
- others

Sprinter Carriers



- ▶ Picking and carrying containers
- ▶ Ability both to transfer and lift
- ▶ Hydrostatic or diesel-electric drive
- ▶ Manufacturing location - Würzburg, Germany

Sprinter Carriers



▶ Capacities

- Handling 20' to 45' containers
- Lifting capacity (under spreader) up to 60 t

▶ Dimensions

- Width approx. 5 m
- Length approx. 10 m
- Lifting height up to 6.2 m (1 over 1)

▶ Speeds

- Travel up to 32 kph
- Hoisting up to 24 m/min

▶ Features / options

- Single or twinlift
- Automatic spreader positioning system
- Weighing system
- Tyre pressure & oil condition monitoring
- Others

Loading & Unloading

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Transport

- ▶ Terminal Tractors (TT)
- ▶ Straddle Carriers (SC) *
- ▶ Sprinter Carriers *
- ▶ Automated Guided Vehicles (AGV)

** for transport & storage*

System Capabilities

Planning & Consulting
Software
Service

Storage

- ▶ Automated Stacking Cranes (ASC)
- ▶ Rubber-Tyred Gantry Cranes (RTG)
- ▶ Rail-Mounted Gantry Cranes (RMG)

Handling

- ▶ Reach Stackers (RS)
- ▶ Empty Container Handlers (EGH)
- ▶ Full Container Handlers (FCH)
- ▶ Forklift trucks

Rubber-Tyred Gantry Cranes (RTG)

- ▶ Space-saving container stacking
- ▶ Mobile for flexible use
- ▶ Manufacturing location
- Xiamen, China



Rubber-Tyred Gantry Crane (RTG)



► Capacities

- Handling 20' to 45' containers
- Lifting capacity (under spreader) up to 60 t, single/twin lift

► Dimensions

- Span up to 26.5 m, 7+1 truck line
- Lifting height (under heavy lift beam) up to 21 m, 1 over 6 high cube (HC)

► Speeds

- Gantry travel 135 m/min
- Trolley travel up to 75 m/min
- Hoisting with load up to 30 m/min

► Design

- Fully electric drive; energy saving system available
- Power supply: port mains or on-board diesel generator

Rail-Mounted Gantry Crane (RMG)



- ▶ Space-saving container stacking
- ▶ High performance, high span
- ▶ Manufacturing location:
 - Xiamen, China



Rail-Mounted Gantry Crane (RMG)



▶ Capacities

- Handling 20' to 45' containers
- Lifting capacity (under spreader) up to 60 t, single/twin lift

▶ Dimensions

- Rail span up to 50 m
- Lifting height (under heavy lift beam) up to 34 m

▶ Speeds

- Gantry travel 120 m/min
- Trolley travel up to 100 m/min
- Hoisting with load up to 40 m/min

▶ Design

- Automatic positioning system
- Weighing system available

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Transport

- ▶ Terminal Tractors (TT)
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System Capabilities

Planning & Consulting
Software
Service

Storage

- ▶ Automated Stacking Cranes (ASC)
- ▶ Rubber-Tyred Gantry Cranes (RTG)
- ▶ Rail-Mounted Gantry Cranes (RMG)

Handling

- ▶ Reach Stackers (RS)
- ▶ Empty Container Handlers (ECH)
- ▶ Full Container Handlers (FCH)
- ▶ Forklift trucks

Reach Stackers (RS)



- ▶ Handling and stacking of containers
- ▶ Dedicated multi-attachment versions for other cargo also available
- ▶ Manufacturing locations:
 - Montceau-les-Mines, France
 - Xiamen, China

Reach Stackers (RS)



Port Solutions



- ▶ Handling 20' to 45' containers
- ▶ Capacities up to 70 t
- ▶ Stacking height up to 1 over 5
- ▶ Intermodal/piggyback spreader available for all models



Empty Container Handlers (ECH)



- ▶ Handling and stacking of empty containers
- ▶ Handling of 20' to 45' containers
- ▶ Stacking height up to 7+1
- ▶ Single or double container handling mode
- ▶ Capacity under spreader up to 10 t
- ▶ Available with spreaders or forks
- ▶ Manufacturing location:
 - Lentigione, Italy
 - Xiamen, China

Full Container Handler (FCH)

- ▶ Handling and stacking of full containers
- ▶ Handling 20' to 45' containers
- ▶ Heavy-duty, extreme stacking operations
- ▶ Stacking height up to 1 over 5
- ▶ Capacity under spreader up to 45 t
- ▶ Available with spreaders or forks
- ▶ Manufacturing location:
 - Lentigione, Italy



Loading & Unloading

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System Capabilities

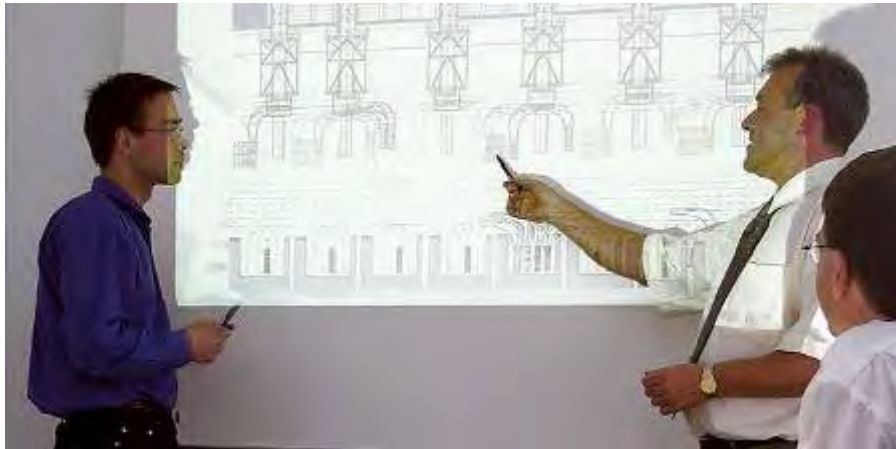
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- ▶ Software
- ▶ Service

Storage

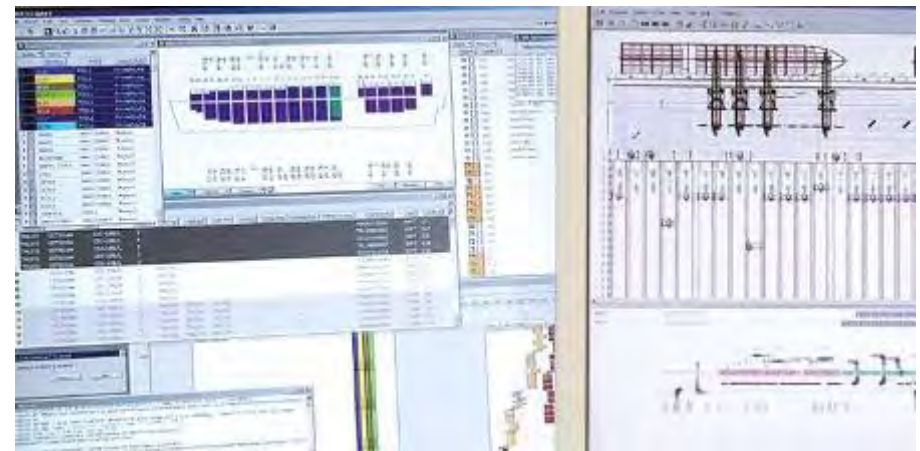
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Handling

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- ▶ Forklift trucks



- ▶ Project management from concept to startup
- ▶ Simulation and emulation of terminals

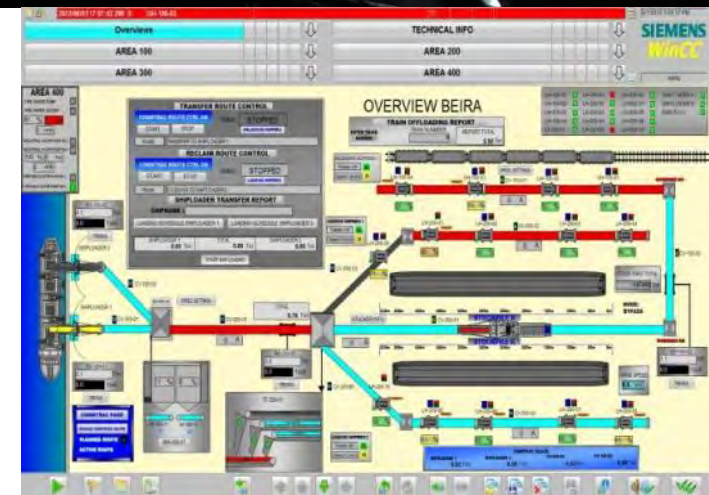




- ▶ Management and navigation software
- ▶ Bulk-specific IT solutions
 - CommTrac terminal management system
 - Conveyor management software
- ▶ Further software packages for container and bulk terminals
- ▶ Software brands: TBA, DBIS

TBA
SIMULATION
EMULATION
SOFTWARE

DBIS
SOFTWARE
AUTOMATION
CONSULTANCY





Do you have any questions?

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Booth 3

