



# The Future of Port Solutions

Solutions provided by a strong partner

# Terex Milestones in Port Business



1824

1968 Launch of Straddle Carrier 2000



1993 1995  
REGGIANE China

1960

2009

1966 1986  
Launch of Lift Trucks Launch of Reach Stackers & Empty Container Handlers



2012

1933



TEREX.  
TEREX | GOTTWALD



1995



1906

1956

Invention of Mobile Harbour Cranes

1980s

Invention of Automated Guided Vehicles

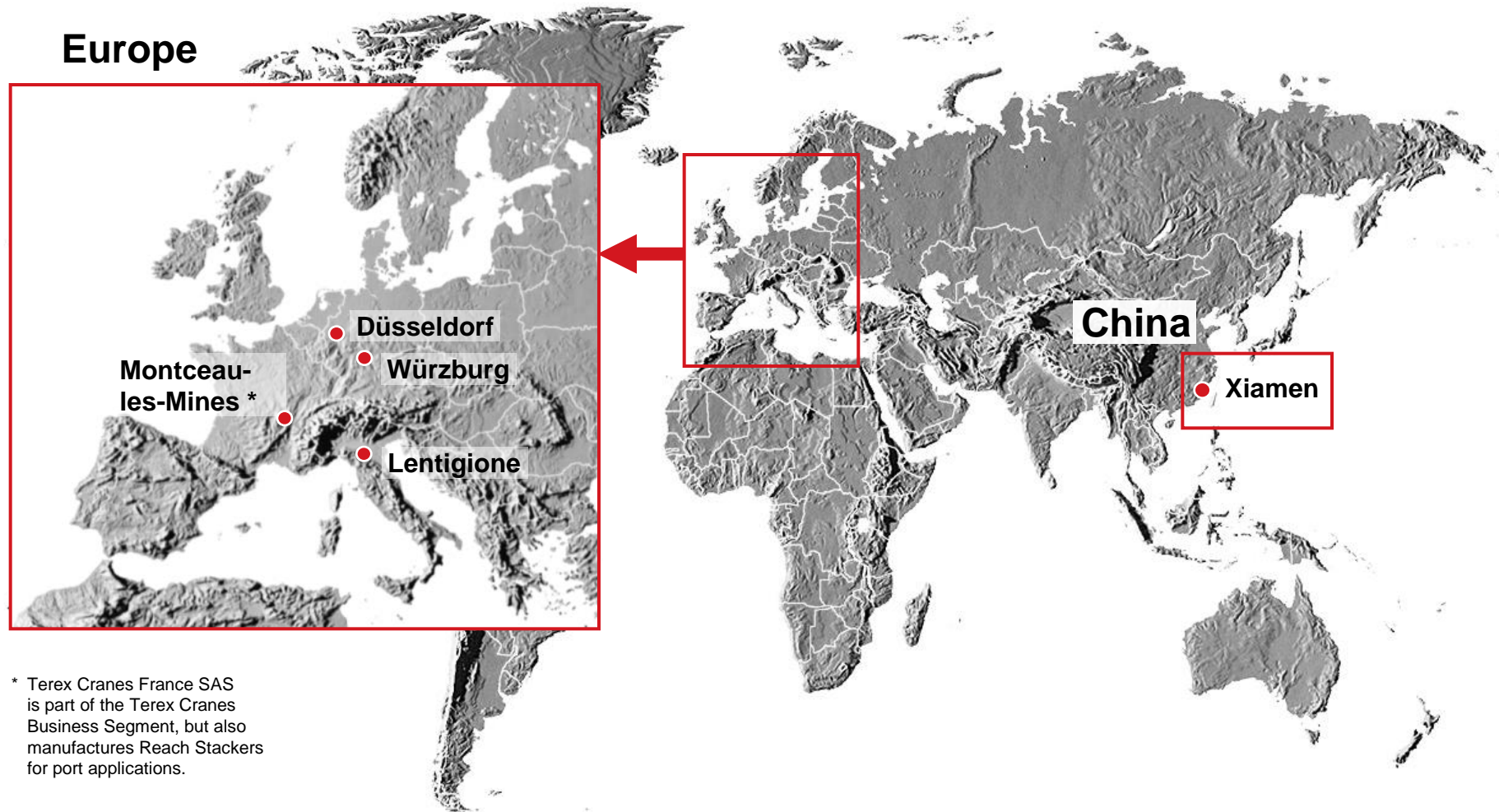
2006



2011



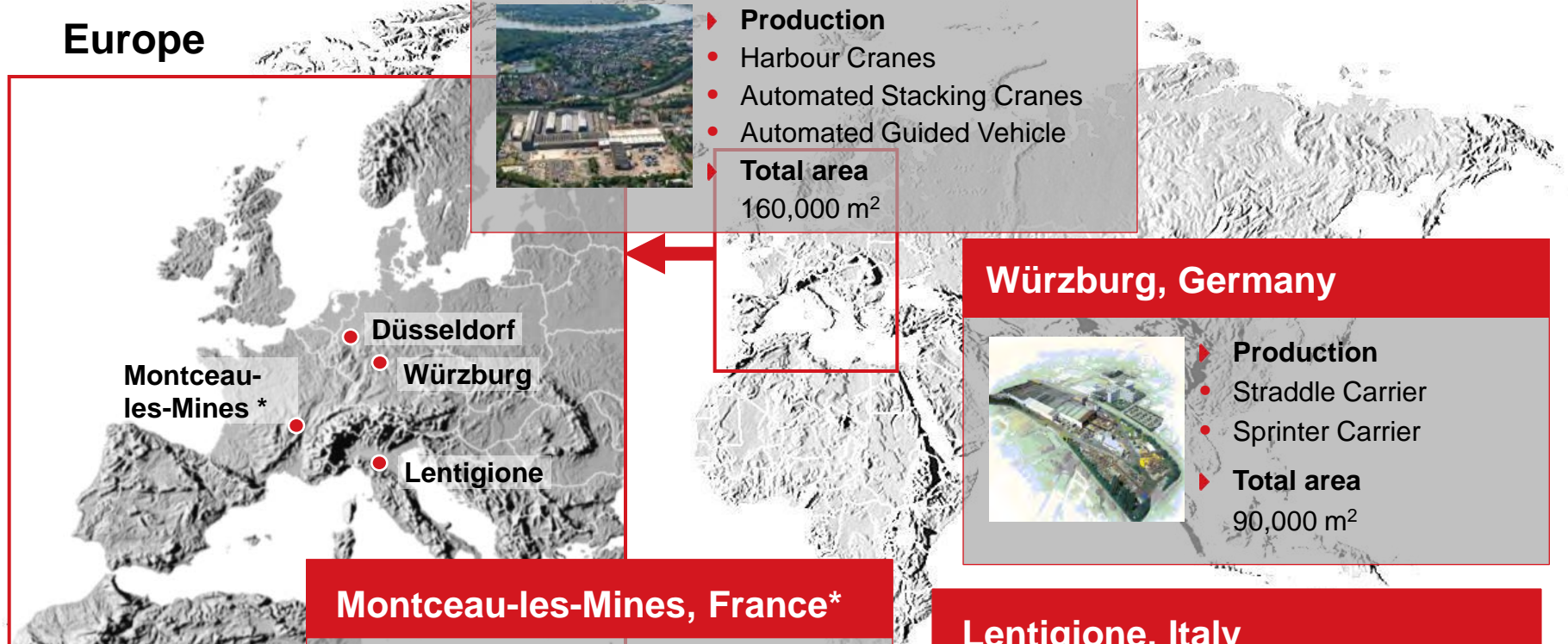
# Manufacturing Locations



\* Terex Cranes France SAS is part of the Terex Cranes Business Segment, but also manufactures Reach Stackers for port applications.

# Manufacturing Locations

## Europe



### Düsseldorf, Germany



- ▶ **Production**
  - Harbour Cranes
  - Automated Stacking Cranes
  - Automated Guided Vehicle
- ▶ **Total area**  
160,000 m<sup>2</sup>

### Würzburg, Germany



- ▶ **Production**
  - Straddle Carrier
  - Sprinter Carrier
- ▶ **Total area**  
90,000 m<sup>2</sup>

### Montceau-les-Mines, France\*



- ▶ **Production**
  - Reach Stackers
- ▶ **Total area**  
38,800 m<sup>2</sup>

### Lentigione, Italy



- ▶ **Production**
  - Full Container Handlers
  - Empty Container Handlers
  - Fork Lifts
- ▶ **Total area**  
150,000 m<sup>2</sup>

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## Xiamen, P.R. China



- ▶ **Production**
  - Ship-to-Shore Cranes
  - Rubber-Tyred Gantry Cranes
  - Rail-Mounted Gantry Cranes
  - Reach Stackers
  - Empty Container Handlers
- ▶ **Total area** 280,000 m<sup>2</sup>

**China**

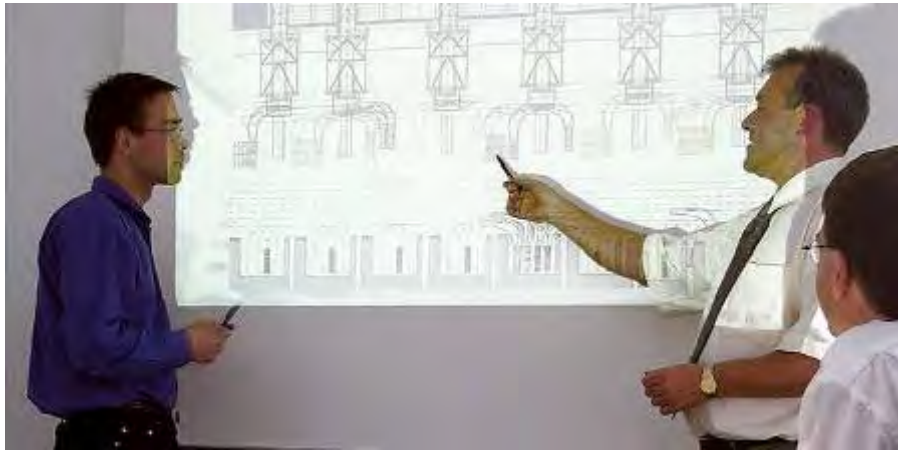
● **Xiamen**



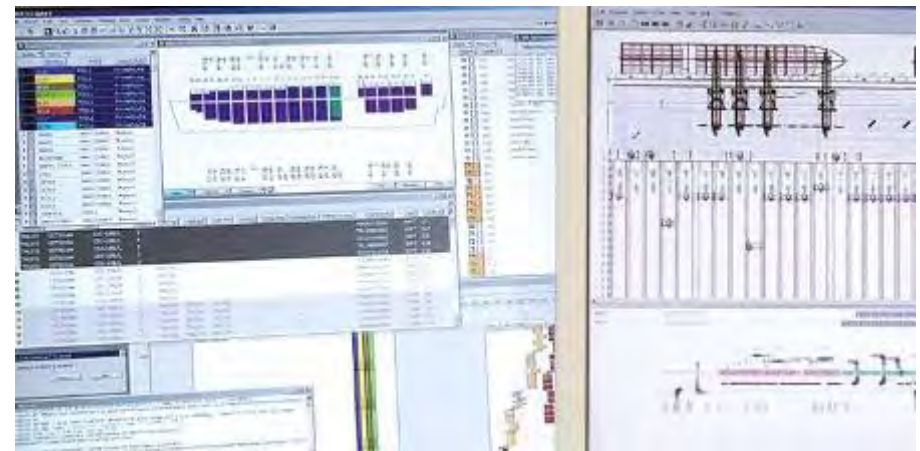


Your Idea:  
Creating or Improving a Terminal

Solution Provided:  
Consulting Services, Simulation, Emulation  
Project Management for  
Container and Bulk Terminals



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



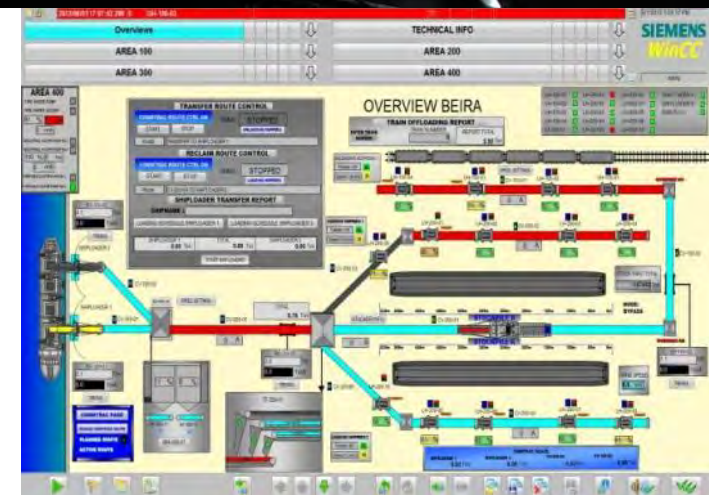




- ▶ Management and navigation software
- ▶ Bulk specific IT solutions
  - CommTrac terminal management system
  - Conveyor management software
- ▶ Further software packages for container and bulk terminals
- ▶ Software brands: TBA, DBIS

**TBA**  
SIMULATION  
EMULATION  
SOFTWARE

**DBIS**  
SOFTWARE  
AUTOMATION  
CONSULTANCY



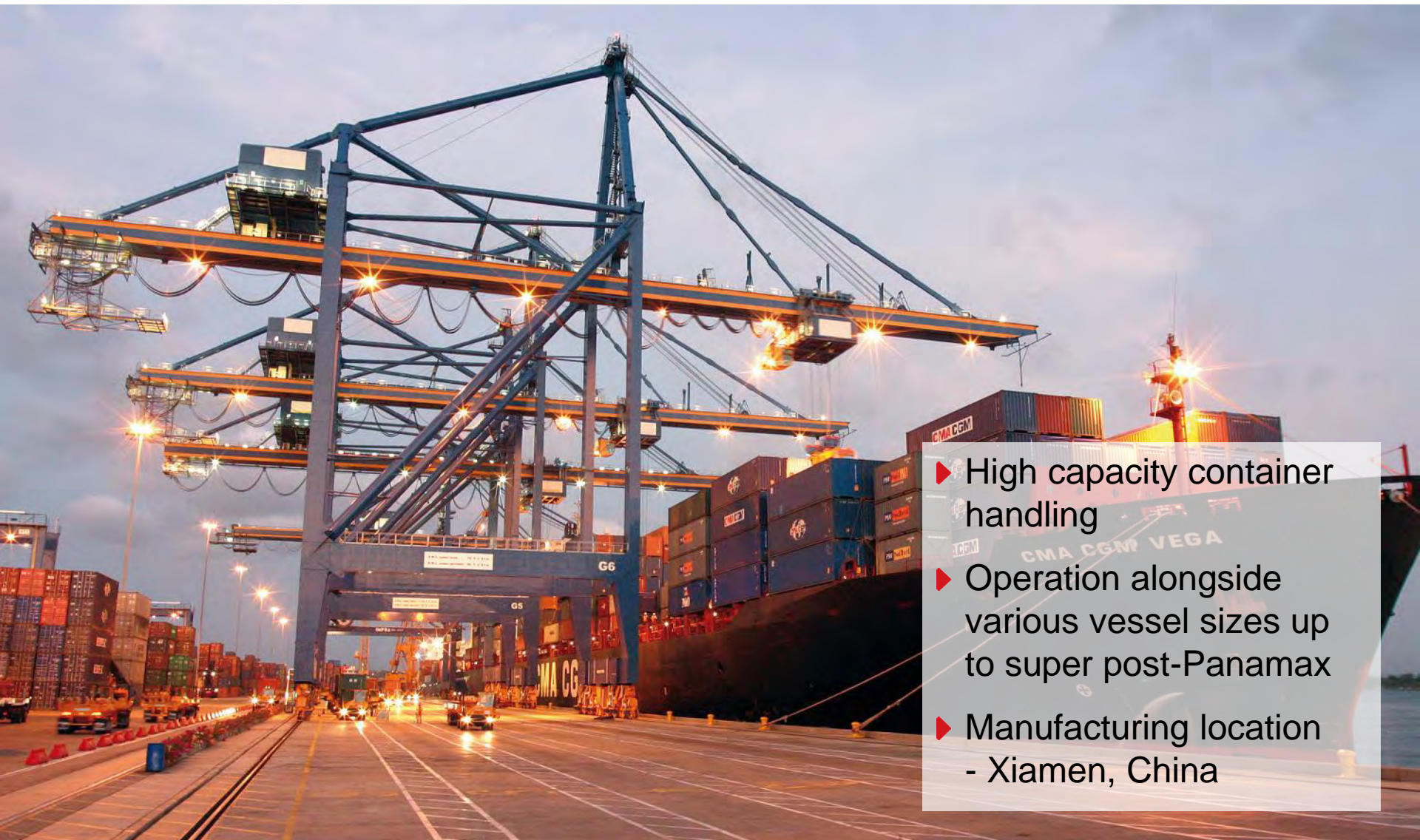




Your Business:  
Loading, Unloading of ships

Solution Provided:  
STS or Harbour Cranes

# Ship-to-Shore Cranes (STS)



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



# Ship-to-Shore Cranes (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)

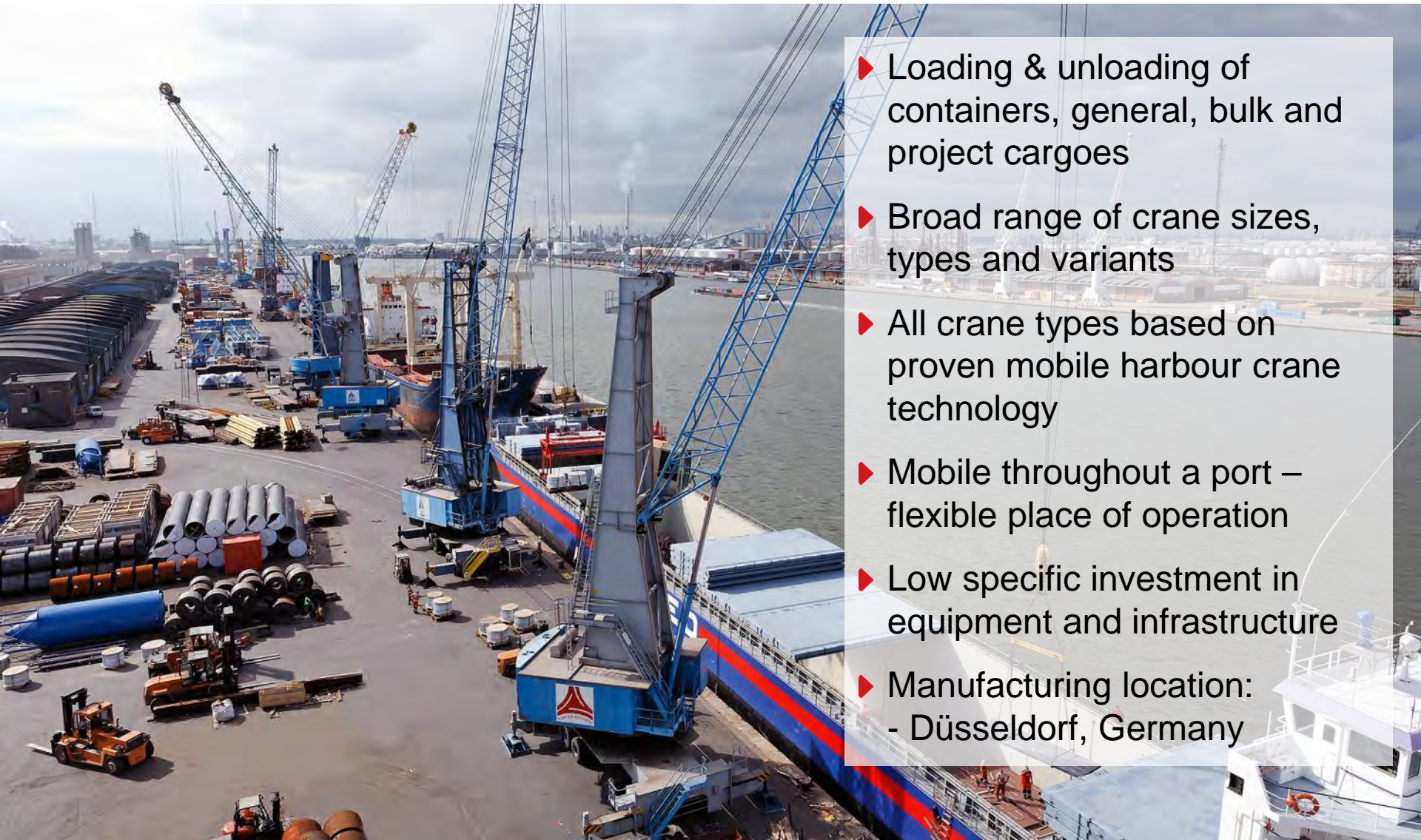
## ► Speeds

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

## ► Design

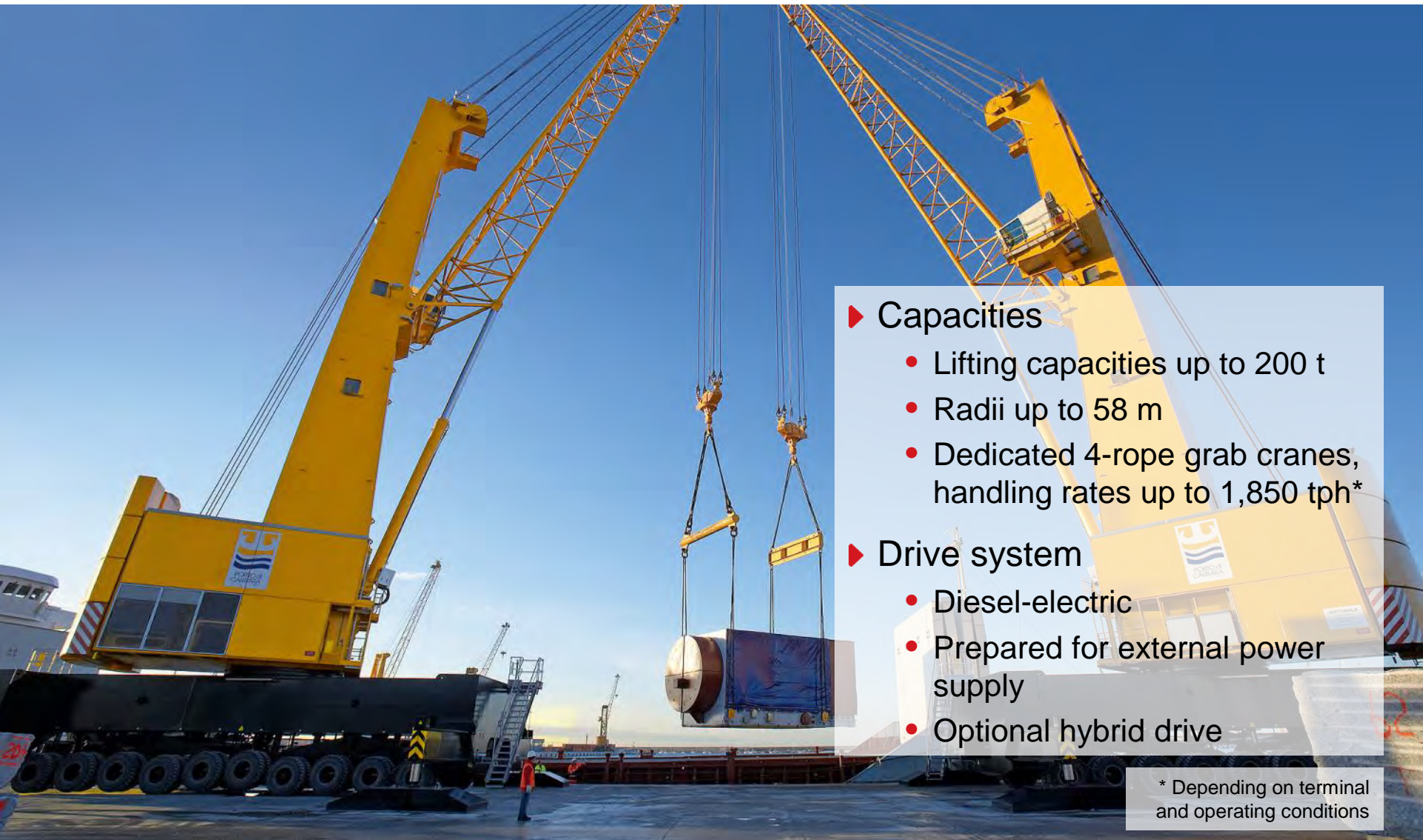
- Trolley: rope towed or self-propelled
- Power supply: port mains or on-board diesel generator





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





## ► Capacities

- Lifting capacities up to 200 t
- Radii up to 58 m
- Dedicated 4-rope grab cranes, handling rates up to 1,850 tph\*

## ► Drive system

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

\* Depending on terminal and operating conditions



# Harbour Crane Types



## Mobile Harbour Cranes

- ▶ Extremely versatile
- ▶ High performance
- ▶ Short lead times achieved by Advance Order Program
- ▶ Low specific investment in crane and infrastructure thanks to modular design



## Portal Harbour Cranes

- ▶ For narrow and special purpose quays
- ▶ Individually designed portal
  - Clearance height: 4 - 10 m
  - Track gauge: 10 - 20 m



## Floating Cranes

- ▶ Turnkey solution from barge to crane
- ▶ No additional investment in land or quay infrastructure
- ▶ Ship-to-ship or ship-to-shore handling
- ▶ Operation on quayside, mid-stream or on the open sea



## Rubber-Tyred Portal Harbour Cranes

- ▶ Combines mobility of a mobile harbour crane with the advantage of a portal solution
- ▶ Easy to drive under
- ▶ Easily manoeuvrable





Your Operation:  
Serving the Quayside

Solution Provided:  
Reach Stacker, Straddle Carrier, Sprinter Carrier  
Fully Automated Guided Vehicles



# Reach Stackers (RS)





# Reach Stackers (RS)



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



# 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 Carriers (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 (3+1)

## ► Speeds

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

## ► Features / options

- Single or twinlift
- 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+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

# Automated Guided Vehicles (AGV)

- ▶ Horizontal container transport
- ▶ Fully automated; fleet management and navigation software
- ▶ Lift AGV version; decouples transport from storage and thus reduces fleet size
- ▶ Manufacturing location:
  - Düsseldorf, Germany





# Automated Guided Vehicles (AGV)

- ▶ Handling 20' to 45' containers
- ▶ Capacity 40/60 t  
(1 container/2 x 20' containers)
- ▶ Speed up to 22 kph (6 m/s)
- ▶ Positioning accuracy +/- 25 mm
- ▶ Drive systems
  - Diesel-electric drive
  - Hybrid drive
  - Battery drive
- ▶ Battery drive system
  - Zero emissions in terminal
  - Fully automated battery exchange station







Your Challenge:  
High Performant Container Stock

Solution Provided:  
Rubber Tyred Gantry Cranes, Rail Mounted  
Gantry Cranes,  
Fully Automated Stacking Cranes



# Rubber-Tyred Gantry Cranes (RTG)



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





# Rubber-Tyred Gantry Cranes (RTG)



## ▶ Capacities

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

## ▶ Dimensions

- Span up to 26.5 m, 7+1 truck line
- Height (under heavy lift beam) up to 21 m, 6+1 high cube containers

## ▶ 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 Cranes (RMG)



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





# Rail-Mounted Gantry Cranes (RMG)



## ▶ Capacities

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

## ▶ Dimensions

- Rail span up to 50 m
- 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

# Automated Stacking Cranes (ASC)

- ▶ Accurate container stacking with very high storage density
- ▶ High-rigidity construction
- ▶ Fully automated; crane and stack management software
- ▶ Manufacturing location:
  - Düsseldorf, Germany





# Automated Stacking Cranes (ASC)



## ▶ Capacities

- Handling 20' to 45' containers
- Lifting capacity (under spreader) 40 t

## ▶ Typical dimensions

- Span 9 to 11 containers
- Stack length 35 - 50 TEUs
- Height up to 5+1 (high-cube)

## ▶ Speeds

- Gantry travel 240 m/min
- Trolley travel 60 m/min
- Hoisting 39/72 m/min (full/empty)

## ▶ Design

- Rigid load guidance system; provides high positioning accuracy even in severe conditions
- Cantilever version available (C ASC)



Your Task:  
Handling different Goods, Container

Solution Provided:  
Empty and Full Container Handler,  
Forklift Trucks



# 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 Handlers (FCH)

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





- ▶ Container or other heavy load handling (e.g. steel bars, coils, prefabricated concrete)
- ▶ Capacity up to 52 t
- ▶ Standard lifting height up to 5.1 m
- ▶ Other attachments available to handle a variety of cargo (ram, clamps, magnets)
- ▶ Manufacturing location: - Lentigione, Italy





Your Business:  
Bulk Handling

Solution Provided:  
Bulk Material Handler



# Terex® Fuchs Bulk Material Handlers



# TEREX

Port Solutions

- ▶ For bulk vessels up to coasters
- ▶ Large working radius up to 24 m
- ▶ Fast work cycles provide handling capacity up to 1,000 tph\*
- ▶ Energy efficient drives for low operating costs



\* Handling rates dependent on terminal and operating conditions



Your Demand:  
High availability, Long Lifetime, Reliable Support

Solution Provided:  
Assistance from Assembly and Commissioning,  
Training, Maintenance, Refurbishment,...



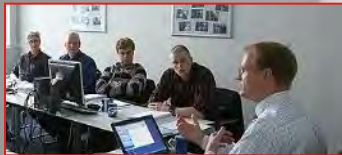
# Turnkey Capability



Upgrade solutions



Analysis of required logistics performance



Analysis of changed frame conditions



Concept engineering



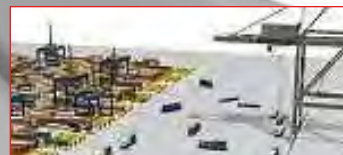
Customer service / outsourcing partner



Simulation & planning



Shipment & assembly



Turnkey project management



Software Competence & Products



Innovative base products





Your Approach:  
Reducing emissions, saving energy

Solution Provided:  
Fully electric driven machines  
Battery Driven Solutions





## Terex Port Solutions provides

- ▶ Ergonomic solutions and user friendly control systems
- ▶ A comprehensive range of “green” products
- ▶ Highly efficient and environmentally compatible drive systems
- ▶ Space saving concepts

# The Future of Port Solutions

► Based on our comprehensive portfolio ...





# The Future of Port Solutions

- ▶ ... Our holistic approach covers more than just our products
  - Consulting capability
  - Integrated solutions for terminals
  - Customized packages
  - Fleet concepts
  - Life cycle solutions
- ▶ Your benefits
  - High level of expertise
  - Single source supplier
  - Short communication channels
  - Streamlined project management





Let's start to find the solution for you –  
Meet us at our stand in the exhibition –  
**Meet Terex Port Solutions!**

