

A collage of six grayscale images showing various port operations: a crane loading a ship, a forklift moving containers, a terminal with many containers, a large gantry crane, a ship at a dock, and a large gantry crane lifting a container.

# The Future of Port Solutions

Building on A Strong Tradition

# Road map to the combined port solutions of Terex and Gottwald



Two global leaders in the port equipment industry...



... have built a new joint Business Group ...



... which owns two product brands that form the broadest product range in the business.

# Manufacturing locations



Business group

**Terex Port Solutions**

Legal entities & product ranges



- ▶ Harbour Cranes
- ▶ Automated Stacking Cranes
- ▶ Automated Guided Vehicles
- ▶ Hoppers
- ▶ Software

- ▶ Full Container Handlers
- ▶ Empty Container Handlers
- ▶ Fork Lifts

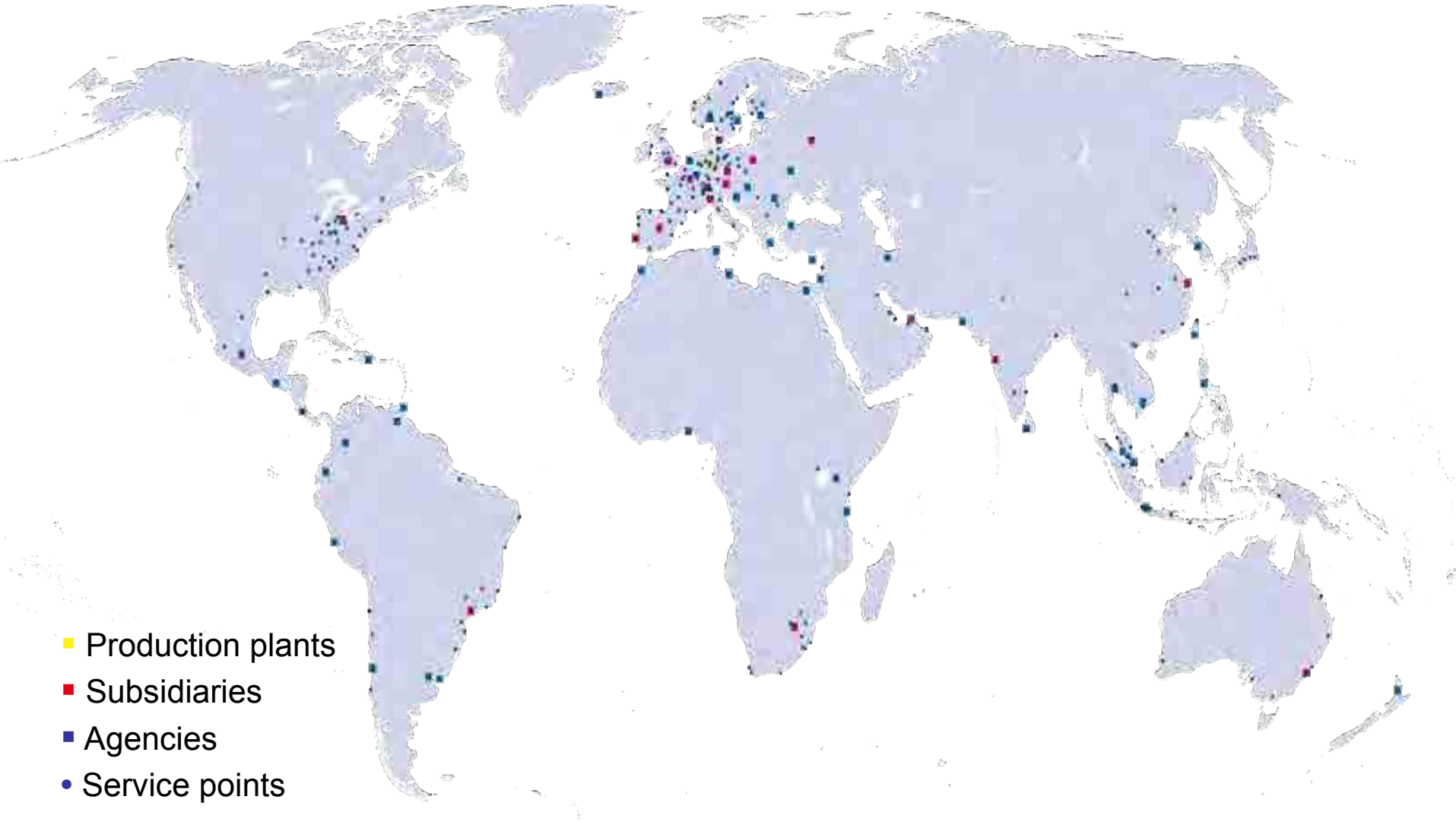
- ▶ Straddle Carriers
- ▶ Sprinter Carriers

- ▶ Ship-to-Shore Cranes
- ▶ Rubber-Tired Gantry Cranes
- ▶ Rail-Mounted Gantry Cranes
- ▶ Reach Stackers
- ▶ Empty Container Handlers
- ▶ Fork Lifts

- ▶ Reach Stackers

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

# Terex MHPS Worldwide



- Production plants
- Subsidiaries
- Agencies
- Service points

## 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

- ▶ **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)**

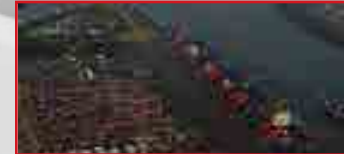
## Handling

- ▶ **Reach Stackers (RS)**
- ▶ **Empty Container Handlers (ECH)**
- ▶ **Full Container Handlers (FCH)**
- ▶ **Forklift Trucks**
- ▶ **Hoppers**
- ▶ **Bulk Material Handlers (BMH)**

# 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

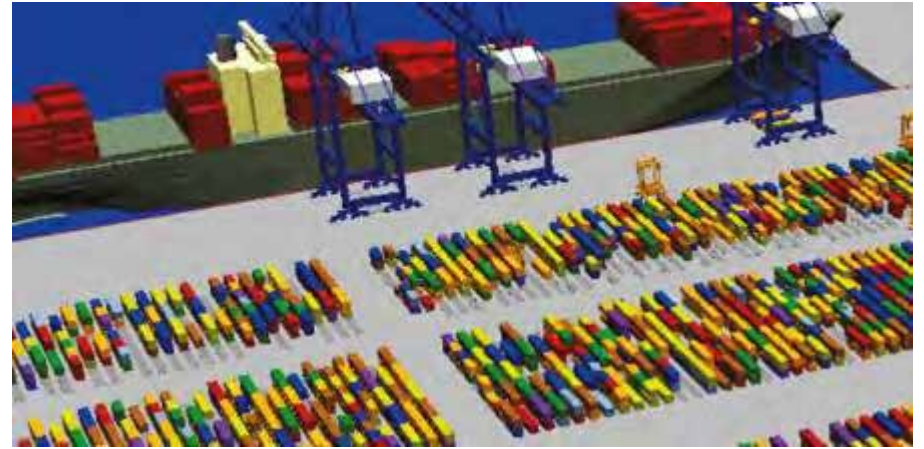
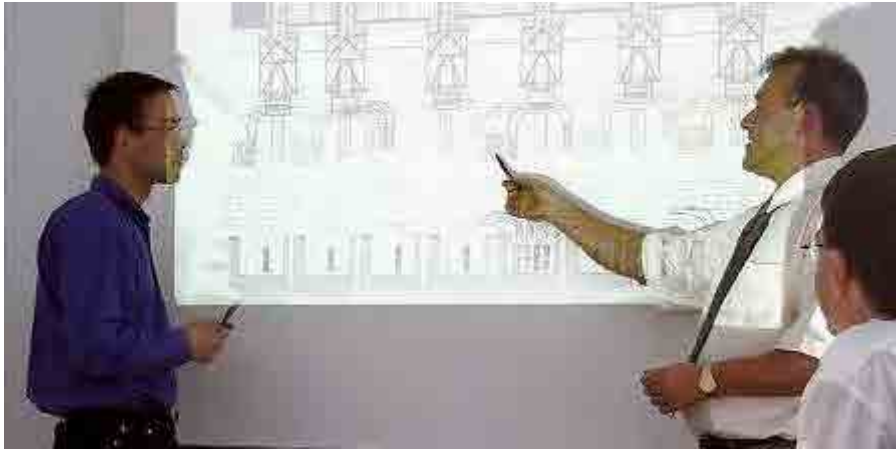


Innovative base products

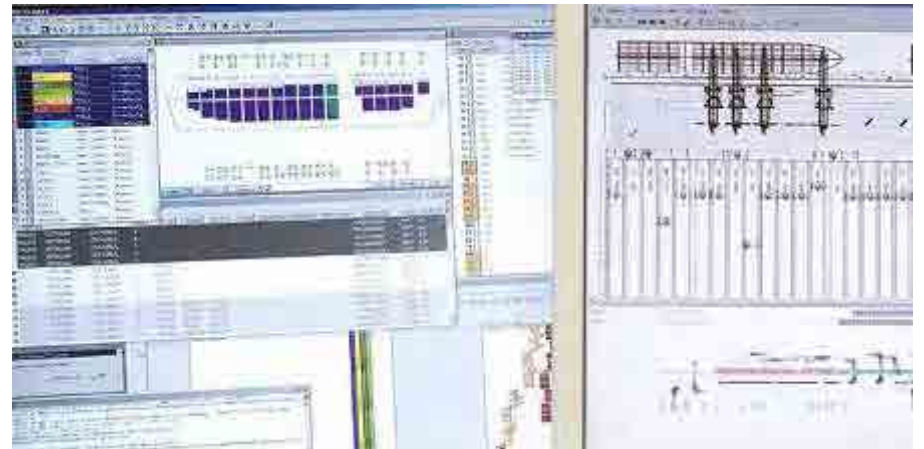


# Always the Right Combination

Application	Loading & Unloading	Transport	Storage	Handling
<p>Bulk</p> <p><b>Container</b></p> <p>General Cargo</p> <p>Project Cargo</p>	<p>Pedestal-mounted HC</p> <p>Ship-to-Shore Crane</p> <p><b>Mobile Harbour Crane</b></p> <p>Portal Harbour Crane</p> <p>Floating Crane</p>	<p>Lift AGV</p> <p>Battery Lift AGV</p> <p><b>Straddle Carrier</b></p> <p>Sprinter Carrier</p> <p>Automated Guided Vehicle</p>	<p>Automated Stacking Crane</p> <p><b>Rubber-Tyred Gantry</b></p> <p>Rail-mounted Gantry</p>	<p>Reach Stacker</p> <p>Full Container Handler</p> <p><b>Empty Container Handler</b></p> <p>Fork Lift</p> <p>Bulk Material Handler</p>
				



- ▶ 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



# 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



## ► 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

# 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



## ▶ 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)

- ▶ 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



# 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)

# 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)



## ▶ 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

# 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

# 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)

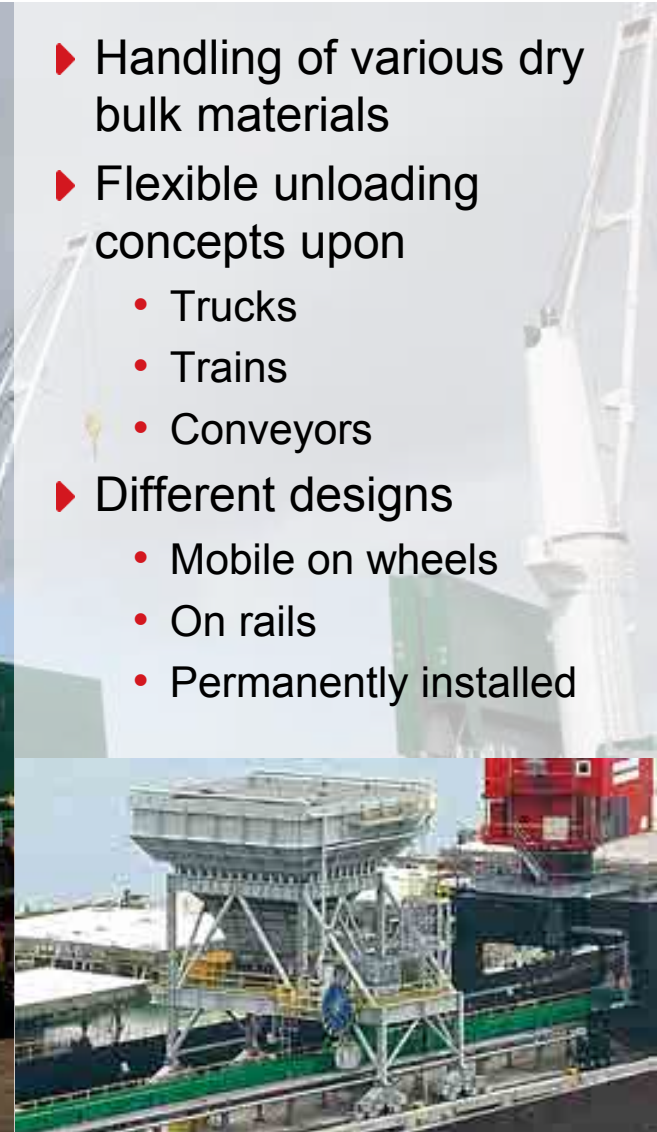
- ▶ Handling and stacking of full containers
- ▶ Handling of 20' to 45' containers
- ▶ Heavy-duty, extreme stacking operations
- ▶ Stacking height up to 5+1
- ▶ Capacity under spreader up to 45 t
- ▶ Available with spreaders or forks
- ▶ Manufacturing location:
  - Lentigione, Italy





- ▶ 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

# Hoppers



- ▶ Handling of various dry bulk materials
- ▶ Flexible unloading concepts upon
  - Trucks
  - Trains
  - Conveyors
- ▶ Different designs
  - Mobile on wheels
  - On rails
  - Permanently installed

# Terex® Fuchs Bulk Material Handlers



- ▶ 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



## 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

As one of the leading companies in cargo-handling technology, TPS takes its obligations towards the human race and our environment seriously:

Continuous development:

- ▶ Sophisticated, sustainable technologies
- ▶ Emission-reducing measures
- ▶ Technologies for excellent land use
- ▶ Biodegradable hydraulic oils, addition of biofuels



# Seamless Support at 1st and 2nd Level

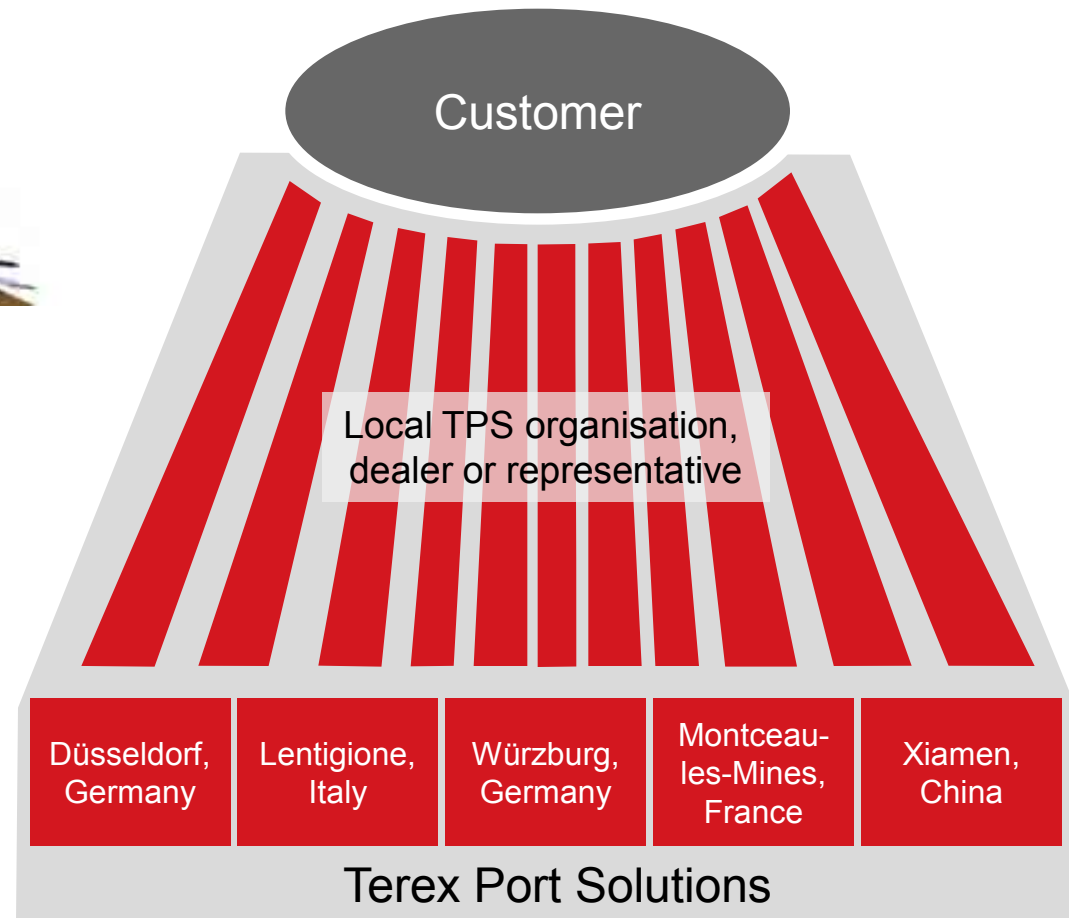


# TEREX

Port Solutions



1st level –  
Your local contact



2nd level –  
Factory support

# Services for The Entire Lifecycle



**Erection and  
commissioning**



**Relocation**



**Spare parts  
management**



**Maintenance contracts  
and fleet management**



**Training**



**Repairs**



**Refurbishment and  
upgrades**



**Inspection and  
maintenance**

Life Cycle Support  


## Erection and commissioning

Our experience for your safety. Our service team is a competent and experienced partner for the professional commissioning of your port installations.

- ▶ Erection according to our “Think Safe. Think Terex.” initiative
- ▶ Commissioning of port equipment to meet the needs of your schedule
- ▶ Inspection and approval by our authorized inspectors



# Develop Your Staff Through Our Training Courses



## Technical and operator training

With our training courses, we help you to exploit the full potential of your equipment and boost your productivity.

- ▶ **Modular, hands-on training program**
- ▶ **Training adapted according to customers specific needs**
- ▶ **Highly qualified instructors and state-of-the-art equipment**
- ▶ **Training courses held at our training centers or on-site**
- ▶ **Recognized training certificate on successful completion of courses**



## Parts management

Our genuine spare parts meets the highest quality requirements. Perfectly matched to fit Terex Port Solutions products they reduce maintenance requirements and ensure the functional reliability, long service life and continuous availability.

- ▶ **Life cycle supply of spare parts**
- ▶ **Comprehensive in-country dealer network for local parts availability**
- ▶ **Excellent and reliable logistics for rapid supply worldwide**
- ▶ **Replacement solutions for parts no longer manufactured**
- ▶ **Various types of parts packages**



# Smooth and Reliable Operation

## Inspection & maintenance

Regular inspection and maintenance is the basis for maximum reliability and availability of your TPS equipment long term. Extensive trained technicians will perform inspection and maintenance according to maintenance manuals and local regulations.

- ▶ **Prevent unexpected standstills**
- ▶ **Maintain premium reliability and availability**
- ▶ **Fulfil legal requirements**
- ▶ **Preserve the value of you equipment**



## Refurbishment & upgrade

Our modernization & retrofit solutions enable older machines and installations to be adapted to meet new technical or economic requirements.

- ▶ **Utilize new technical features**
- ▶ **Replace obsolete components**
- ▶ **Adapt your equipment to meet changing requirements**
- ▶ **Incorporate additional functions**

Abstract of services:

- Diesel-powered generator unit upgrade
- Retrofit of external power supply
- Control upgrade
- Modification of span and lifting height
- Modification of speed and performance data
- Refurbishment of operators cabin
- ...



## Repairs

Bringing your equipment back in operation after accidents or serious damages is essential for your profitable operation. Our experienced experts will support you in defining required measures and perform necessary repair work.

- ▶ **Short reaction time**
- ▶ **Defining of required measures**
- ▶ **Performing of necessary repair work**
- ▶ **Many years of experience**



# High Level of Availability and Long Service Life

## Fleet management

Maintenance and repair for all installed products from a single source – not only a cost-effective solution, but also to ensure that your equipment reliably offers a high level of availability and long service life.

- ▶ **Maintenance and repairs carried out by the manufacturer**
- ▶ **Highly qualified service technicians**
- ▶ **Cost transparency**
- ▶ **Predictability over many years**
- ▶ **Clear responsibility**
- ▶ **Various tiered packages available**



# Relocation as An All-in-One Package

Transport solutions including:

- Project planning
- Transport engineering
- Dismantling
- Loading
- Shipping
- Unloading

Equipment transported ...

- completely assembled
- partly assembled
- in assembly groups



# The Future of Port Solutions

► Based on our comprehensive portfolio ...



# The Future of Port Solutions

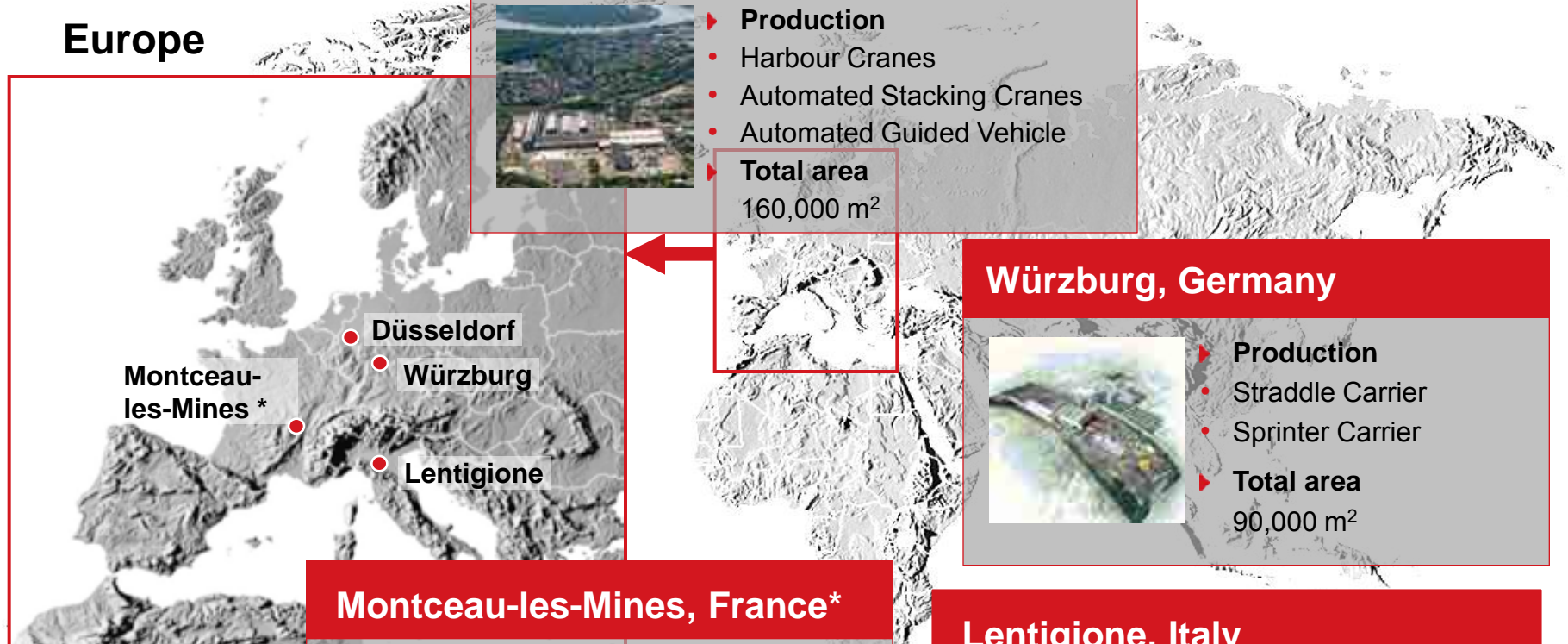


- ▶ ... Our holistic approach covers more than just our products
  - Consulting capability
  - Integrated solutions for terminals
  - Customized packages
  - Fleet concepts
  - Life cycle solutions
  
- ▶ Your benefits
  - High level of expertise
  - Single source supplier
  - Short communication channels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



# 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\*



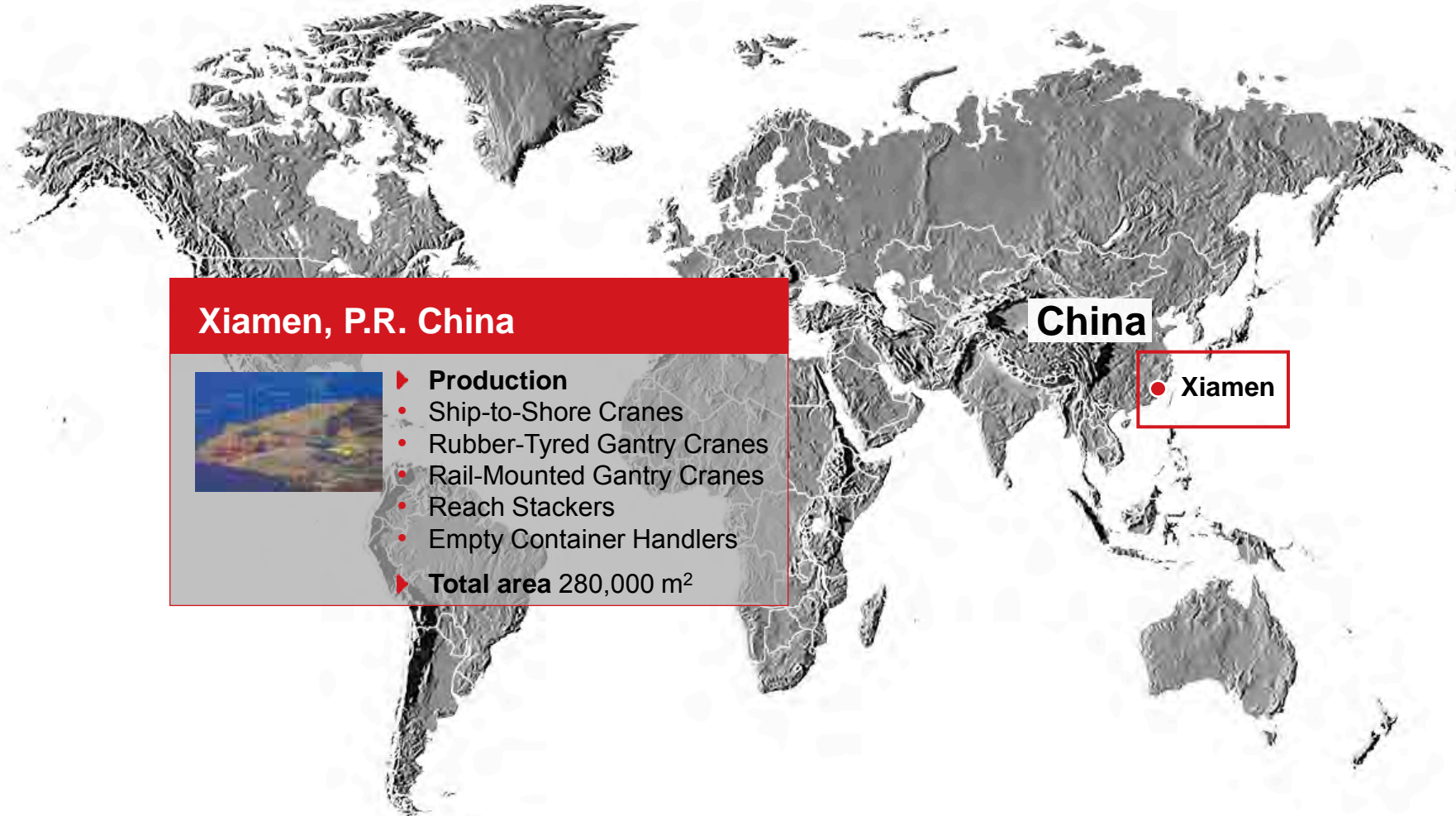
- ▶ **Production**
  - Reach Stackers
- ▶ **Total area**  
38,800 m<sup>2</sup>

### Lentigione, Italy



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

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



## 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



Do you have any questions?  
Feel free to ask

