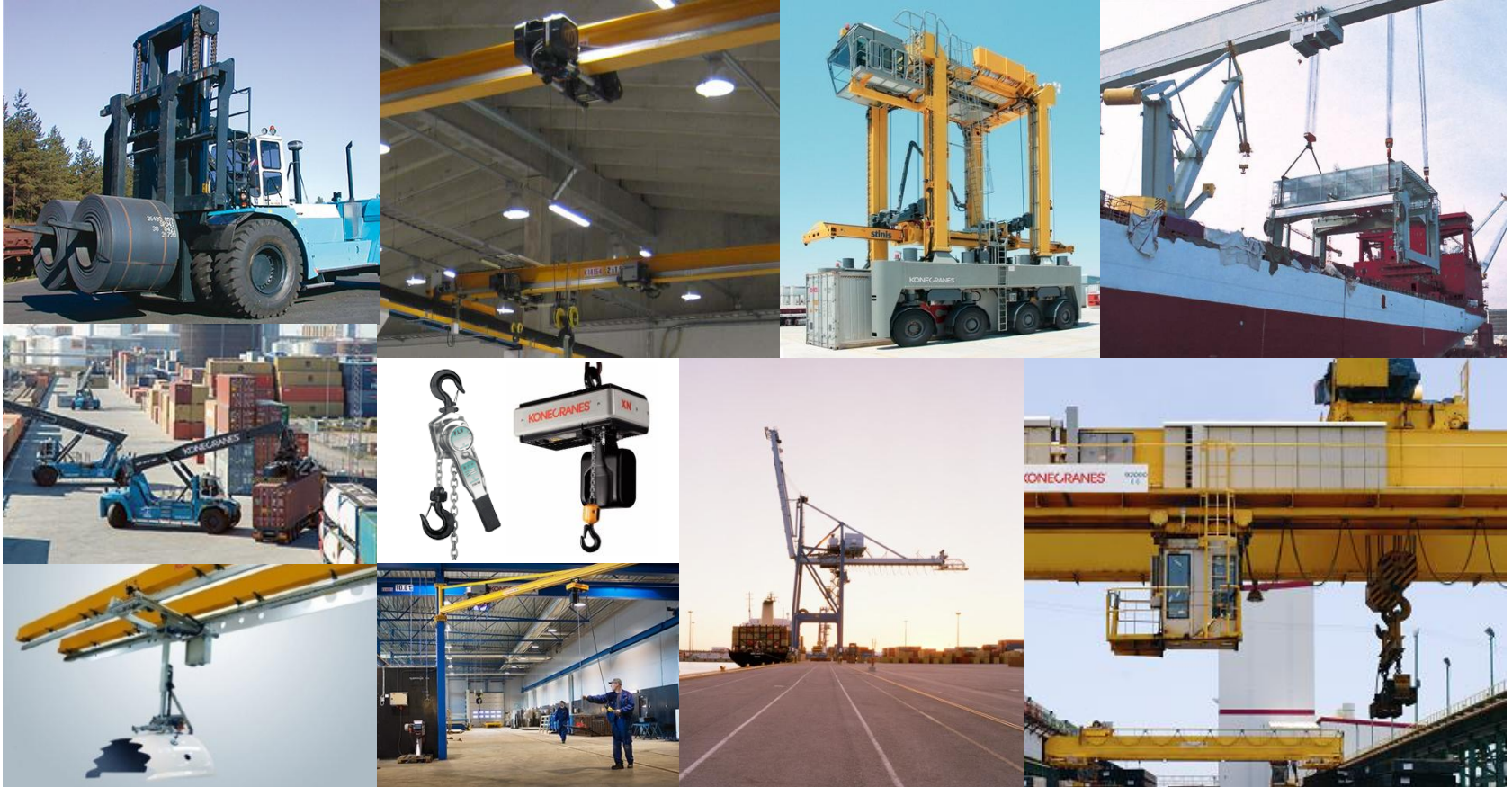


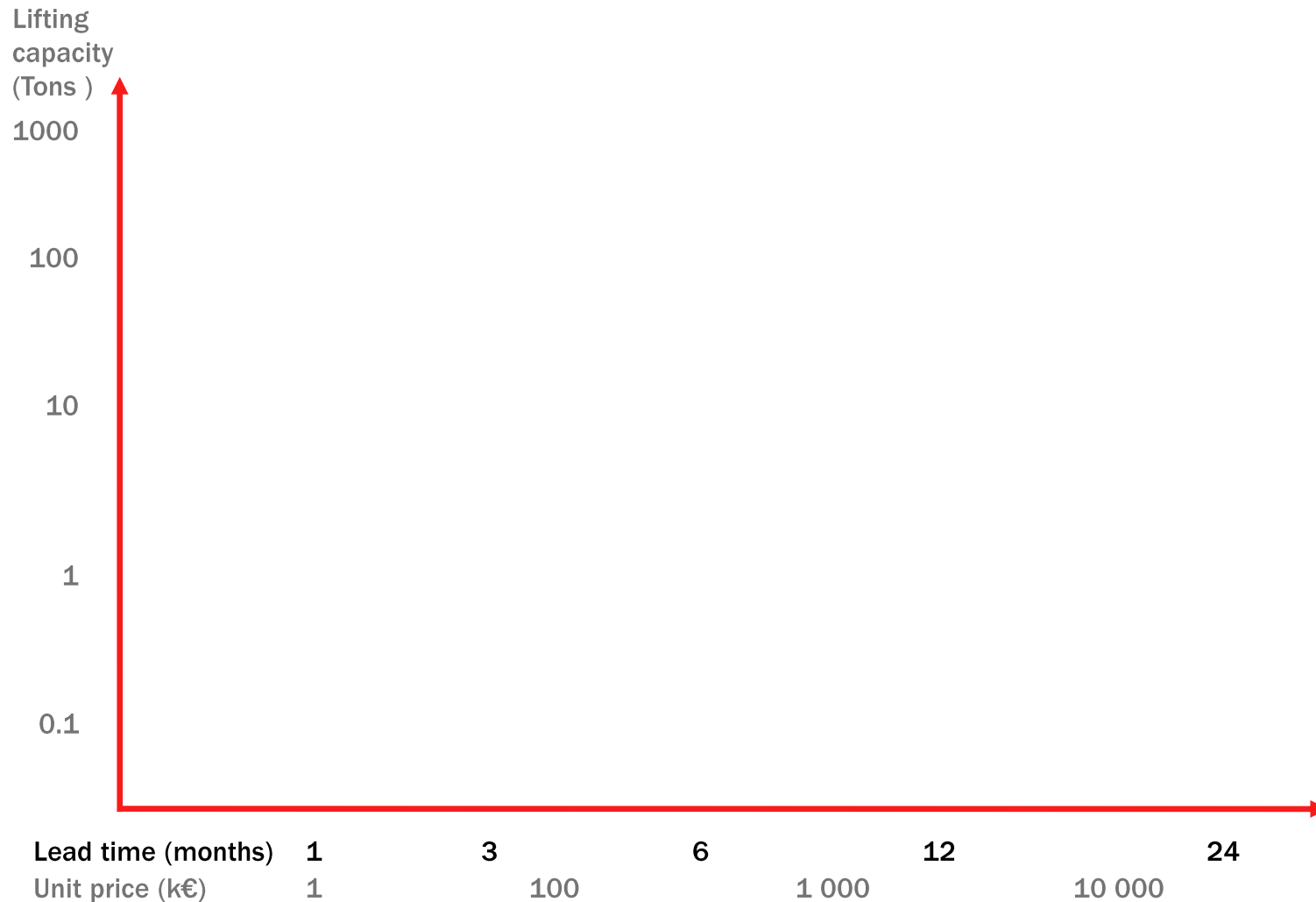
RESEARCH AND DEVELOPMENT CMD, November 23, 2010

Ari Kiviniitty, CTO

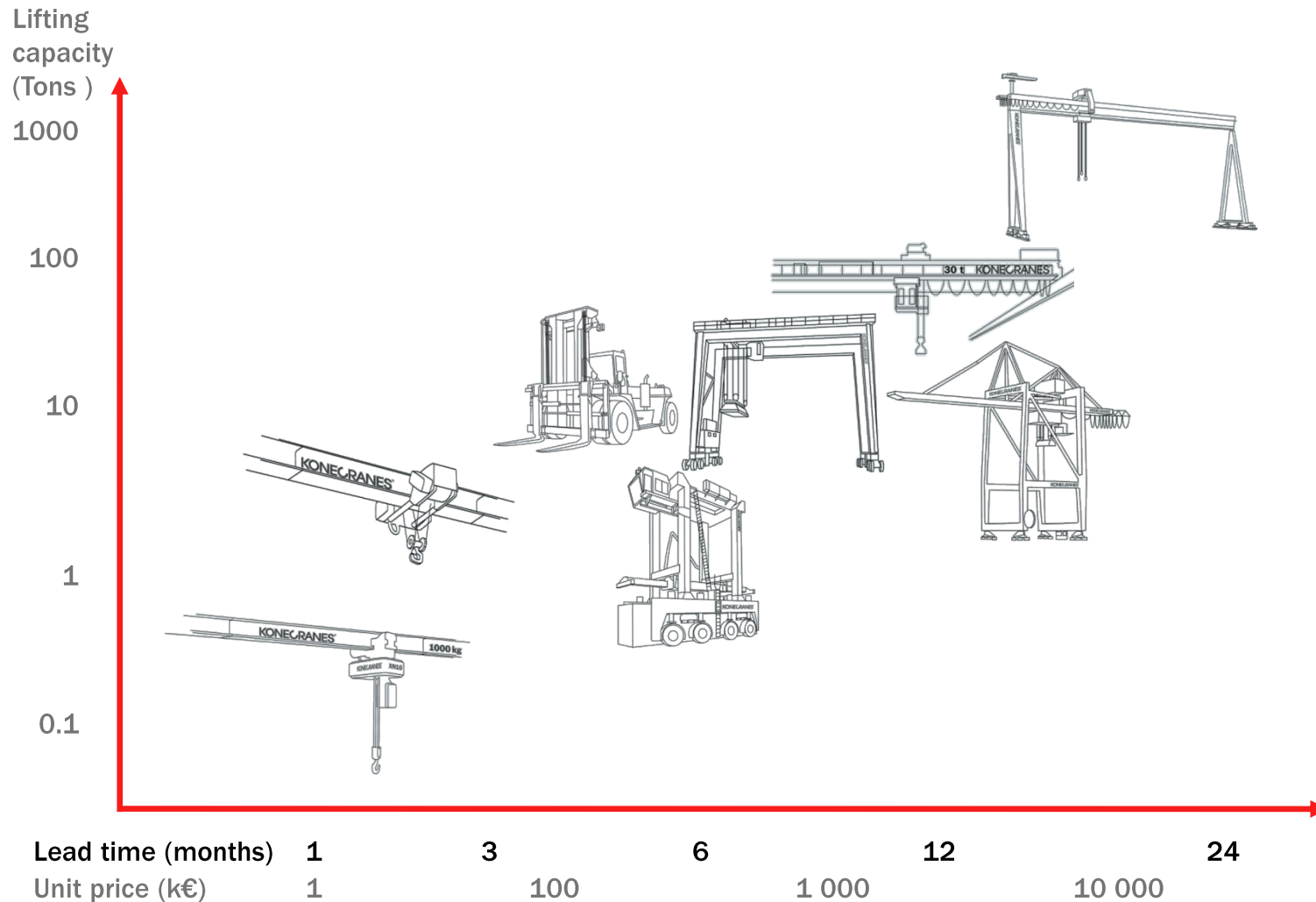
THE WIDEST RANGE OF LIFTING SOLUTIONS



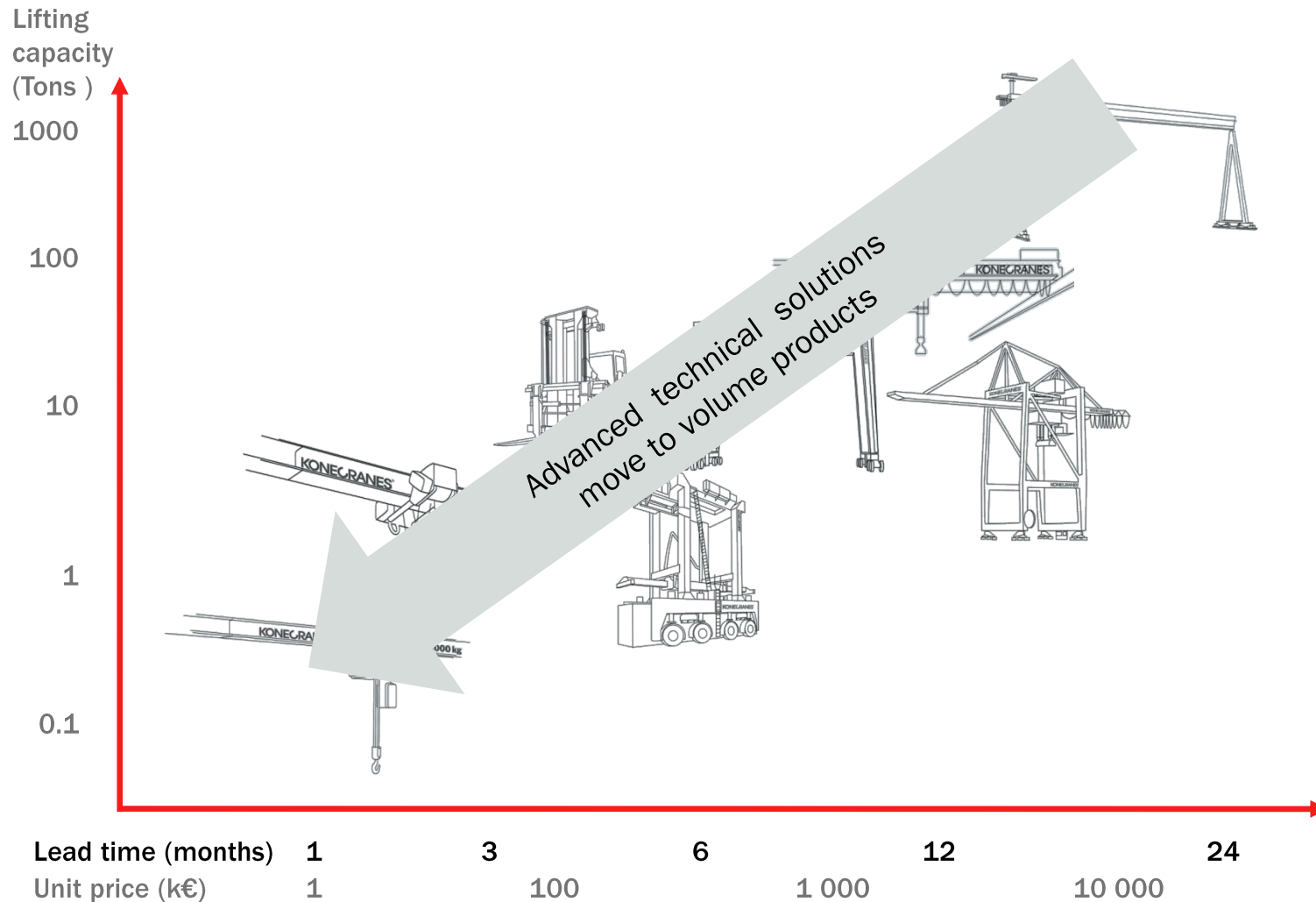
THE WIDEST RANGE OF LIFTING SOLUTIONS



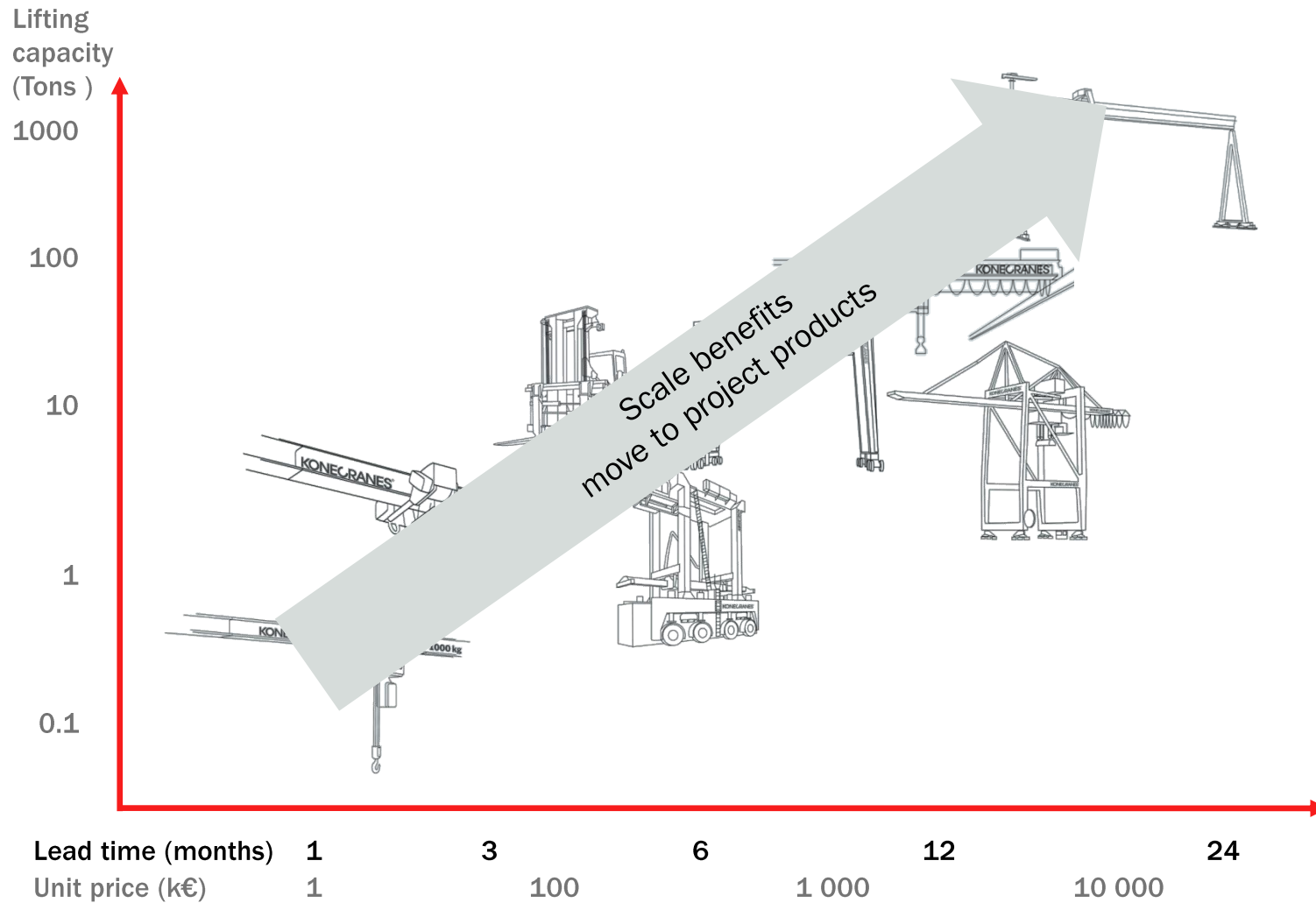
THE WIDEST RANGE OF LIFTING SOLUTIONS



TECHNOLOGY DEVELOPMENT



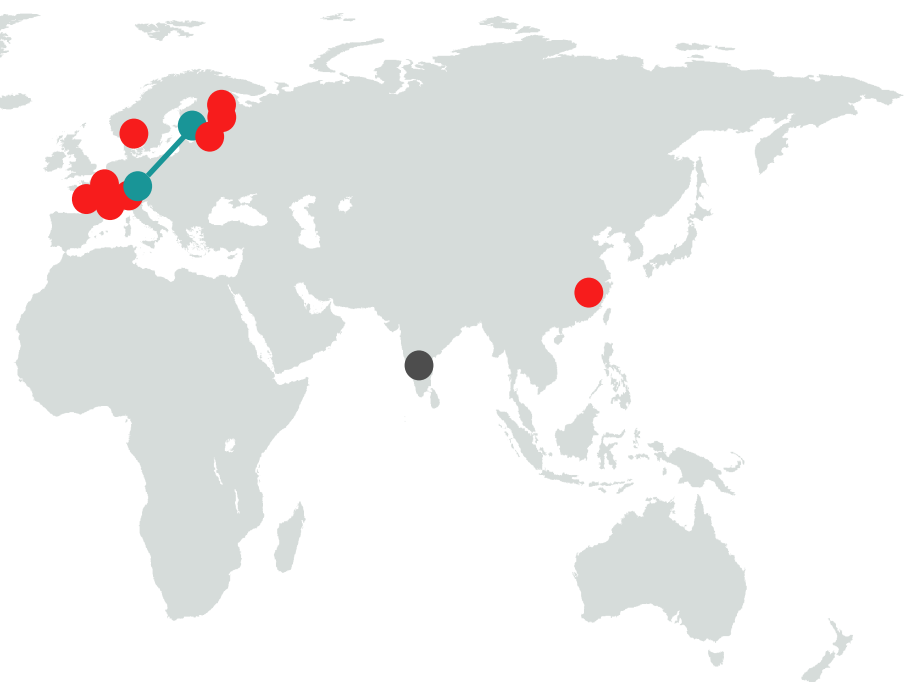
TECHNOLOGY DEVELOPMENT



KONECRANES R&D

- Coordinates all R&D activities through the Technology board
- R&D center with laboratories and testing facilities in Hyvinkää, Finland, and Kunzelsau, Germany
- Platform teams according to products
- Engineering office in Pune, India
- Concurrent engineering working concept in development projects

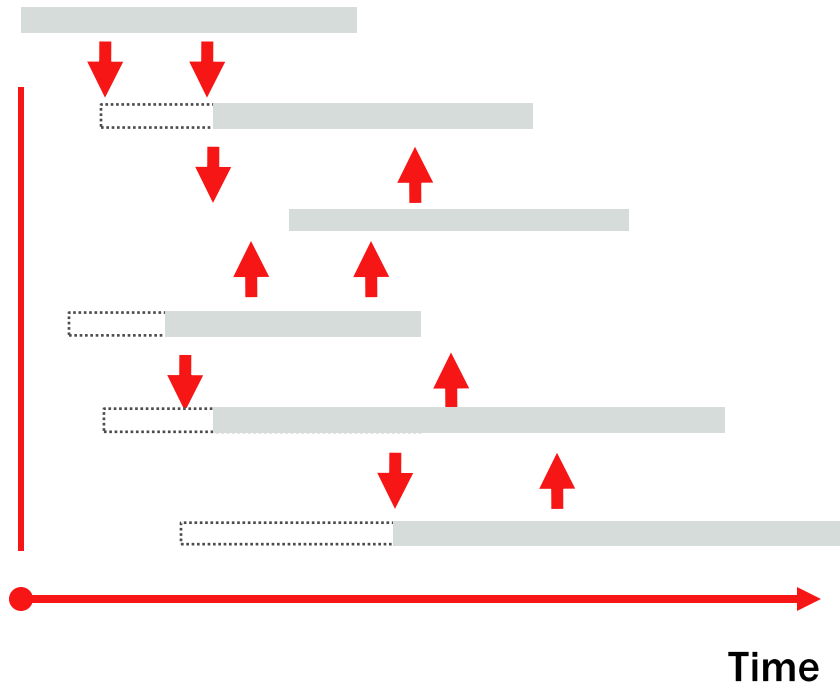
- R&D
- Platform team
- Engineering office



CONCURRENT ENGINEERING

Project execution

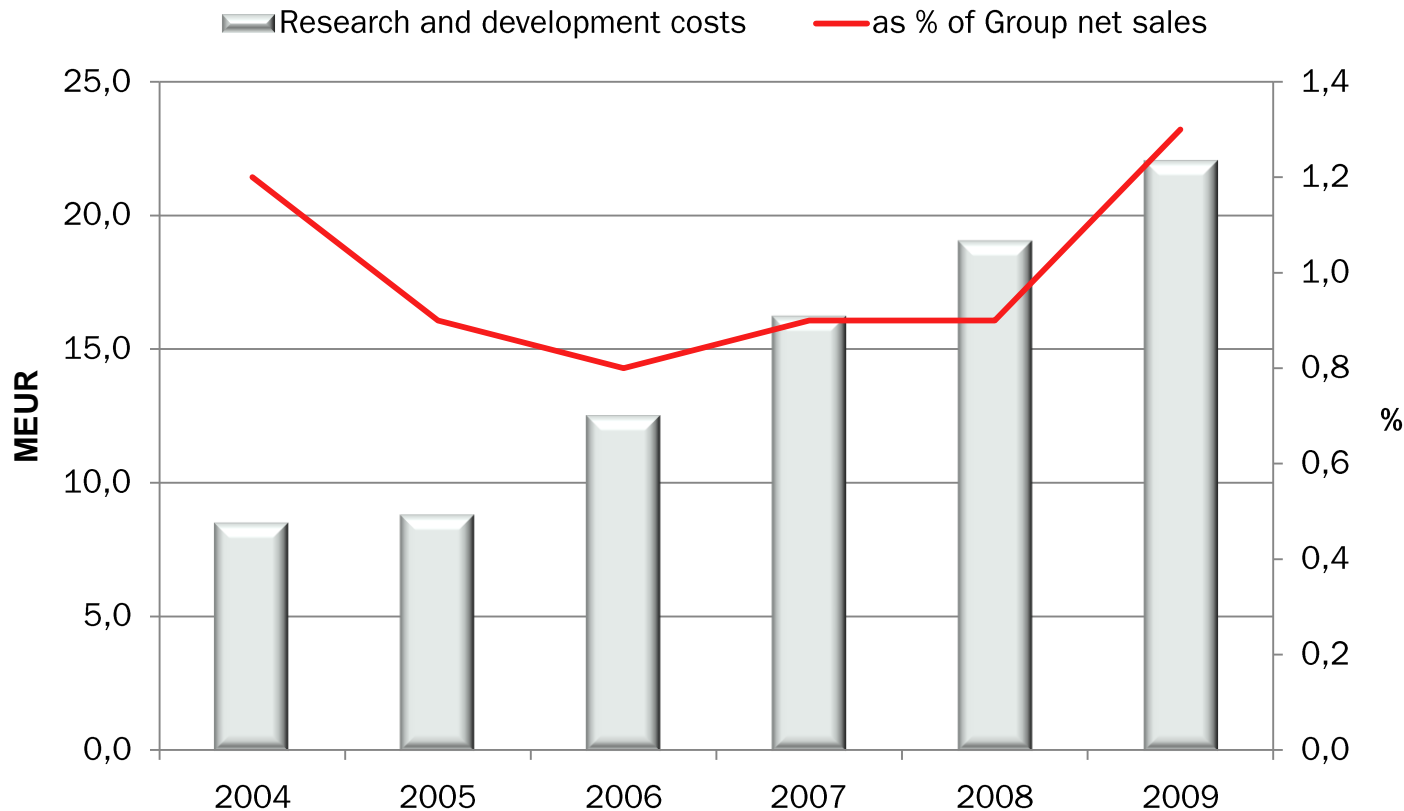
CONCURRENT ENGINEERING PROJECT



- Core R&D team
- Product Platform
- Sales/Marketing, (Customers)
- Procurement, (Suppliers)
- Service, (Contract base)
- Production

R&D AND AUTOMATION

Konecranes R&D costs



R&D FOCUS AREAS IN THE FUTURE

Product "image" and user's experience

- Industrial design

Even more attention towards Safety

- Sway control

Increased intelligence in products

- Modular upgradeable crane controls

Environmental awareness

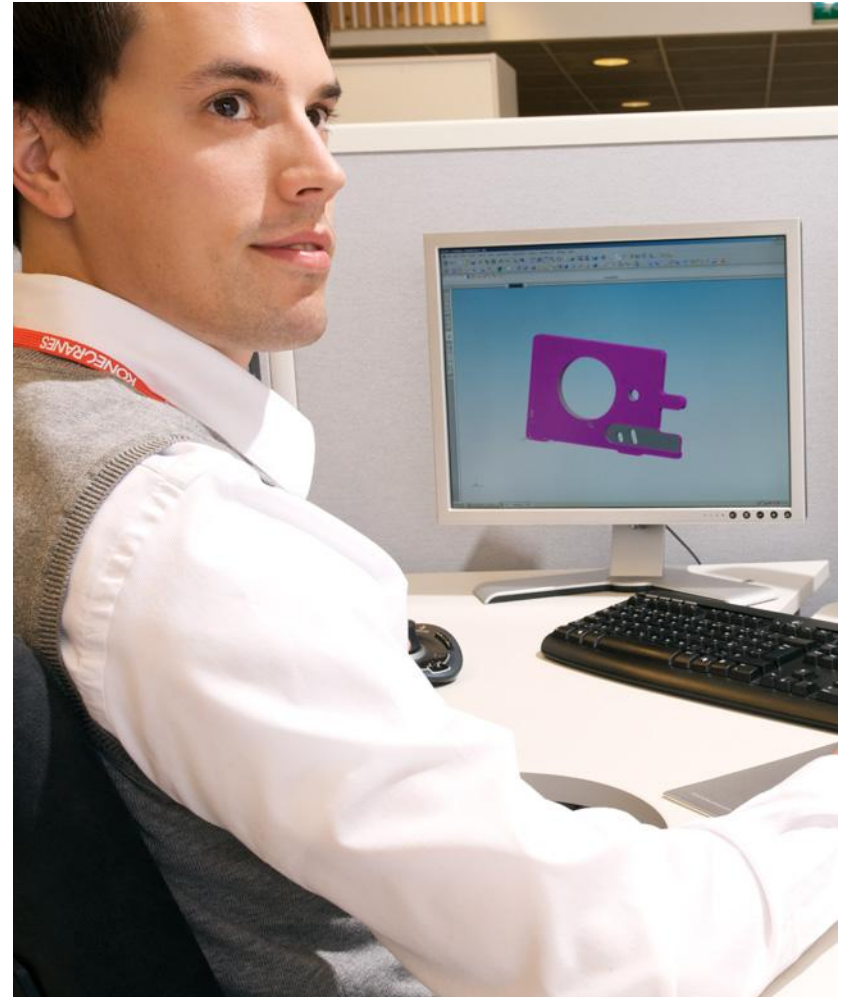
- Energy efficient solutions

Intelligence in processes due to modern ICT

- Remote service

Importance of innovations will remain

- Foldable service platform (patent pending)



STANDS:

I CXT Crane

II Smarton

III RTG



CXT CRANE

Safety and performance in material handling

Sway Control

- Prevention of load sway by accurate control of travelling movements
- Especially for application with fast load cycles, heavy loads and fragile loads

Positioning

- Automatic or semiautomatic positioning to desired targets
- Targets can be fixed by the application or the operator can teach the targets for the crane

Protected areas

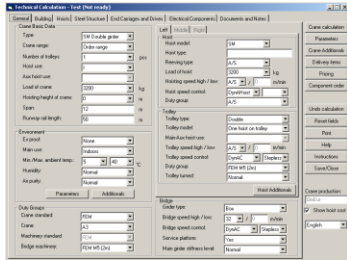
- Automated travelling only in safe areas
- Protected areas can be fixed by the application or the operator can teach the areas for the crane



SMARTON CRANE

Intelligent modular design

Markman



Documentation



Intelligent crane controls
with Remote diagnostics



Power
Terminal

Control
Service

Regenerative
drive

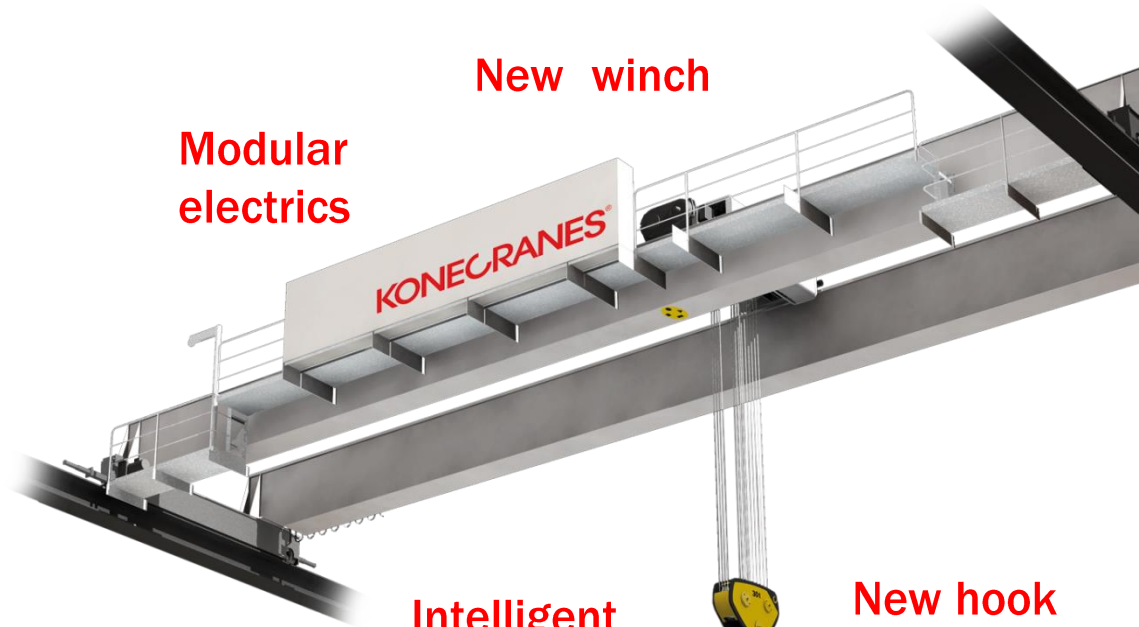
Trolley 1

Auxiliary
hoist

Bridge
Options

New winch

Modular
electrics



Intelligent
rope reeving

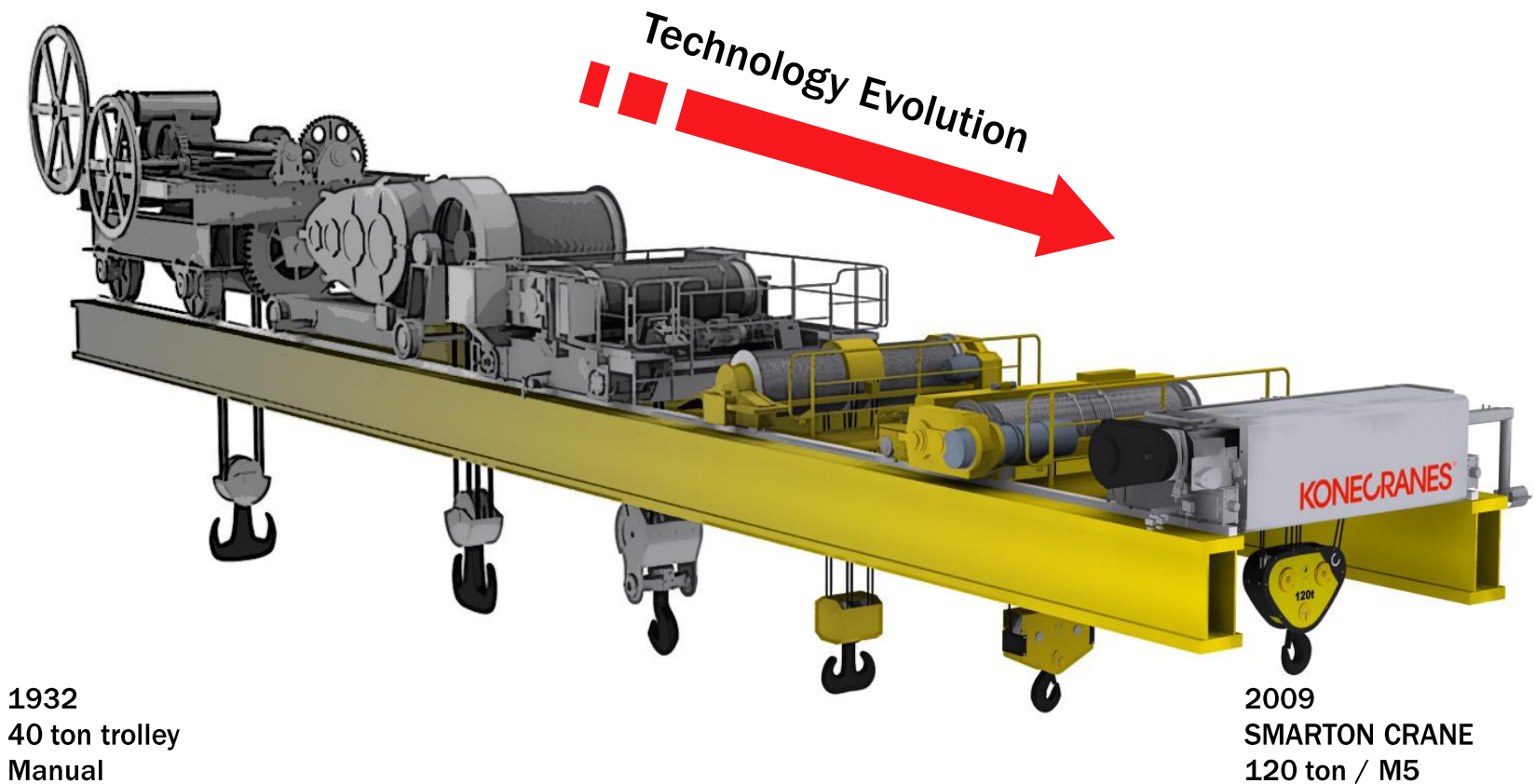
New hook
block

Human
Interface
to Machine



SMARTON®

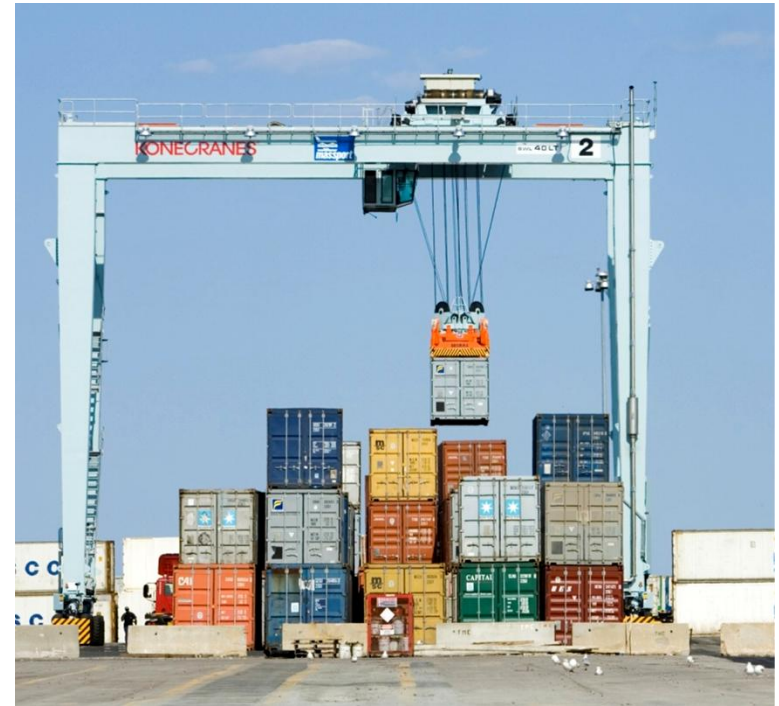
The purpose-built, intelligent solution for
demanding service applications and **heavy process** use



RTG

Rubber Tired Gantry crane

- Over 700 delivered to terminals and global operators since 1995
- Very high repeat order ratio
- Frame agreements with large customers
- World's first all electric RTG (1995)



Active Load Control



No hydraulics

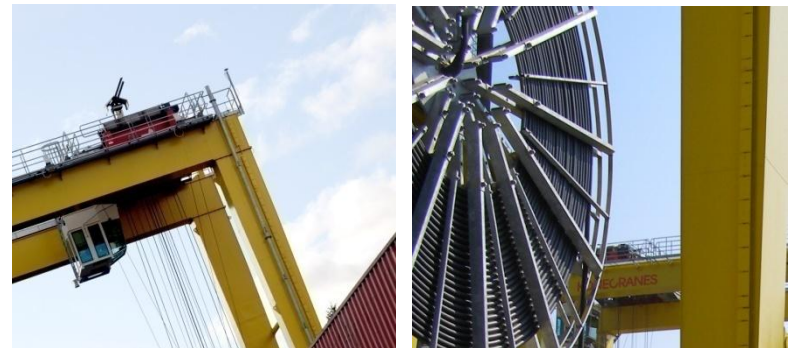
WORLD LEADING CRANE TECHNOLOGY

Culture of pioneering innovations

Ensuring the reliability at full scale test site in Finland:

Features

- Hybrid technology for mobile equipment (with energy storage)
- Modular cable reel RTG
- Safety features
- Advanced electrical spreader





**NOT JUST LIFTING
THINGS, BUT
ENTIRE BUSINESSES**