

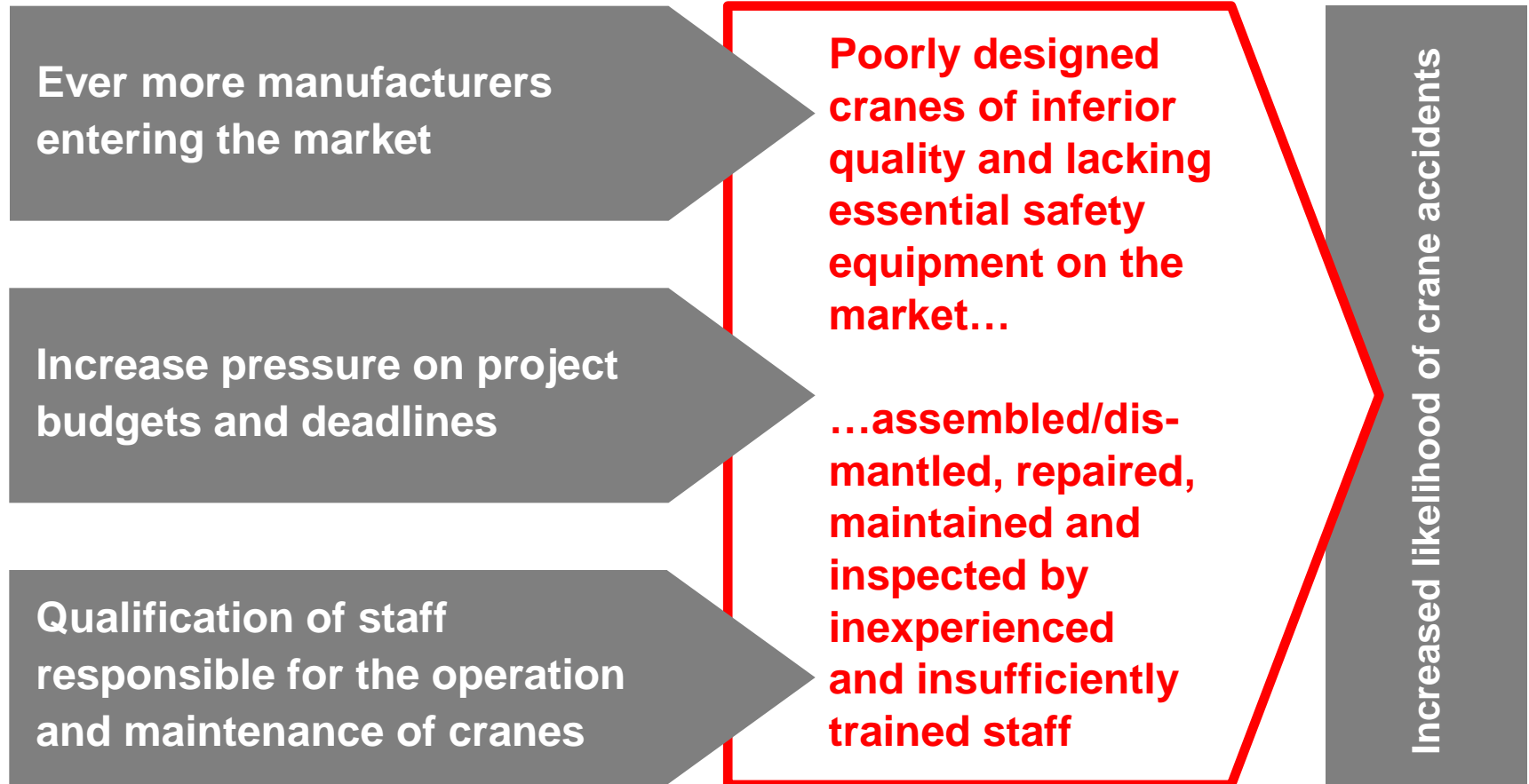
# WOLFFKRAN

The need for defining safety standard in the tower crane industry: A look at product standards and beyond.

Dr. Peter Schiefer, CEO



# Crane safety is becoming primary issue in the industry



# CECE is committed to establishing industry standards

**The Committee for European Construction Equipment has identified the sale and operation of cranes that do not comply with the relevant EU legislation as a major problem for:**

## Tower Crane Safety

Cranes do not comply with the applicable Machine Directives and relevant legislation (the law)

Cranes do not meet the required safety and environmental standards

Cranes are not delivered with the necessary documents and instructions to ensure safe operation

## Competitiveness

The sale of inferior or counterfeit cranes is a source of unfair competition

This effects the ability of serious manufacturers to fund R&D

Competitiveness is at stake and industry jobs at risk

# CECE has issued a series of guides aimed at creating awareness about existing standards and best practices



## Information about the European Standard EN 14439

- Out-of-service wind stability
- Assembly stability
- Mandatory safety equipment



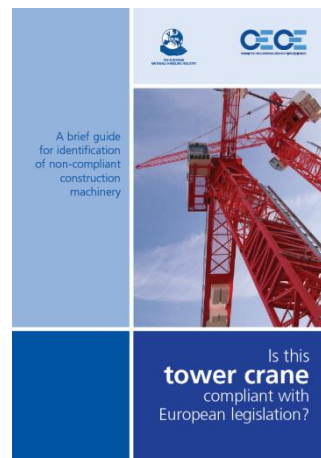
## Recommendations for the safe operation of cranes

- Assembly/ dismantling
- Inspections
- Qualification of staff

September 2009

May 2011

March 2012



## Guideline to help distinguish between compliant and non-compliant cranes:

- Lists criteria that can be easily checked, without in-depth knowledge
- Aimed at owners, potential buyers & authorities

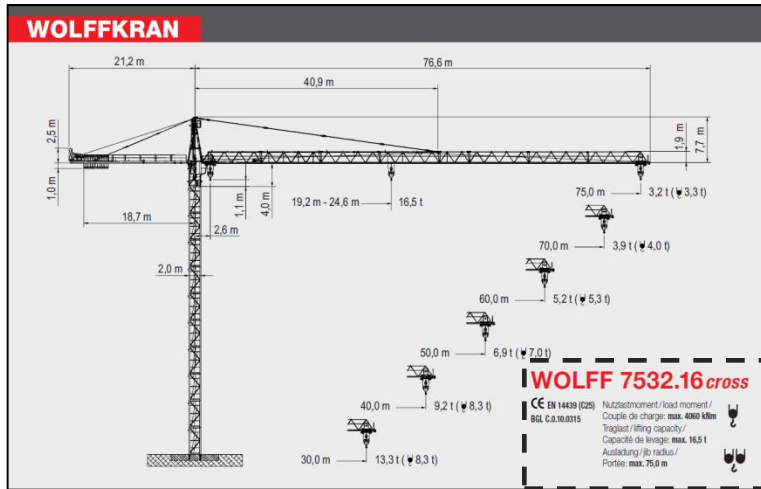
A look at **safety features** that a crane should have to reduce risk of accidents.



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# Improved safety when a crane is out of operation



**WOLFF 7532.16 cross**

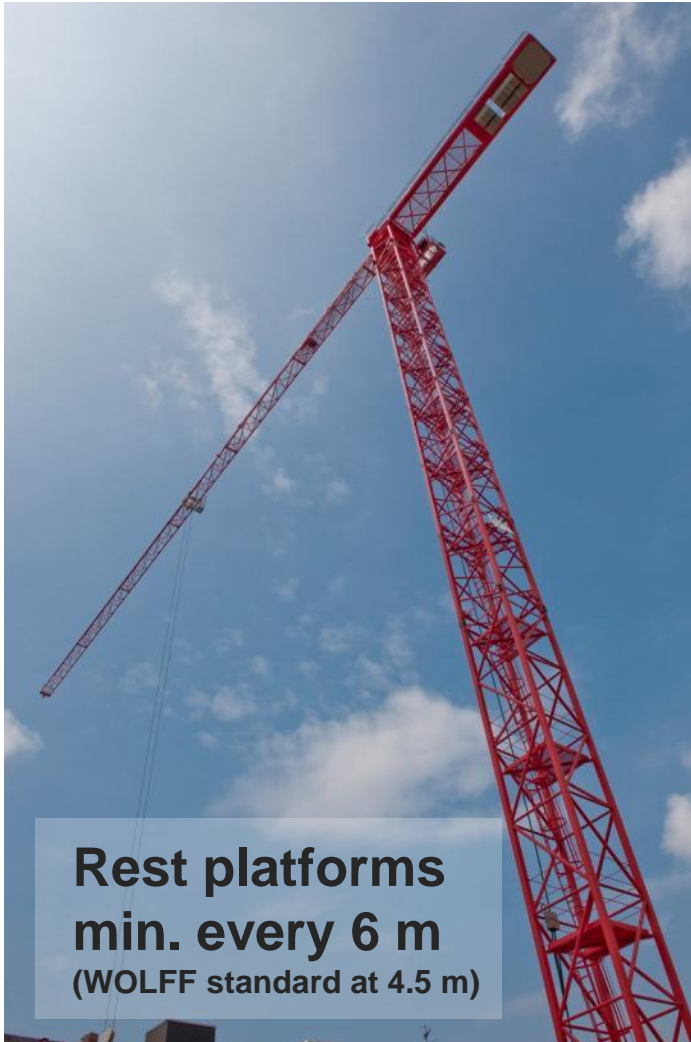
CE EN 14439 (C25) Nutzlastermoment / load moment /  
 BGL C.0.10.0315 Couple de charge: max. 4060 kNm

Traglast / lifting capacity /  
 Capacité de levage: max. 16,5 t

Ausladung / jib radius /  
 Portée: max. 75,0 m

- The European Standard EN 14439 defines **more accurate and higher out-of-service stability standards** than previously used for the crane configuration
- Cranes compliant with EN 14439 must be configured according to FEM 1.005
- Leading suppliers agreed to base their technical documents on crane configurations calculated for **wind region C** and a wind speed profile based on **25 year recurrence**
- For construction sites in particularly exposed locations the configuration has to be adapted according to the instructions of the manufacturer

# Minimum requirements per EN 14439 regarding safe access to the crane (standard in WOLFF cranes)



# Minimum requirements per EN 14439 regarding safe access to the crane (standard in WOLFF cranes)

Hand and knee rails,  
toe-boards (rec. 10 cm high),  
no gaps in walkways wider  
than 20 cm



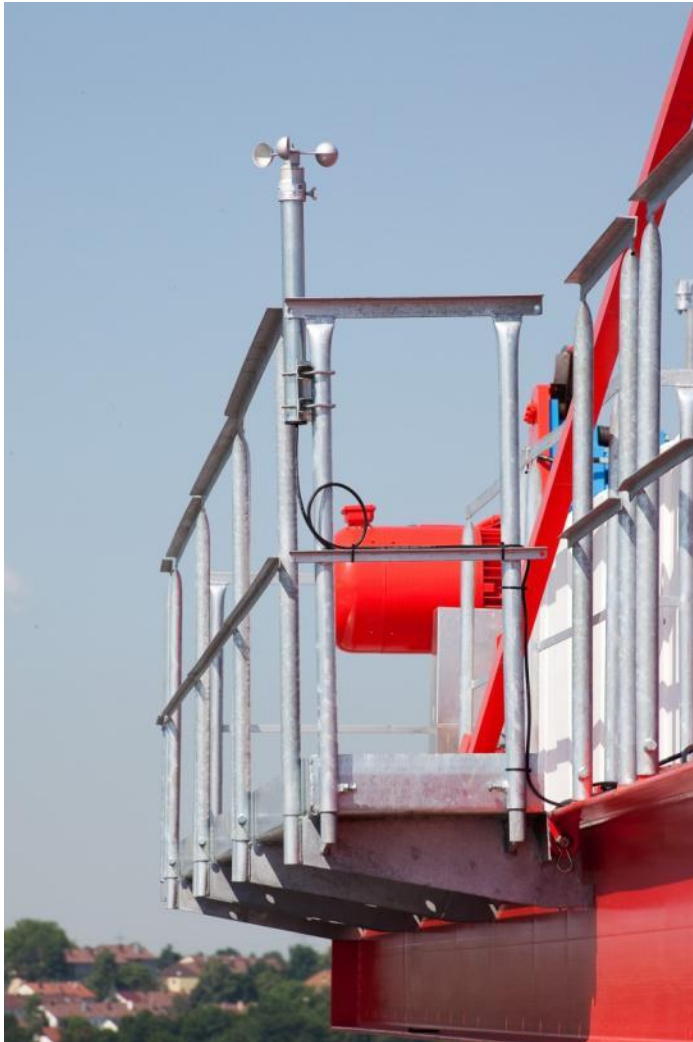


# Minimum requirements per EN 14439 regarding safe access to all areas of the crane (standard in WOLFF cranes)



Jib trolley must be equipped with a trolley basket

# Further safety equipment required per EN 14439 (standard in WOLFF cranes)



**Outside light indicators  
showing the crane condition**

**Anemometer  
for all top-slewing tower cranes**

# Requirements per EN 14439 improving operator comfort and working conditions **(standard in WOLFF cranes)**

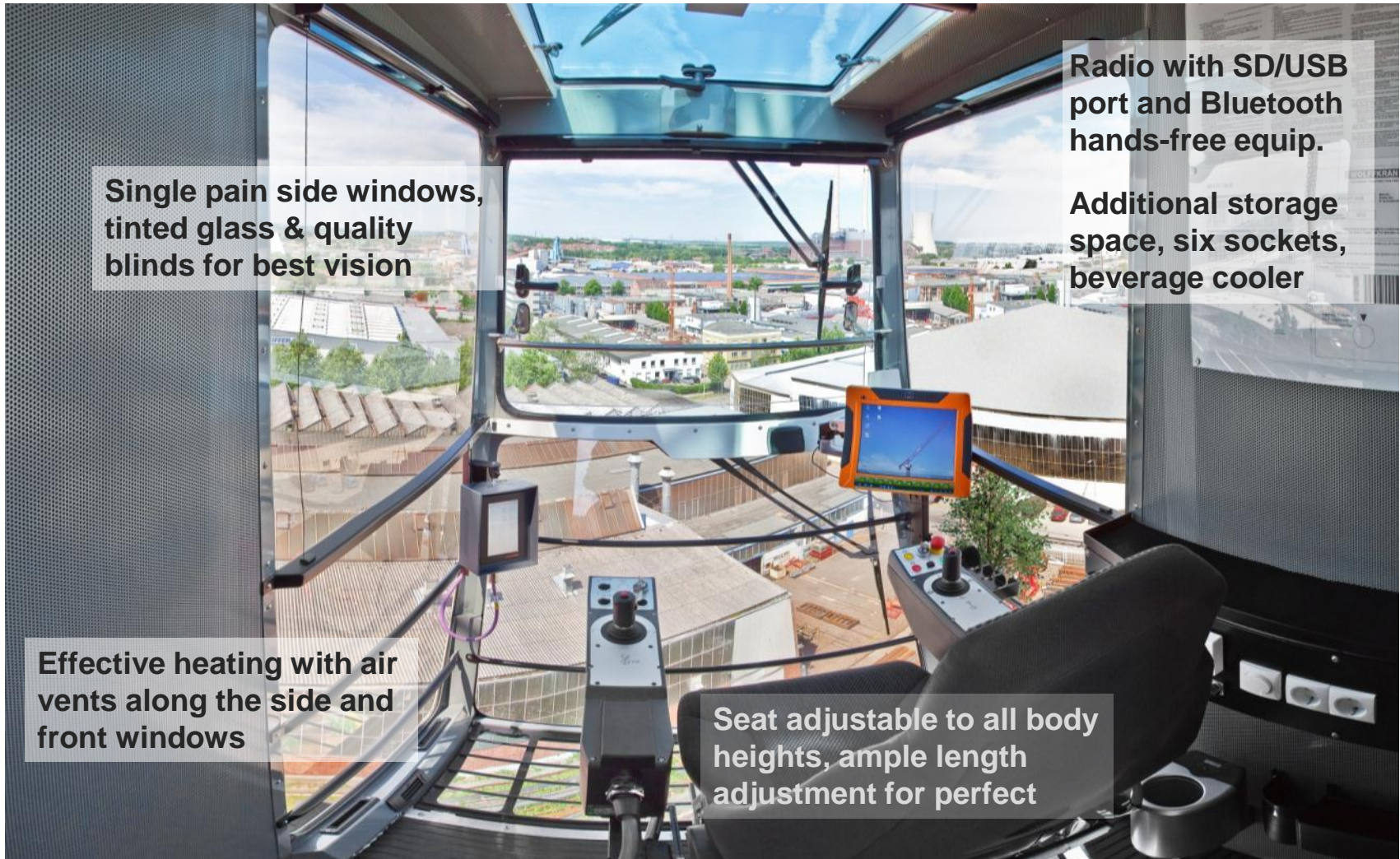


**Windscreen wipers**

**Monitor with operating data for driving support**

**Minimum standards regarding heating and ergonomic layout of seat/control panels**

# The new **WOLFF CAB**: Surpassing minimum requirements by far and standard in all WOLFF cranes



Single pain side windows, tinted glass & quality blinds for best vision

Radio with SD/USB port and Bluetooth hands-free equip.

Additional storage space, six sockets, beverage cooler

Effective heating with air vents along the side and front windows

Seat adjustable to all body heights, ample length adjustment for perfect

# The new WOLFF CAB: Easy operation through optimally designed control panels and monitor with crane data



- Easy to read 7 inch touchscreen color monitor
- Selection among different languages possible
- All crane data displayed on one page
- Menu guided setting of overload protection system and all limiters
- Intuitive navigation through the menu



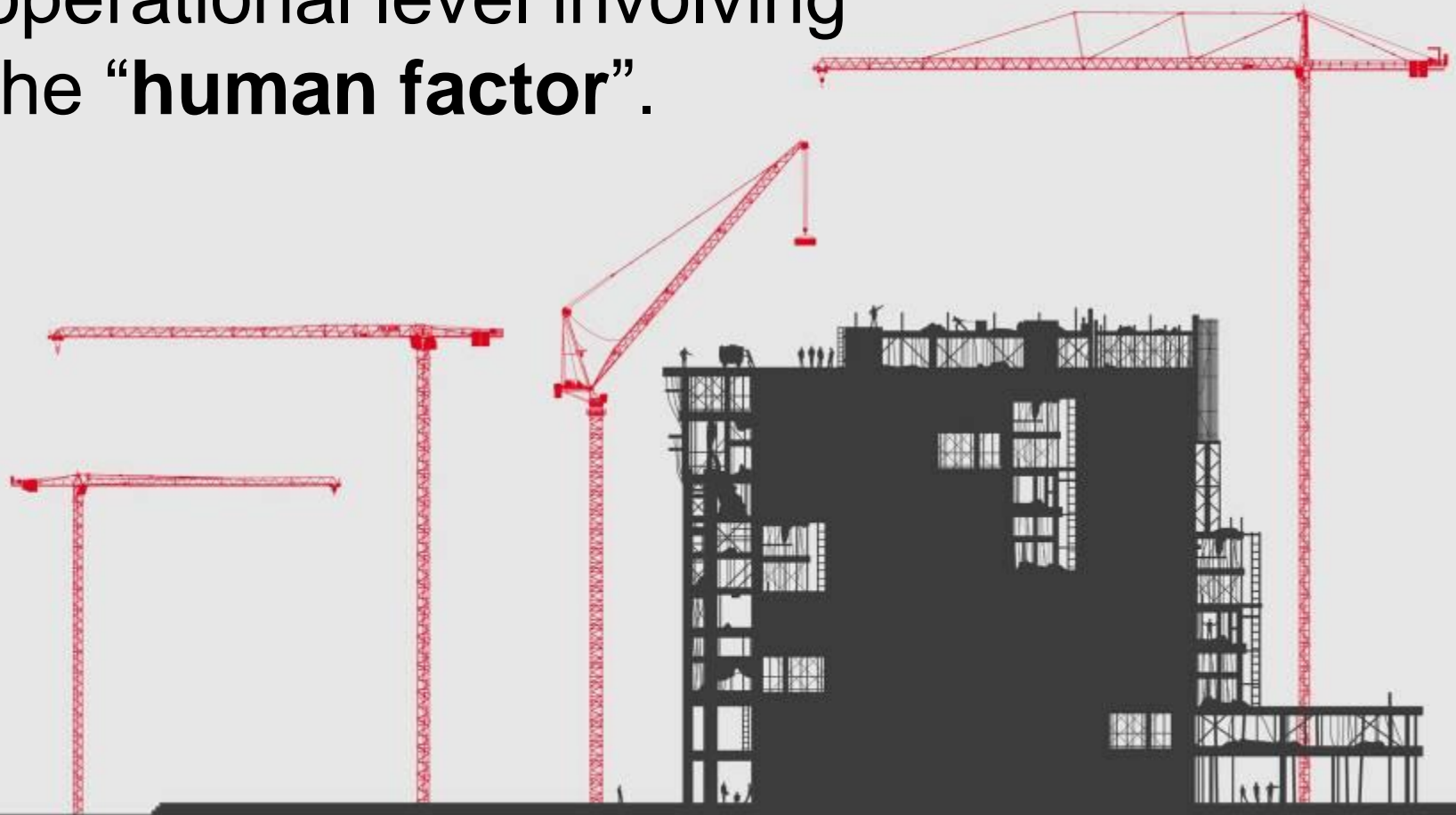
- Ergonomic armrests
- Smooth-running joysticks for fatigue-free working
- Flatter buttons & bellows for easy cleaning and maintenance

# WOLFF Crane Control: Reducing room for error in crane operation



- Electronic safety controls with bus technology
- Incremental absolute encoders for all operating movements
- Slewing gear with electrically operated weathervaning device
- Automatic wind force compensation
- Sensor technology for electronic overload protection system
- Increased load moment limitation by automatic hoist speed reduction
- Working space limiter
- Electronic overload protections system
- Anti-collision interface (as per EN 14439)
- Electronic controlled level luffing (for luffing jib cranes)

A look at what can be done to reduce and prevent risk at the operational level involving the **“human factor”**.



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# Project planning: Getting it right from the beginning





# Project planning: Getting it right from the beginning

## Comprehensive WOLFFKRAN manuals

- Manual with central ballasts and corner loads for all possible standard crane compositions (jib lengths and foundation types)
- Manual with detailed technical data about the crane and construction site preparation

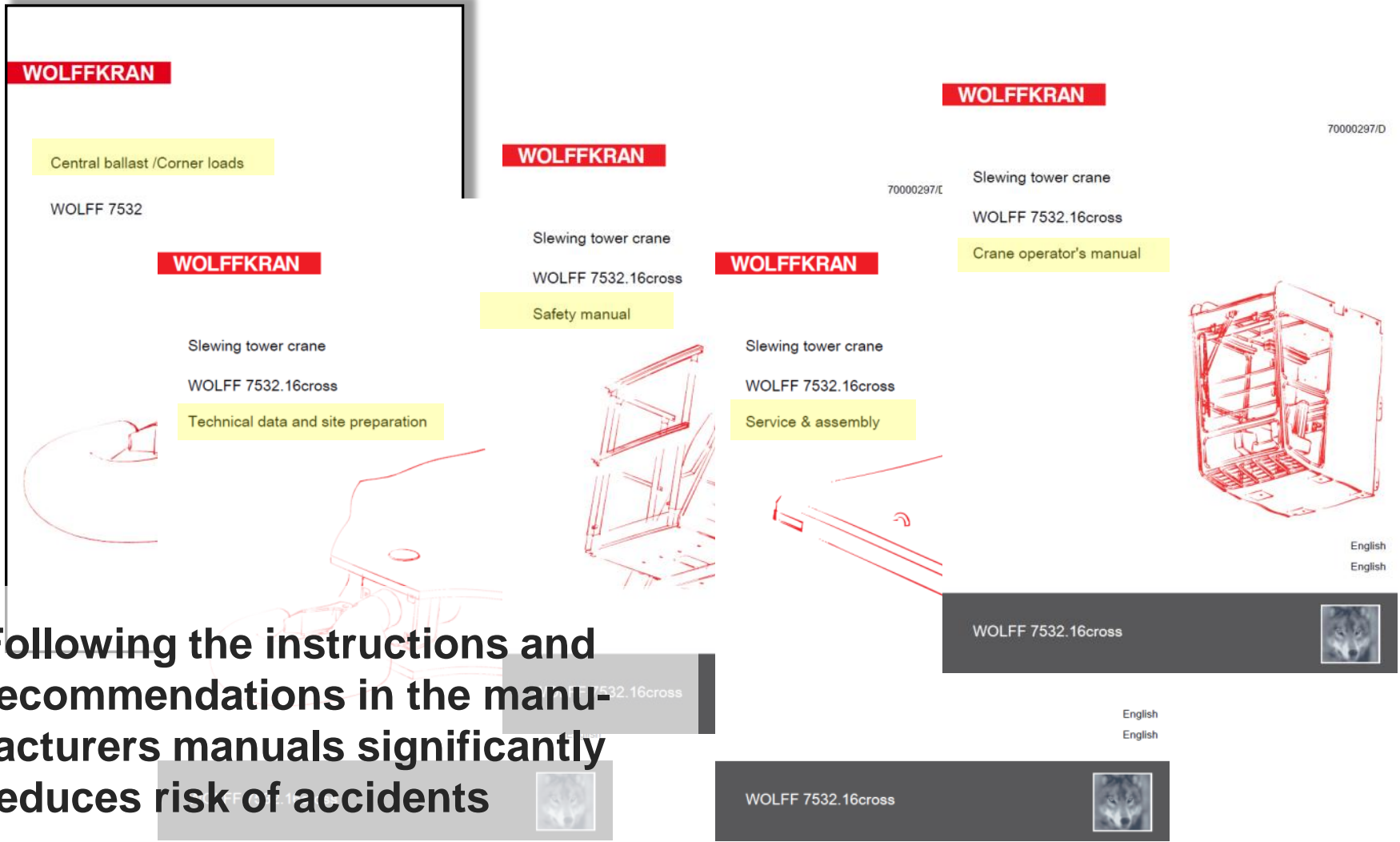
## Dedicated WOLFFKRAN Planning Department

- Support in planning, calculating and verifying statics, foundations etc
- Planning of special projects

## WOLFF Solution

- Online Crane Configurator

# Operational Safety: Comprehensive Operator Manuals delivered with all WOLFF cranes



**Following the instructions and recommendations in the manufacturers manuals significantly reduces risk of accidents**

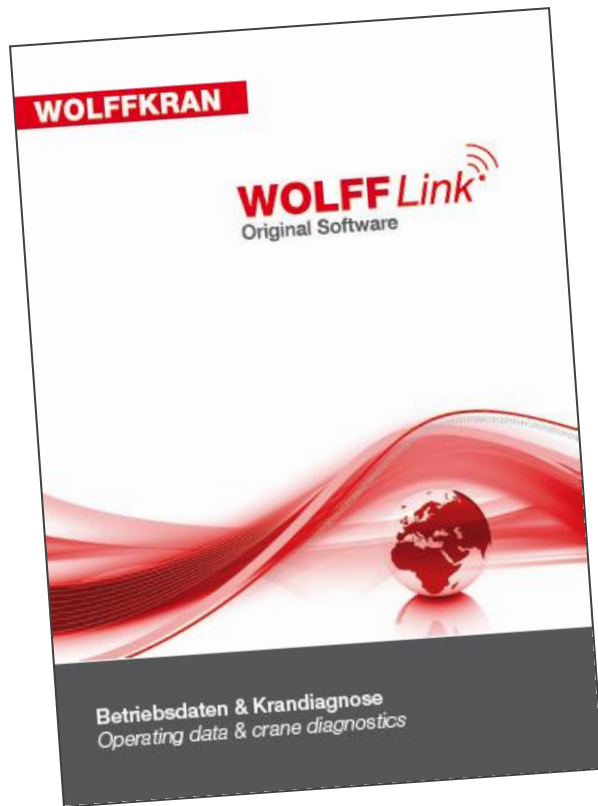
# Regular maintenance and crane inspections contribute significantly to accident prevention

- Many accidents occur because crane parts are not regularly checked, poorly repaired or inferior spare parts are used
- Cranes must be inspected in terms of content and timing according to:
  - Recommendations of the manufacturer
  - Applicable national law
- Criteria that are checked and qualification of staff performing the inspection depend upon the type of inspection

Frequency	Qualifications	Operator	Designated person	Competent Person	Expert engineer
<b>Daily inspections</b> (examples: Visual inspection, mechanism, brakes, indication devices, ropes...)		✓	✓	✓	✓
<b>Frequent inspections</b> (examples: hydraulic, lubricants, hooks, connections, wearing of the brakes, anchorage...)			✓	✓	✓
<b>Periodic inspections</b> (Functional tests e.g: steel structure and rails, components...)				✓	✓
<b>Thorough inspections</b> (examples: Dismantling, vibration, noise, corrosion, brake connections...)					✓

Source: CECE Guide “What is a safe tower crane” published in March 2012

# Online crane diagnostic tools can support staff with crane maintenance, thus increasing safety

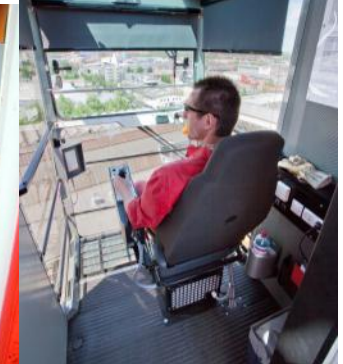


## **WOLFF Link is a crane diagnostics software featuring:**

- Read-out of the following data
  - Current operating conditions and signals
  - Crane failure and failure memory
  - Machine and operating data over a defined period of time
- Management of all operating and machine data in a comprehensive database
- Administration of entire crane fleet
- All WOLFF cranes are equipped with a teleservice module designed to account for the future trend of data transmission via the internet

# Qualification of staff responsible for the installation, maintenance & operation of cranes is critical for safety

- Operating companies are obliged to provide qualified staff for the assembly, maintenance and operation of cranes that is:
  - Professionally trained and adequately experienced (good knowledge of cranes)
  - Familiar with occupational health and accident prevention regulations
- Manufactures support operating companies by offering theoretical and practical training
- **WOLFFKRAN School of Cranes** offers the following courses:
  - Assembly and Practical Training
  - Climbing
  - Electronics



Are industry **standards necessary**  
**to ensure the qualification of staff**  
responsible for the operation  
and maintenance  
of cranes?



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# While efforts to make cranes safer continue, the focus should also be on standards for staff qualification

National legislation and jointly defined product standards

## Manufacturers' Responsibility

Design, construction & manufacture of cranes according to applicable directives

Delivery all required certificates, documents, instructions

Accreditations  
Certifications  
Licenses

## Operating Companies' Responsibility

Assembly/Dismantling

Operation

Maintenance

Routine inspections

Project Planning  
Manuals  
Training  
etc

# Members of CECE Tower Crane Section committed to taking up the challenge....

What is a "Safe" Tower Crane?



Safety Recommendations of Tower Cranes' Manufacturers



**Latest CECE guide with manufacturers recommendations on the safe installation, operation and maintenance of tower cranes**



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