

KRANUNION

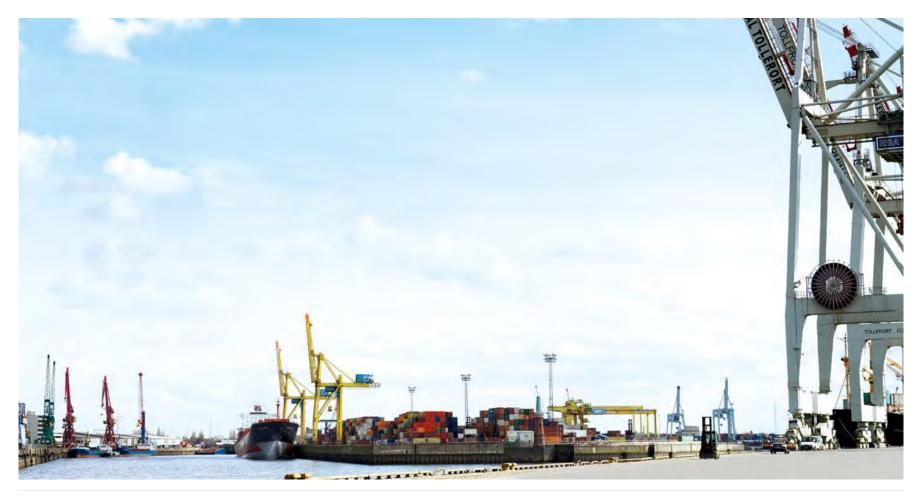
EFFICIENCY IN BULK HANDLING

The 12th Trans Middle East 2016

27.10.2016, Jeddah, Saudi Arabia



KRANUNION XL-ENGINEERING





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THE MEMBERS OF KRANUNION











KIROW - is the world market leader for railway cranes and slag pot carriers.





KIROW, ARDELT AND KOCKS ARE MEMBERS OF KRANUNION.



KRANUNION
KIROW ARDELT KOCKS

ARDELT - is the world market leader for double jib level luffing cranes.







KRANUNION KIROW ARDELT KOCKS

KOCKS - is the world market leader for Goliath cranes and a pioneer in the development of container cranes.





INDUSTRY FOCUS

BETTER UNDERSTANDING OF THE LOGISTICS PROCESS







Tracklaying



Shipyard



Container handling



Bulk handling



General cargo handling



BULK HANDLING



KIROW, ARDELT AND KOCKS ARE MEMBERS OF KRANUNION.



INTRODUCING THE TUKAN-K FROM ARDELT





ARDELT HISTORY

1902 – founded by Robert ARDELT

1936 – grant of the patent for the articulated luffing jib system





AUSGEGEBEN AM 24. JANUAR 1998

REICHSPATENTAMT PATENTSCHRIFT

A 66631 X1/25b

Tag der Bekanntmachung über die Erteilung des Patents: 2. Januar 1936

Ardeltwerke G. m. b. H. in Eberswalde*)

Wippkran

Patentiert im Deutschen Reiche vom 19. Juli 1932 ab.

Die Erfindung bestifft einen Wippkran, vorgeschlägen, bei viergliedrigen Lenker-lessen Spitzenausleger von einem mehrglied-systemen, also bei sogeniannten Lenniskonden-tigen Lenkersystem getragen wird- Die Aust-Leite Länge des einen Lenkers agabe der Erindung besteht darin, das Lenker-system so auszubilden, daß nicht nur einer Wippbewegung der Spitzenrolle auf einem bestimmten waggerechten Wege möglich ist, sondern daß die Spitzenrolle nach Belieben

deren Ausleger sich um einen festen Punkt des Krangestelles dreht, schon vorgeschlagen, den Ausleger zweiteilig auszuführen und den Winkel zwischen den beiden Teilen des Aus-Hegers versichen den benehr neuen des zuset legers versinderlich zu machen. Auf diese Weise wird zwar erreucht daß die Spitzein-reile auf beiteigte Puokte einer Pläche von der Form eines Kreistingabschnittes ein-stellbar ist, jedoch ist es bei diesen Vorschlä-ken nicht möglich, in einfacher Weise eine

veränderlich zu gestalten, indem der Zug- 35 lenker durch Seile gebildet wurde, welche nach Bedarf eingezogen werden können. Bei

Spitzenausleger von zwei verschiedenartigen Lenkern getragen wird, nämlich von einem 50 Kreislenker, also einem Lenker, der um einen festen Punkt des Krangestells drehbar ist, und von einem zweiten Lenker, dessen Fußgelenk von einem zwerten Leiner, dessen zugezeitet vermittels einer Kurvenbahn oder einer Kurvenbahn oder einer Kurbel relativ zum Krangestell auf einer 55 bestimmten Bahn beweglich ist. Detartige Wippsysteme sind für Krane mit einem auf eine Strecke beschränkten Spitzenrollenweg wagerechte Bewegung der Spitzenrolle zu erhalten; weiterhin liegen die Vorrichtungen auf Verstellung des Winkels seiner ungänge lich in der Auslegerkonstruktion. Es ist auch

*I Van dem Patentzucher ist als der Eefinder angegeben worden: Hermann Sax in Eberstoolde.





XL EFFICIENCY FOR THE MOST MODERN TERMINALS

The crane for the crane operator

Fully electrical drive technology

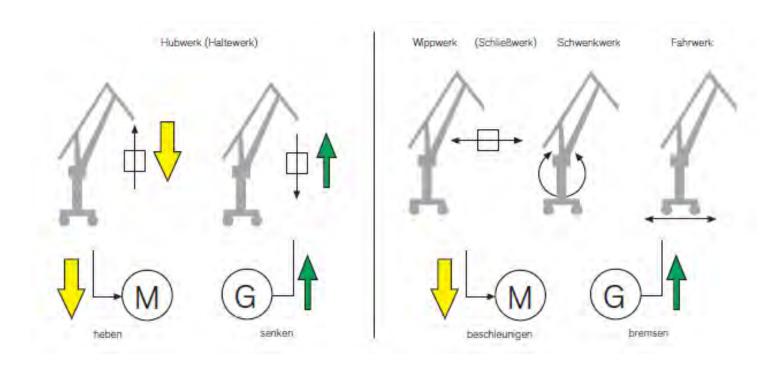
perfect logistics

The adaptive crane – model series Tukan K



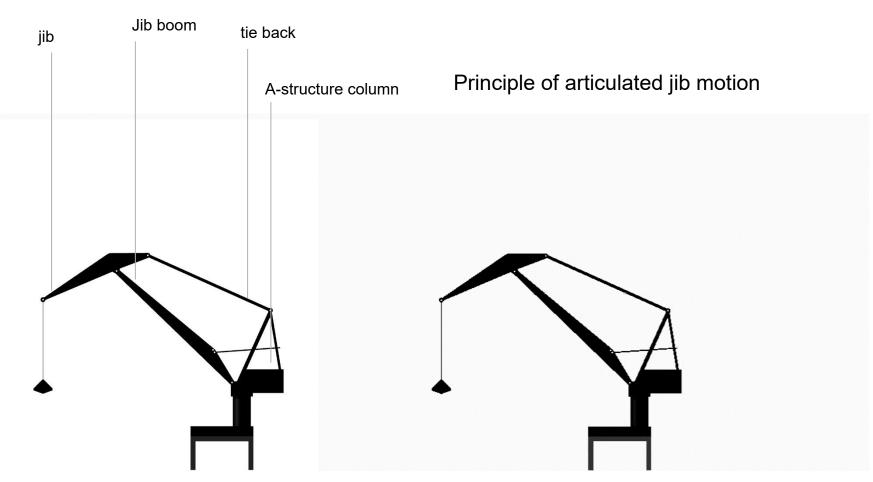
FULLY ELECTRICAL DRIVE TECHNOLOGY

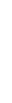
Energy recuperation during fully electrical operation





HIGHLY EFFICIENT MECHANICAL SYSTEM

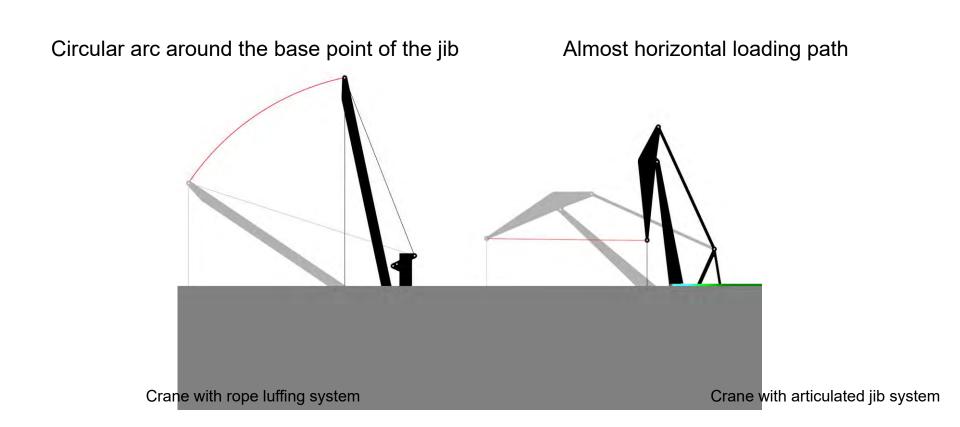




HIGHLY EFFICIENT MECHANICAL SYSTEM



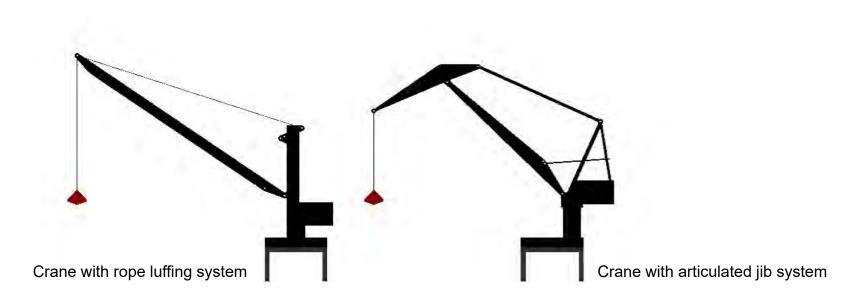
Luffing systems







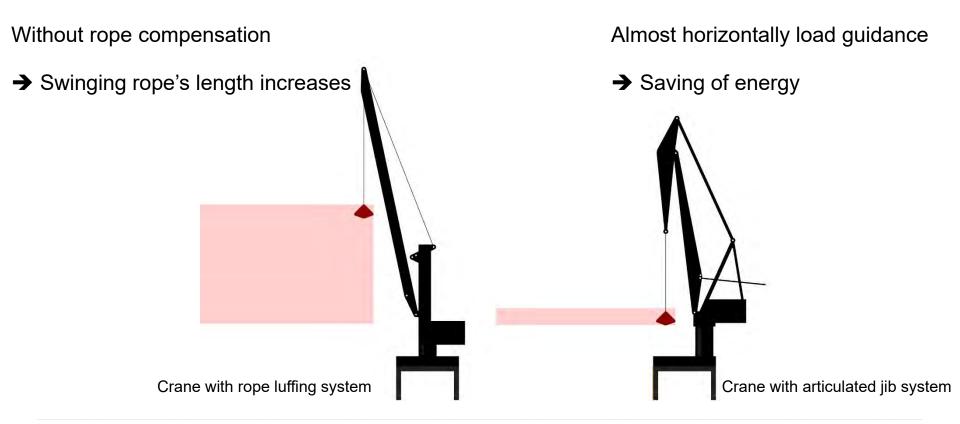
Comparison of the load way without rope compensation on the crane with rope luffing system





ARDELT

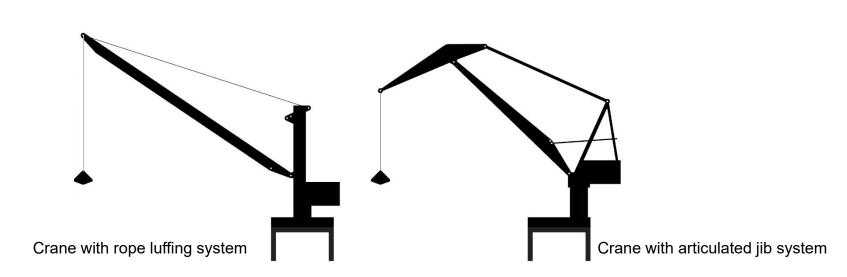
Comparison of the load way





ARDELT

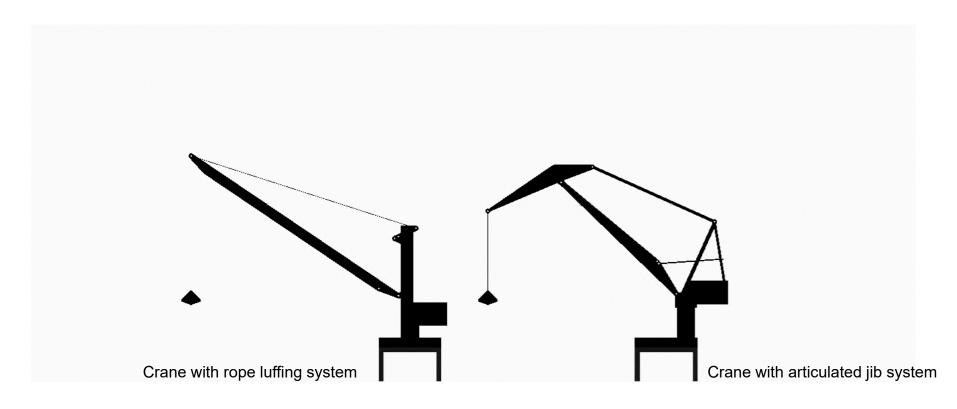
Horizontal load way with rope compensation on the crane with rope luffing system





HIGHLY EFFICIENT MECHANICAL SYSTEM

Horizontal load way with rope compensation on the crane with rope luffing system

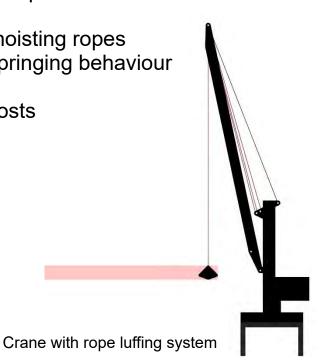


HIGHLY EFFICIENT MECHANICAL SYSTEM

Comparison of the load way

With rope compensation

- → Longer hoisting ropes
- → strong springing behaviour
- → higher costs



Short rope lengths

→ lower costs

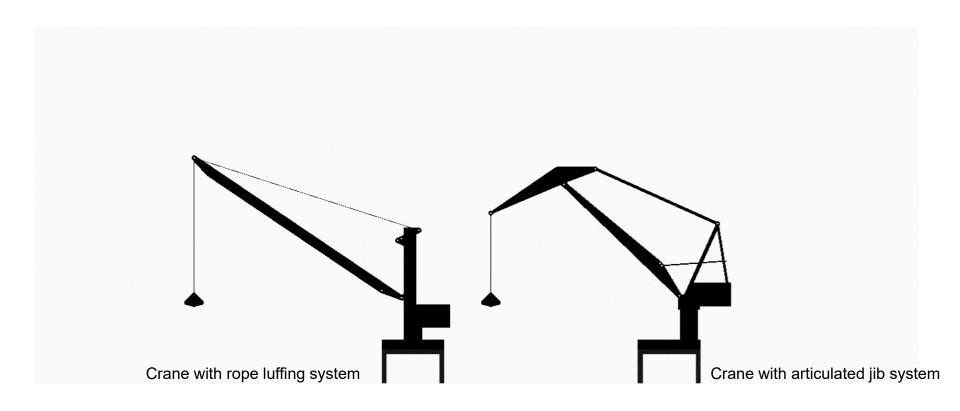


Crane with articulated jib system





Comparison of the swinging way

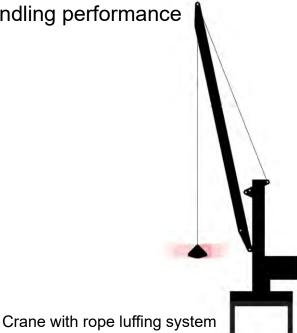




Longer hoisting rope lengths

- → wider swinging deflections
- → longer handling cycle time

lower handling performance



Shorter swinging length

- → smaller swinging deflections
- → shorter handling cycle time
- → higher handling performance

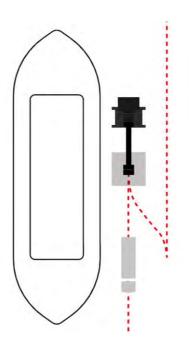




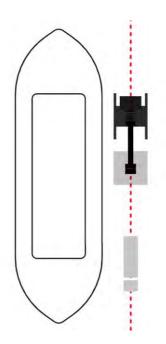




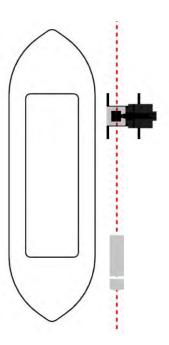
Crane with rope luffing system without high gantry



Crane with rope luffing system with high gantry

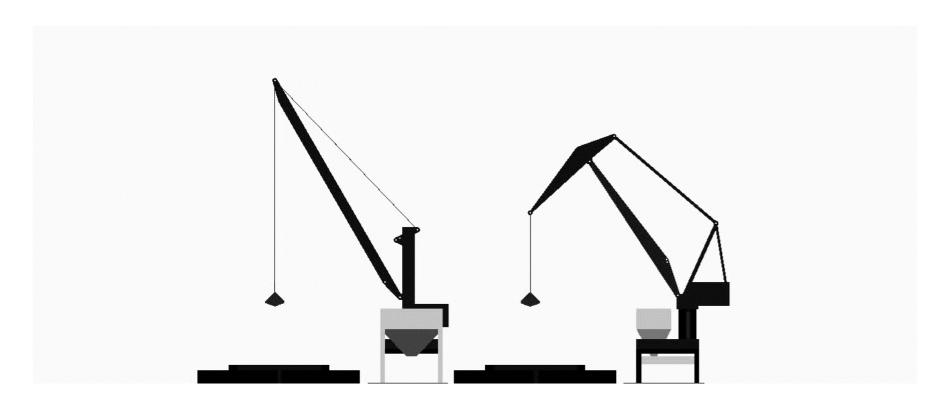


Crane with articulated luffing jib system with high gantry





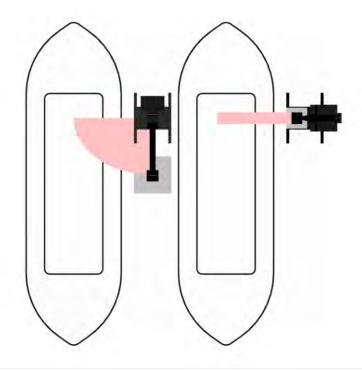
Comparison of unloading concepts



Crane with rope luffing system



Comparison of unloading concepts



Rope luffing system Articulated luffing jib system

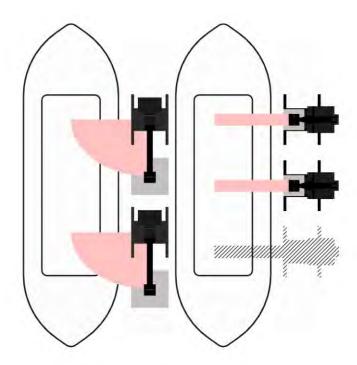
Tukan Kangaroo

No slewing motion

- → shorter load ways
- → more working cycles



The hopper



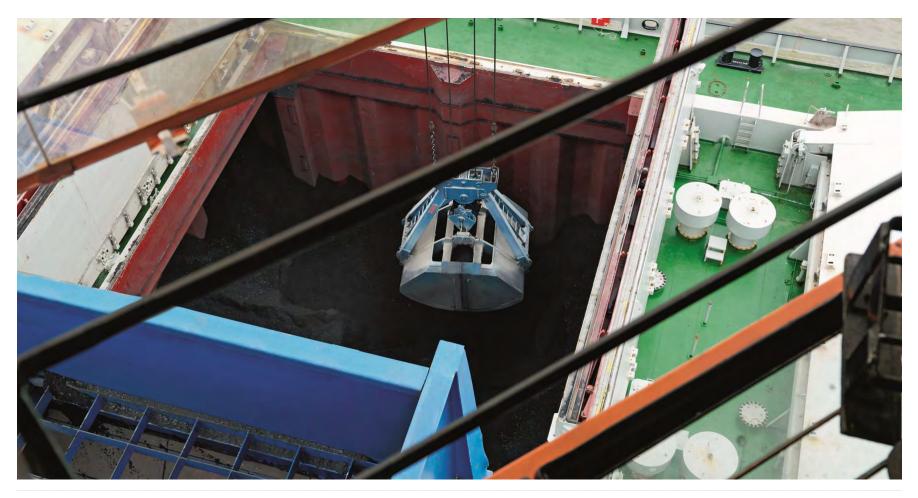
Rope luffing system Articulated luffing jib system

Tukan Kangaroo

Integrated hopper - better access to the hatches

- → less required space on the quay
- → simultaneous operation of several cranes



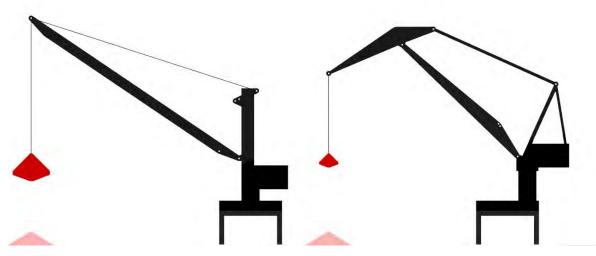




Comparison of grab size for the same quantity of material handled

Achievement of handling performances:

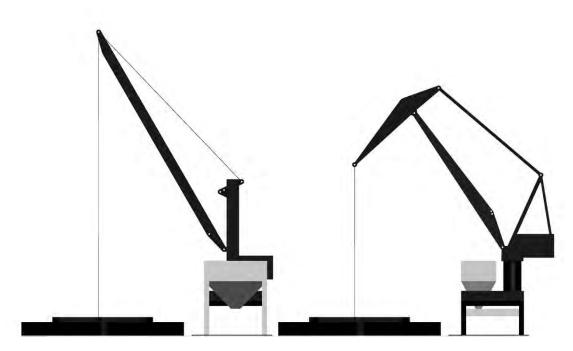
- → smaller grabs can be used
- → smaller grabs → lower deadload
- → reduction of investments and operating costs



Crane with rope luffing system



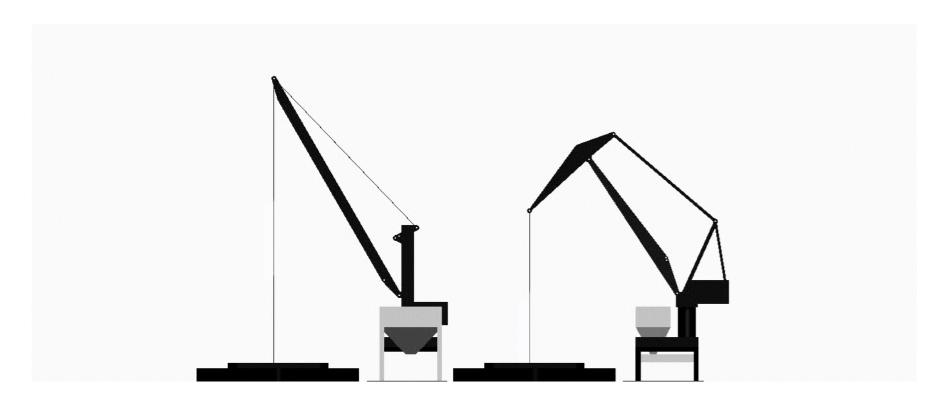
Comparison of swinging of the grab



Crane with rope luffing system



Comparison of swinging of the grab



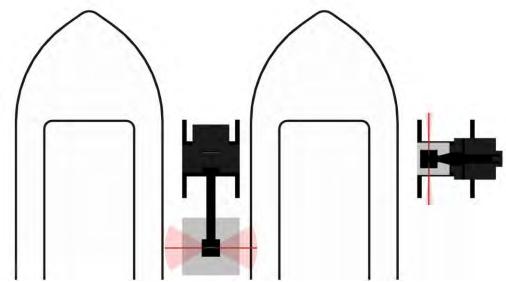
Crane with rope luffing system



Comparison of swinging of the grab

Short swinging lengths ≈ stable rope field

- → low turning and swinging motion of the grab
- → basic linear grab motion ≈ no angular momentum



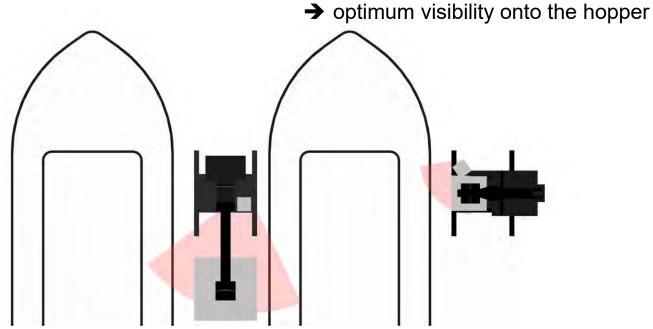
Crane with rope luffing system



Comparison of operator's visibility conditions

Optimum cabin arrangement near the hopper

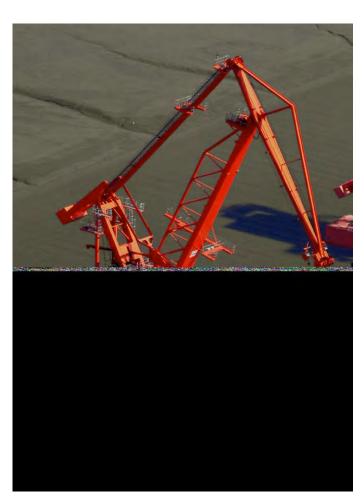
→ sphere of action and bulk hopper are always in the crane operator's field of view



Crane with rope luffing system



TUKAN-K | THE SPECIALIST FOR HANDLING BULK MATERIAL



- Double jib principle
- Fully electric drives
- Dead weight compensation
- → low operating & maintenance costs
- → high level of labour productivity
- → long service life

"An efficient green solution for a clean environment"



THANK YOU FOR YOUR ATTENTION

