

# 42 KUENZ ASCS IN FULL OPERATION AT TM2 IN MOROCCO



David Moosbrugger, Managing Director, Kuenz

In 2016, Kuenz stood out amongst strong international competition and was awarded a contract with APM Terminals, a subsidiary of Maersk Group, to deliver 42 automated stacking cranes (ASCs) to a new automated terminal in the Port of Tanger, Morocco.

Kuenz delivered all 42 cranes over the first two phases of the project from 2017 to 2019, with the terminal officially opening in June 2019. The cranes, which run full-time in automatic mode, have already handled 1 million TEU.

## OPTIMIZING THE ASSEMBLY PROCESS

Kuenz developed a completely new concept for on-site assembly. Hinges were installed between the main girder and the beams, allowing the cranes to be assembled on the ground and easily erected afterwards. The process proved successful, allowing complete assembly of five cranes within a three-day timespan

## CUSTOMER FAMILIARITY WITH KUENZ CRANES

APM Terminals is one of the world's leading port operators. "The main reason for the latest success in Tanger was the high satisfaction of the customer with the cranes in Rot-

terdam," said Guenter Bischof, CEO of Kuenz.

APM Terminals MedPort Tanger is a Greenfield project, similar to the Port of Rotterdam. Kuenz is also in charge of service and maintenance of the cranes in Rotterdam as well as for the cranes in Tanger.

## NEW STACKING CONCEPT

In terminals such as this, large ships are loaded and unloaded using ship-to-shore cranes. In the stacking area, all incoming and outgoing containers are temporarily stored before being loaded onto trucks or other vessels for further transport. The stacking area in Tanger is organized into 21 storage blocks, with each block being operated by two fully automated Kuenz ASCs.

The blocks are arranged parallel to the quay. The transfer zone is serviced by manned straddle carriers.

Siemens has been chosen to be the component and automation supplier for the cranes. The latest state of the art technology for automating the cranes has been used, the entire process is fully automated and only two remote operation stations for the 42 cranes are needed.

The cranes are prepositioned by the gantry and trolley drives, the fine positioning system

is done by a micro motion system between the headblock and spreader. A 3D Laser system is used to scan the target and therefore the containers can be positioned with a very high accuracy. The cranes stack five containers high and 11 containers wide. The speeds range from 210m/min for the gantry, 72m/min for the trolley and 42m/min for the hoist with full load. The entire ASC blocks have been simulated before starting the design and the simulation was the basis for the speeds.

A Siemens Block Management System (BMS) is the link between the TOS and the crane. The BMS optimizes the moves of the cranes and is a key element to allow the terminal to operate as efficiently as possible.

## NEW TECHNOLOGY

An additional key to Kuenz's success is to an entire new generation of stacking cranes. In contrast to a traditional construction, the main girders of the new cranes are designed with a round, aerodynamic shape which provides many advantages to the customer. One resulting benefit includes a lower wind attack area requiring less drive power, leading to a lower energy consumption and reduced dynamic forces on the drive wheels, crane tracks and civil works. Besides the operational



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benefits the system also provides cost savings in the area of service, maintenance and exchange of parts. Kuenz expects that the operational costs for the new generation stacking crane, supplied to Tanger, compared to the traditional design to be significantly lower.

The proven hoisting system, where the ropes are running directly from the drum to the headblock has been reused in Tanger. The experience with this system in Rotterdam and Hamburg has been very successful

and the hoist system has been running at those locations for several years.

Also, the gantry traveling concepts has been reused. The key for the concept is the horizontal connection of the sill beam to the gantry travelling gears, forces are tremendously reduced and therefore lifetime of wheels and rails are significantly higher compare to traditional designs.

This whole concept makes the new Kuenz ASCs the lightest and most efficient

cranes in the world.

Apart from cranes for the intermodal container handling, automated stacking cranes have emerged as a bestseller for Kuenz in recent years. More than 120 stacking cranes from Kuenz are currently in operation in Hamburg, GER and Rotterdam, AMS, with more than 20 in the process of being commissioned. The 42 ASC's in Tanger are the first cranes Kuenz has installed on the African continent.

## ABOUT THE AUTHOR

David Moosbrugger is Managing Director of Kuenz. David is in charge of sales and engineering at Kuenz. Before becoming Managing Director of Kuenz, Moosbrugger worked in engineering, project management and sales. He lived in the US for several years working for Kuenz America.

## ABOUT THE ORGANIZATION

Founded in 1932, Kuenz is an Austrian based crane manufacturer. The company offers innovative and efficient solutions for container handling in intermodal operation and automated stacking cranes for port and rail yard operations.

Today, Kuenz is the market leader in intermodal rail-mounted gantry cranes in Europe and North America. While the

group's headquarters is located in Hard, Austria, additional fabrication facilities are located in Gross St. Florian, Austria and Kechnec, Slovak Republic.

Kuenz America, Inc. in Raleigh, NC is the group's sales and service organization in North America. Kuenz expanded again in 2018, adding another sales office in Agrate Brianza, Italy.