

Case Study

Kuenz RMG Project





Industry
Port infrastructure



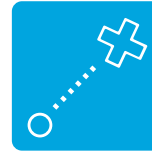
Client
Kuenz



Cargo
4 RMG cranes



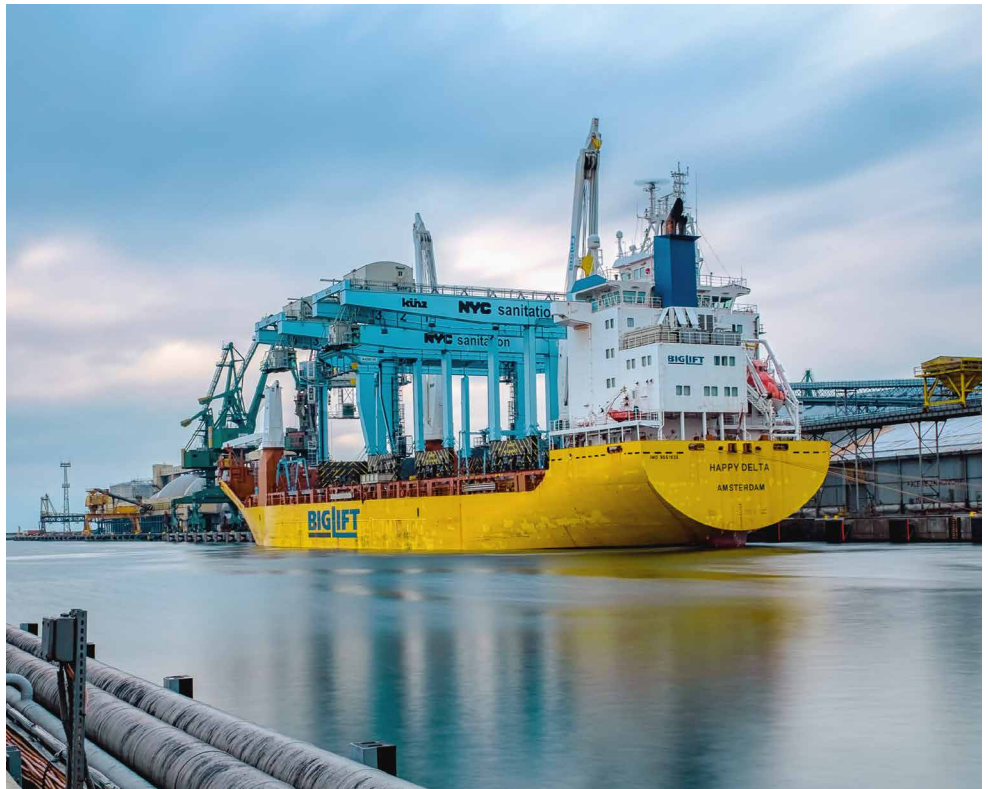
Max. Heavy Lift
301 MT each
(45.63 x 14.17 x
25.60 m)



**Origin and
Destination**
From Gdynia,
Poland to New
York, USA



Project Highlight
Cost savings
due to creative
engineering
solution



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Challenges

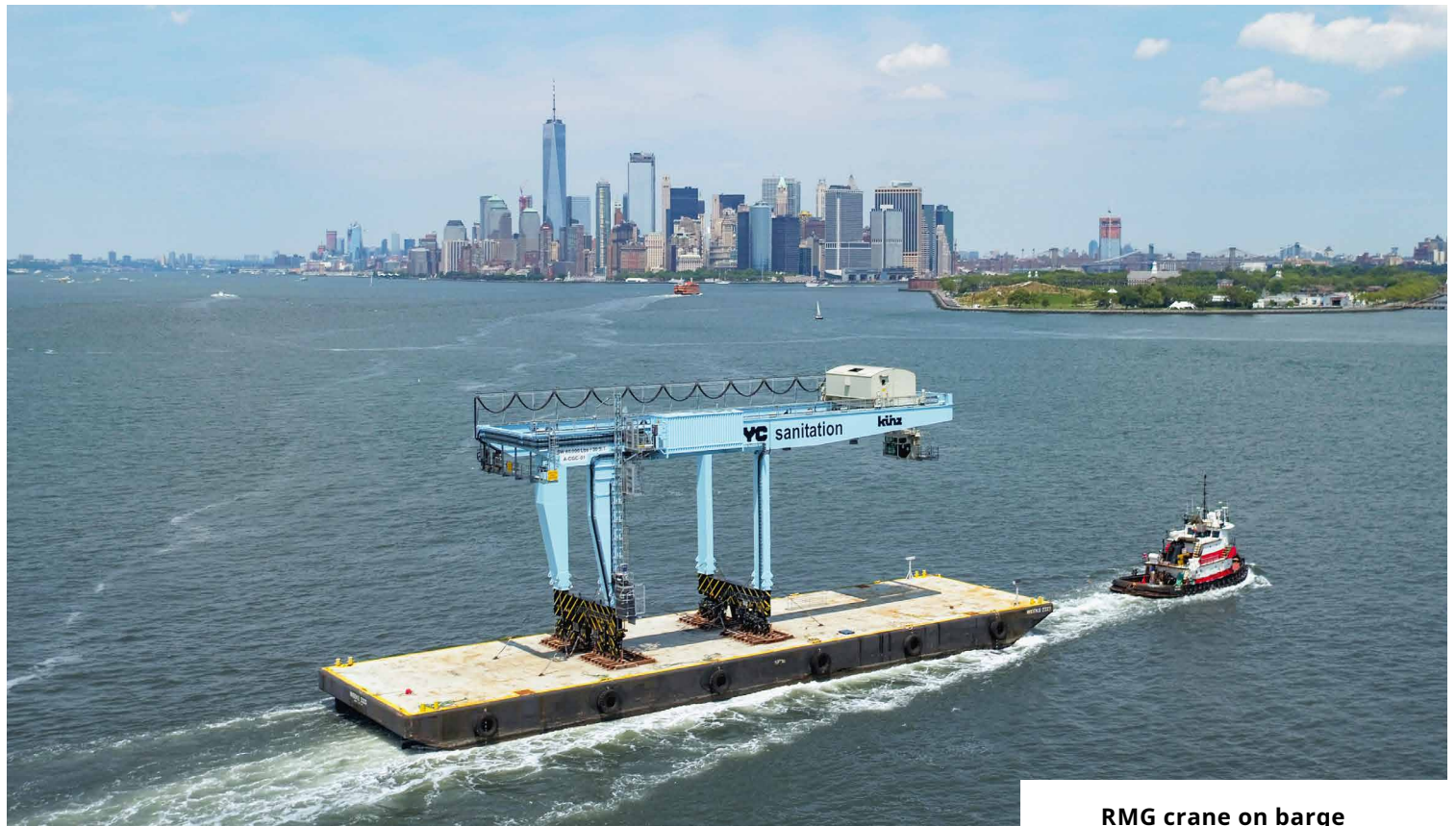
- Restrictions caused by busy ferry traffic at Upper Bay and East River
- Tide flow restrictions in the East River, affecting transit times and scheduling
- Limited lifting options and positions during offloading
- Placement of load spreading devices on the barges with a tolerance of only 10 millimeters
- High winds, which played a significant role due to the RMG cranes' unfavorable center of gravity

Case Study: Kuenz RMG Project

The project was the first large-scale transportation project that Künz GmbH (Kuenz) had awarded to deugro. It involved the movement of four rail mounted gantry (RMG) cranes. As such, this first-time collaboration experience would set the course for any further working relationship between deugro and Kuenz.

One of the significant factors that worked in favor of deugro to win the bid was the offer of engineering services from dteq Transport Engineering Solutions (dteq), a company of the deugro group. dteq

was involved from the onset of the planning process and created value through creative engineering and experienced staff on site at all locations.



**RMG crane on barge
against the backdrop of
the New York skyline**

Location

deugro delivered the RMG cranes to two different facilities in Southwest Brooklyn and in Upper East Side, Manhattan, New York. Against the backdrop of the iconic skyline, first the vessel and then, after discharging, the barges had to overcome busy ferry traffic on the last leg of the transportation route. The traffic in the Upper Bay and East River restricted transit and lifting times, and created wakes that we had to account for during the lifts to rails at the destination. Furthermore, the receiving site was restricted in space and therefore caused limited lifting options and positions during offloading.

Scope of work

deugro, in cooperation with dteq, conducted several site surveys and meetings at the origin in Gdynia, Poland and the destination in New York City in order to find the best engineering solution for this shipment. deugro's scope included extensive engineering work, followed by receiving the RMG cranes at the quay in Gdynia; loading onto the vessel, including lashing and securing; ocean transportation to New York City; transfer to barges, including lashing and securing; barge transportation; and, finally, lifting to rails at each site/terminal.

» Using a unique rotating crane, we performed the lift while keeping the barge and crane out of the way of river traffic. «

Matthew E. Fielder, Vice President Specialized Transport

Project execution

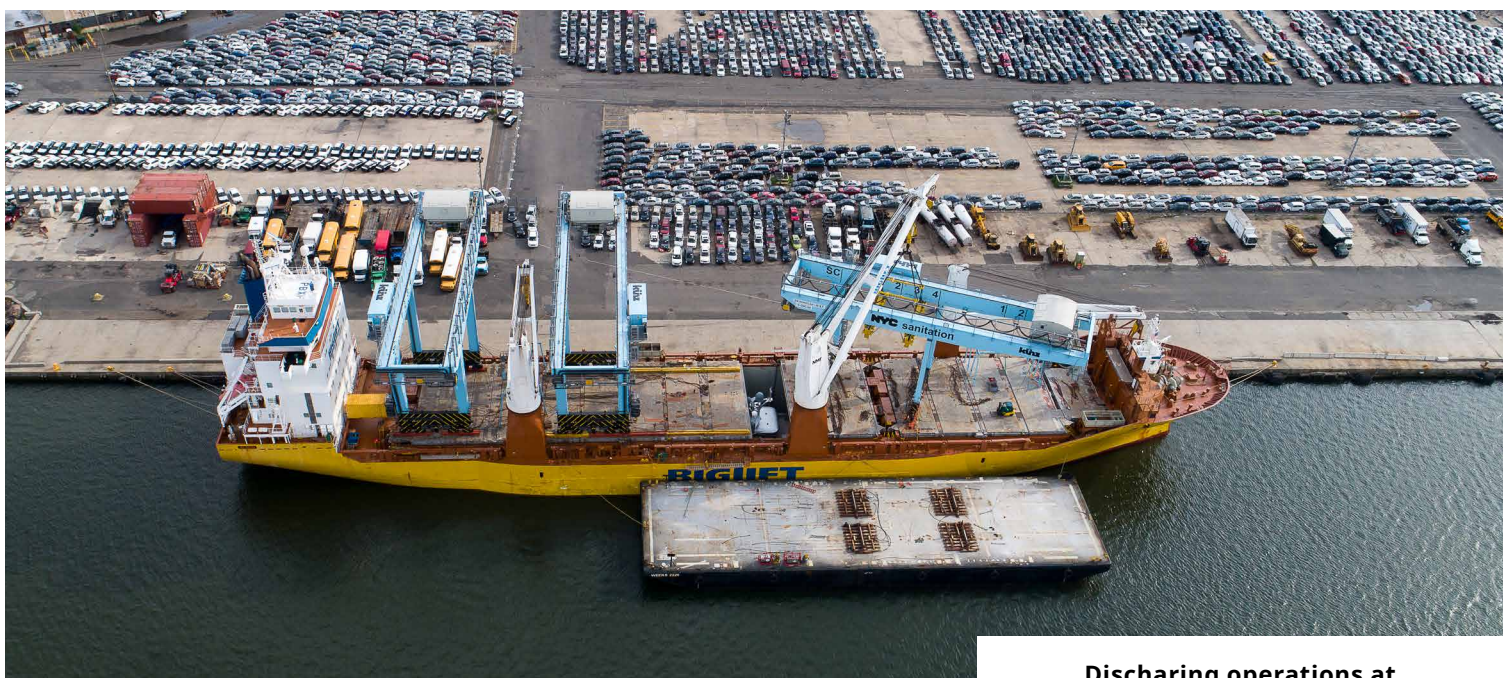
The fact that all RMG cranes were fully assembled during the whole execution enabled the client to save valuable time on assembly and disassembly and to save storage costs in New York. In terms of the transportation, this approach caused some challenges for all project team members and resulted in extensive engineering work.

Due to the RMG cranes' unfavorable center of gravity, wind played a significant role during the whole operation. Both at the origin in Gdynia and at the destination in New York, operations were delayed due to the difficulties we encountered with the wind speeds, which had an impact on the cranes while they were being lifted. To complete the operation in a timely manner, deugro and its partners utilized a set of winches in order to hold 301 metric tons still in the air at a height of over seven meters. Thanks to this solution, the loading in Gdynia was safely and efficiently executed, so the vessel

MV *Happy Delta* was ready in time for its ocean voyage to New York City with all RMG cranes on board.

» Due to the RMG cranes' unfavorable center of gravity, wind played a significant role during the whole operation. «

Once the vessel arrived at Bayonne Port Terminal, New Jersey, the transshipment operations onto barges took place, using one barge for each crane. The convoy transited the Upper Bay and East River in New York City, passing the Statue of Liberty and the iconic Brooklyn Bridge. Frequent ferry traffic and tide flow restrictions on the East River between Manhattan and Brooklyn affected the transit times and scheduling of the project and required flexibility and detailed planning.



**Discharging operations at
Bayonne Terminal, New Jersey**

» With a tolerance of only 10 millimeters, there was no room for error. «

Precision work

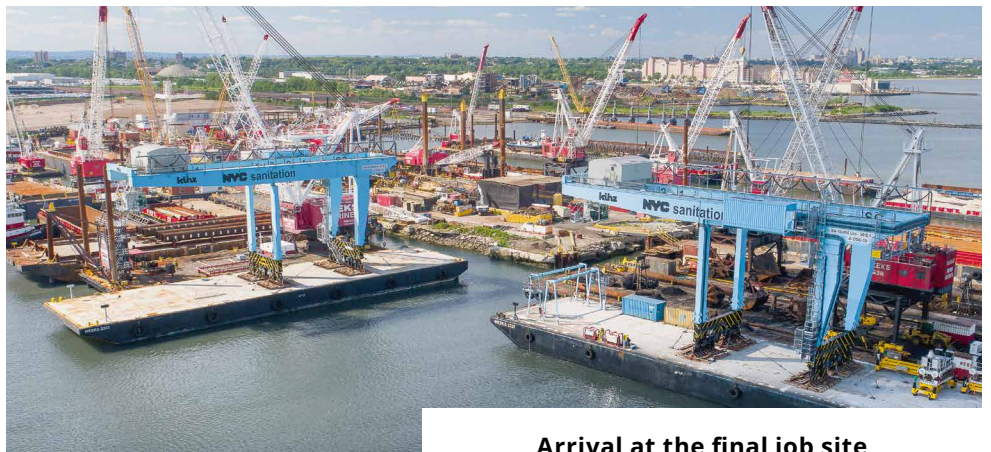
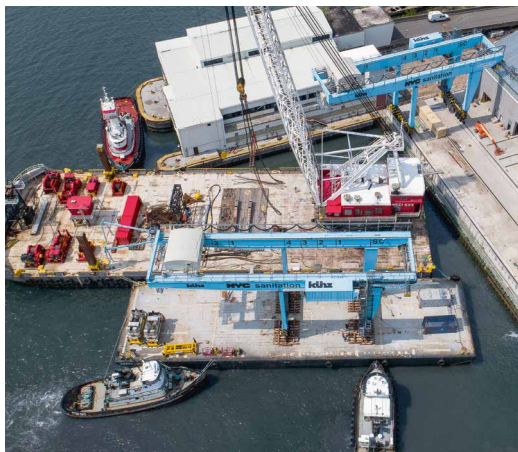
The offloading operations at the extremely congested facility at East 91st Street in Southwest Brooklyn required the full commitment of all team members. One of the biggest challenges was making sure the load spreading devices were placed in the exact position on the barges in order to match the bogies of the cranes. With a tolerance of only 10 millimeters to set the cranes on top of the rails on the load spreading devices, there was no room for error. Any oversight would have caused significant delays to the entire operation. The successful placement on the barge within this tight tolerance was only possible with detailed and engineered planning and exact execution.

In regard to the lift operation, the maximum outreach required to be able to set the RMG cranes to rails in Southwest Brooklyn, and yet clear the boom of the cranes under the boom of the barge crane, was calculated to have an extreme radius of over 35 meters. This would have caused a substantial restriction of cranes that could successfully perform the lift. However, thanks to dteq's creative engineering solution, deugro was able to assist Kuenz in reducing the weight of the RMG cranes:

A smaller part of the cranes had been dismantled in order to be able to handle the units more flexibly. The flexibility gained allowed us to utilize the cabin trolley on the cranes to act as a counter-ballast weight and shift the center of gravity closer to the barge crane, and it enabled deugro to successfully utilize an alternative heavy lift floating crane. This crane carried out the lifts at a faster pace, thanks to its 360-degree rotation capability, while still safely performing within the rated chart capacity. Without this weight reduction and ability to utilize the cabin trolley as ballast weight, the lift could not have been performed in this efficient and safe way.

The combined and well-engineered deugro and dteq solution resulted in significant cost savings for our client. During the debriefing session, Kuenz was extremely satisfied with the overall project result and the great cooperation of all teams involved.

Experience the complete transportation and watch the project video on YouTube: deugro group – Kuenz RMG Project



Arrival at the final job site, a facility in Southwest Brooklyn