

# CASE STUDY

## \ FROM CHALLENGE TO CONQUEST: SMT SHIPPING'S JOURNEY TO A 25% PRODUCTIVITY BOOST







## \ INTRODUCTION

Our customer, SMT Shipping, has achieved significant transshipment advancements, particularly in West Africa on the TSV Conakry Pearl. This region presents a unique challenge due to its shallow shores, extending 10 to 20 meters in depth for up to 10 miles. To be profitable, you will have to ship your cargo with colossal ore carriers. These cape-size vessels can export up to 200,000 tonnes.

However, these fully loaded enormous vessels, 18 meters in depth, cannot approach the shore. The traditional solutions, like constructing extensive jetties or dredging long channels, are economically unviable. This is where SMT Shipping's expertise comes into play.

The company owns and operates vessels with a unique combination of high-loading capacities and shallow drafts. "This allows us to transport a significant amount of cargo from the terminal, usually located in a river in West Africa, to the open sea. We then use large cranes to transfer the cargo to Capesize vessels, also known as Newcastlemax bulk carriers. For rapid and voluminous transfers, a highly efficient grab is essential", explains Marc Smeets, Technical Project Manager at SMT Shipping.

With revenue calculated per ton, the challenge is clear: "We need to optimize the continuous cargo transfer process to maximize our profit."

Read the complete case study to discover their challenges, background and results.





## \ ABOUT SMT SHIPPING



SMT stands for innovation and integrity globally, with a 1700-strong global workforce and offices in Poland, Cyprus, the US, the UK, and the Netherlands. Marc Smeets has been working here as a Technical Project Manager for six years, and he's now working on a transshipping project in Sierra Leone.

This global maritime group of companies is involved in the shipping and transshipment of dry bulk cargo. Over the years of expansion, they entered into Joint Ventures, acquiring vessels to optimise their customers' cargo operations and adding new ships to their approximately 62-vessel fleet.

### SMT has four service divisions:

- bulk carriers and general cargo carriers
- transshipment
- cement carriers
- multi-purpose carriers

Renowned for transporting dry bulk from all kinds of ore and grain to scrap and salt, they have built their reputation as a trusted tonnage provider and business partner in the dry bulk market. Their cargo clients include mines, raw material end-users, traders, importers and exporters.



↑ The Nemag scissors grab

## \ THE CHALLENGE

### THE SEARCH FOR THE OPTIMAL CRANE AND GRAB COMBINATION

Originally, SMT's vessels in West Africa transferred bauxite. When the bauxite market collapsed, SMT was compelled to shift to iron ore transfer for a client in Sierra Leone. This transition posed challenges due to the differing specific gravities of bauxite and iron ore.

Bauxite is lighter than iron ore, respectively around 1.6 versus 2.5 tonnes per cubic meter. Therefore, each material asks for a unique type of grab that maximizes efficiency without compromising the safety and integrity of the crane system.

Although they purchased a specialized bauxite scissors grab from Nemag, the differing weight characteristics of iron ore presented issues with crane overloading, impacting the time of each unloading cycle – a vital factor in their revenue model calculated on a per-ton basis.

Marc Smeets explains that SMT now had three different grabs at their disposal. None of them were ideally suited for the specific characteristics of the iron ore they were now transferring. "We had one too-small clamshell grab, a too-big bauxite clamshell grab, and the big bauxite scissor grab from Nemag."

It sounds like a luxurious position to have three grabs available. "Our technical management wasn't so eager because we already had three expensive grabs on board. But I was fully convinced that we needed a new grab. Since they all didn't enable optimal productivity".



## THE SOLUTION

# ENABLING A HIGHER EFFICIENCY RATE WITH THE NEMAX GRAB

Facing a challenge with their grab selection for iron ore transshipment, SMT Shipping began exploring the best possible grab solution. They had already experienced Nemag's craftsmanship with their scissors grab purchase.



↑ Martine with family during a Nemag family event

↑ The FAT (Factory Acceptance Test) of SMT Shipping at Nemag Factory

### THE SOLUTION

NemaX grab



"Martine, account manager at Nemag, already told us about the NemaX grab. So we returned to Nemag, where she shared a pretty promising presentation. We could also see and experience the NemaX in operation at a steel manufacturer in IJmuiden near Nemag. This live demonstration was very convenient and showed first-hand how satisfied everybody was.

In addition, she calculated and presented data comparing the cycle times of various grabs, revealing that the NemaX showed a remarkable productivity improvement of 14% and 19% compared to the clamshell and scissors grabs with similar specifications. This gave us valuable insights into the performance difference and a clearer view of the total cost of ownership. These numbers also convinced the commercial manager to give this investment a try".

The NemaX grab stood out because of its efficiency. Traditional clamshell grabs require a significant amount of wire to be pulled in and out, taking valuable time with each cycle. In contrast, the NemaX grab uses a fraction of the wire length compared to standard grabs. In the case of SMT's small clamshell grab, the wire length is 13,0 meters compared to the 8,7 meters of the NemaX grab.

"Saving seconds on each cycle doesn't seem much until you calculate the impact on an annual basis."

Although the productivity looked promising, Marc still had to convince his boss. "Our owner always thought Nemag was a bit like the Mercedes or Ferrari of grab builders - the highest quality but overpriced when you only need to get from A to B.

He later discovered that the price difference between Nemag and its major competitors wasn't significant. This ended his long-standing perception when he learned that Nemag's prices are reasonably in line with the market.

"High-skilled operators combined with the technical advantage of NemaX meant our overall efficiency would significantly improve. Recognizing the potential of the NemaX grab, as it is also co-developed with Delft University of Technology, we decided to invest in it."

On comparing its productivity with other grabs in the Sierra Leone use case, NemaX emerged superior due to its speed. Reaffirming the notion: faster transfer times result in higher profits.



Watch  
the nemaX  
in action

Scan or click the QR code

## THE RESULTS

A 25% INCREASED  
PRODUCTIVITY, THREE MONTHS  
ROI AND EASIER MAINTENANCE

AN EXCELLENT  
DECISION

NemaX grab



**"This NemaX grab paid itself back  
more than four times in its first year."**

Furthermore, the NemaX grab demonstrated superior safety and maintenance features. Breakdowns are annoying, tedious, and expensive if you're on a ship in West Africa. With fewer moving parts than the traditional clamshell grab, Marc Smeets experienced zero breakdowns after transferring 6 million tons in the first year.

Maintenance was also more straightforward. Technicians needed to climb up to service a clamshell grab, but the NemaX's design allows for easy access from the ground.

Following the integration of the NemaX grab into SMT Shipping's operations, the company witnessed a remarkable surge in productivity. The crew had to get used to the new grab in the first weeks.

But after their first month, the handling rate went from 1000 to 1250 tonnes per hour. The NemaX Grab boosted productivity by 25% compared to the previous NemaMag scissor grab, which wasn't optimally suited for iron ore.

The right grab for the right job in this continuous transshipment process was an excellent decision - despite the other three available grabs at the ship. The stark improvement in performance resulted in an exceptional return on investment period of less than three months.

The grab eliminates the risks associated with working at heights, especially on a moving vessel at open sea.

It wasn't just safer to conduct maintenance. Unlike a clamshell grab with eight sheaves and eight hinges, the NemaX grab only has two sheaves and one hinge. Fewer moving parts and easier access contribute to faster and more efficient maintenance processes. So, in addition to the productivity increase, the grab is also safer, easier and faster to maintain.





**“It’s very exciting to have one grab for wet ore and another grab for both wet and dry ore.”**

**MARC SMEETS**

## **FUTURE PLANS** THE NEXT STEPS

After seeing the success of the NemaX grab, SMT was eager to keep improving. If you continuously rotate a 180-degree cycle in the open sea, it results in some accidental sideways collisions now and then. The skilled crew of mainly Polish workers welded some modifications. These enhanced the grab’s strength without any downtime of the grab leaving the vessel.

Another challenge for them is West Africa’s seasonal climate. The wet season, stretching from May to October, alters the iron ore’s properties and affects the grabs’ penetration ability. The rain in the wet season makes iron ore a bit heavier but also more lubricant and thus easier to penetrate. In the dry season, the ore is harder to penetrate and requires a heavier grab for the best performance.

However, a heavier grab designed for dry material underperforms in handling wet ore due to its extra weight. So consistent efficiency levels are a challenge to sustain and usually turn into a compromise.

After the success of the NemaX grab, Marc was interested in buying another grab to further increase their productivity. Open to innovation and custom improvements, Nemag also included the custom SMT adjustments in the new grab that is currently being delivered after a successful factory acceptance test.

Additionally, it has a unique feature to add or remove weight in the tubing of the grab. By changing its gravitational force, this hybrid solution can handle both wet and dry ore well. The second grab allows for more flexibility and functions as a productivity insurance for when the current NemaX grab needs large or unforeseen maintenance.

To conclude, this approach strengthened the partnership between SMT Shipping and Nemag. But it also opened doors for future projects to tackle the unique challenges of open sea operations and ensure optimal performance and durability of grabs.

# DO YOU HAVE THE RIGHT GRAB FOR THE RIGHT JOB?

Any car can get you from A to B. But only some cars offer both reliability and performance. The same goes for grabs. But more importantly, don't bring a road car to a Dakar rally. Use the right grab for the right job, as SMT did.

What does it mean for your business to boost productivity by 25%?  
Grabs are expensive, but an investment that pays itself back quicker than most people think.

Are you ready to boost your unloading productivity, create a safer work environment, and reduce operating costs?

Nemag is here to help. Our grab specialists are happy to advise you on the best solution for your specific situation. Request a performance calculation today - free of charge and without any obligation.

Unlock your productivity potential and schedule your free consultation with Martine:  
[martine.dekker@nemag.com](mailto:martine.dekker@nemag.com).



## NEMAX GRAB

## ARE YOU CONVINCED OF YOUR PRODUCTIVITY POTENTIAL?

Request a quote with detailed pricing information for the highest grab quality with the lowest maintenance costs per ton transferred. We will get back to you within 48 hours.



Request  
a quote

Or send an email with your questions to [sales@nemag.com](mailto:sales@nemag.com).



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