



CONTAINERISED BULK HANDLING

The next generation in clean bulk ports

Case Studies of bulk handling systems to stop dust pollution



Frank van Laarhoven

Who we are?

Established in 1972, we are a leading manufacturer and supplier of container handling equipment for ports and terminals...



Who we are?

We entered the bulk handling market in 2011 with *Revolver* rotating spreader...

WorldCargo
news

Enter a search term



Ports & Terminals Cargo Handling Equipment Shipping & Logistics ICT Automation Multimodal Container Industry Refrigeration

RAM launches "Revolver" bulk handling spreader

News 04 May 2011

RAM Spreaders has come up with a new tipping spreader for lifting and tipping the contents of bulk containers.



Three units of the patented Revolver spreader have been delivered to DP World Adelaide for handling containerised iron ore shipments from the Australian mining company IMX.

The units will be deployed over the lifetime of contract loading around 70,000t of iron ore onto the vessel each voyage.

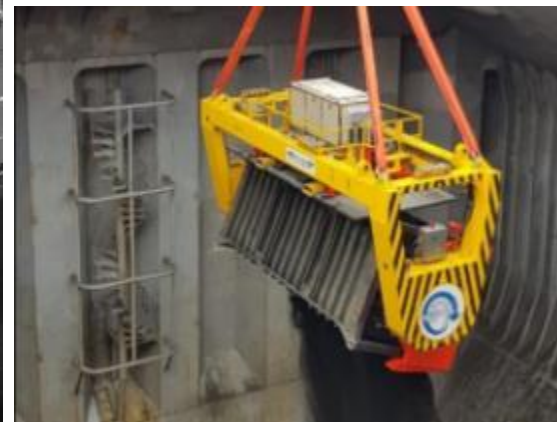
The units at DPW allow containers filled with iron ore to be lifted and tipped into the hold of a vessel. The containers are handled within the port, by rail and at the mine with standard container handling equipment such as straddles and reach stackers.

The project has allowed IMX to export its product quickly with low capital investment whilst meeting all the strict environmental requirements and has allowed DP World to develop new business.

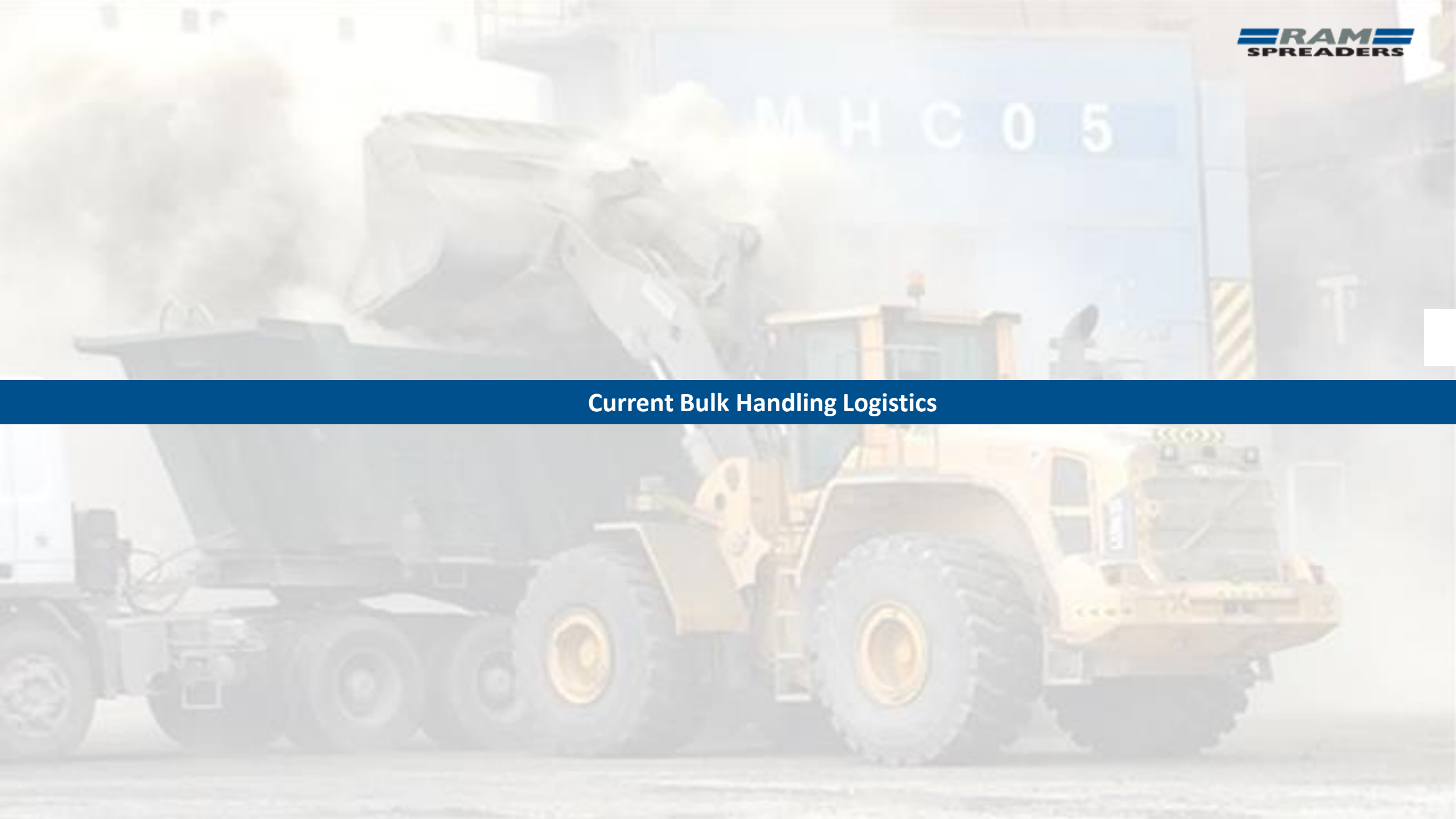


Who we are?

Supplying the Revolver CBH system for various types of crane application from MHC, STS, Ship, Bridge Crane & Reach Stacker

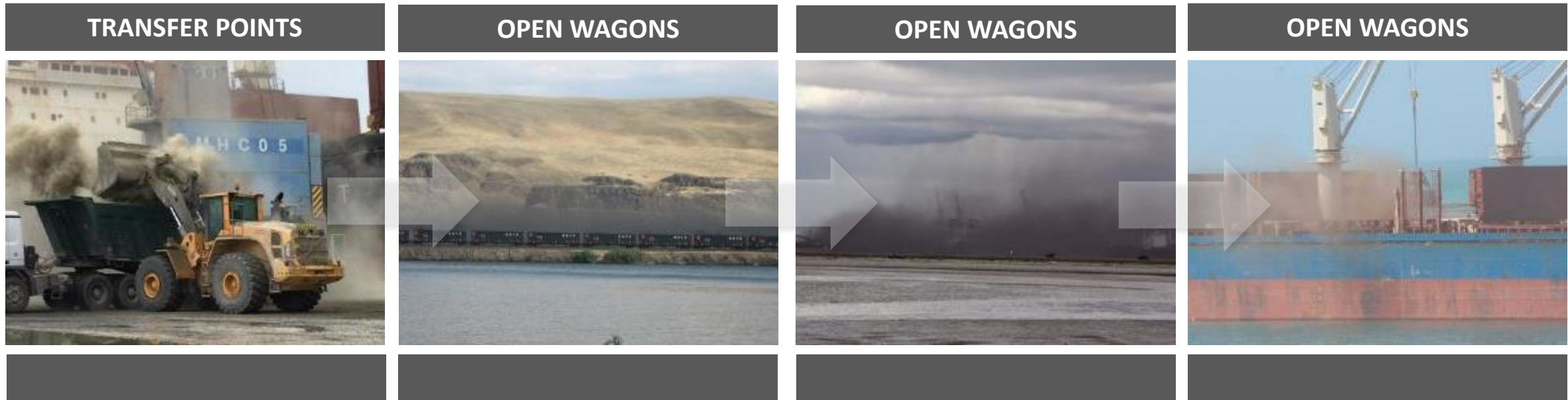


Current Bulk Handling Logistics



Current Bulk Handling Logistics

The commodity is handled multiple times during the logistics cycle



Current Bulk Handling Logistics



But can it be sustained over time?

Dust is generated at any point in the logistics cycle

When energy is added to the material

Resulting in pollution and loss of valuable commodity

Commodity



Energy



Dust



Pollution



Loss of commodity

What can we do?

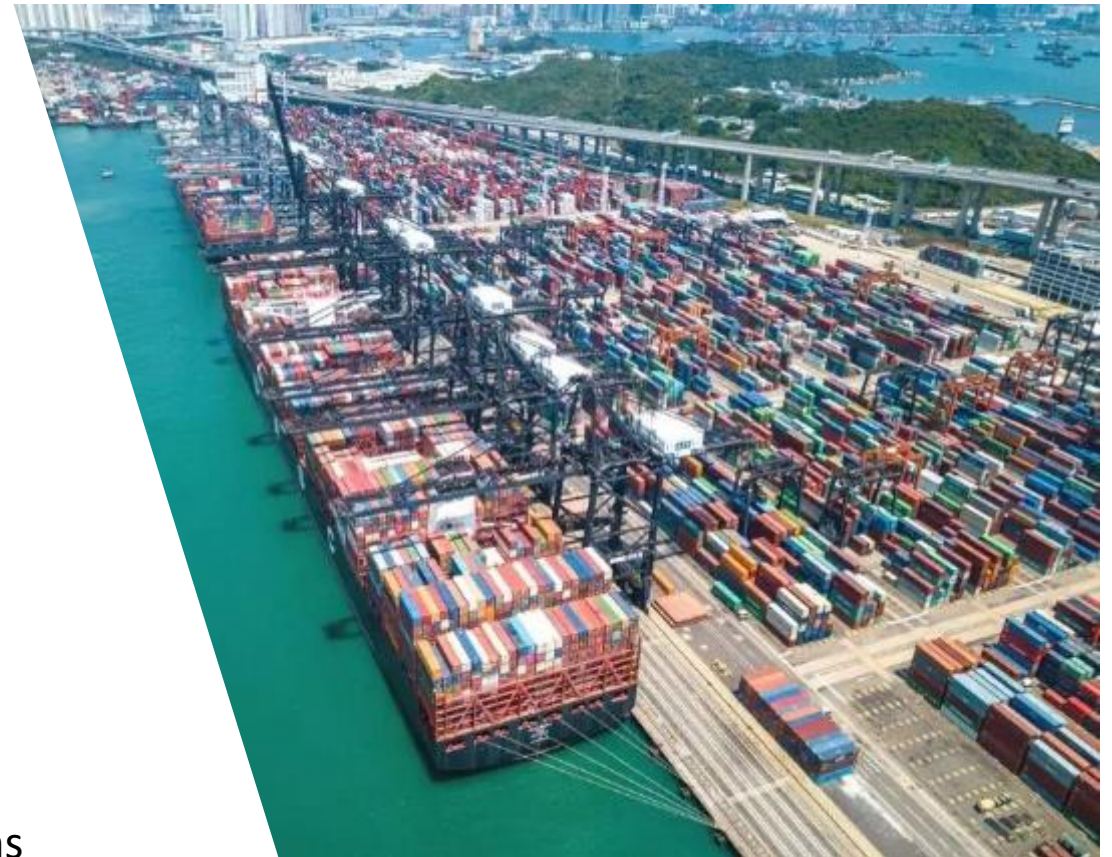
In order to meet current environmental guidelines, many companies are now looking at systems not only to reduce levels of contamination, **but** also cost-effective systems.



A competitive edge for container ports & terminals?

Many standard container terminals **are also** looking at ways to handle bulk commodities to remain competitive, **but a number of factors can restrict their progress:**

- **Lack of space**
to expand into bulk handling operations
- **Limited funds**
to develop the port to accommodate stockpiling
- **Infrastructure**
to cope with demand
- **Environmental impact**
with many ports close to residential or coastline attractions



Is there a solution?



Containerised Bulk Handling



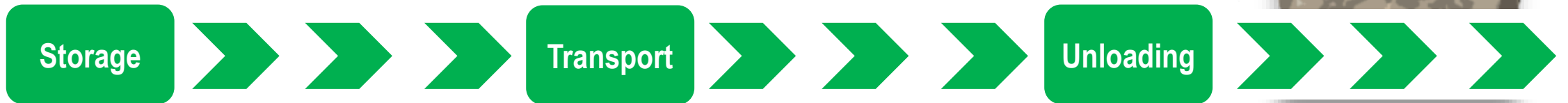
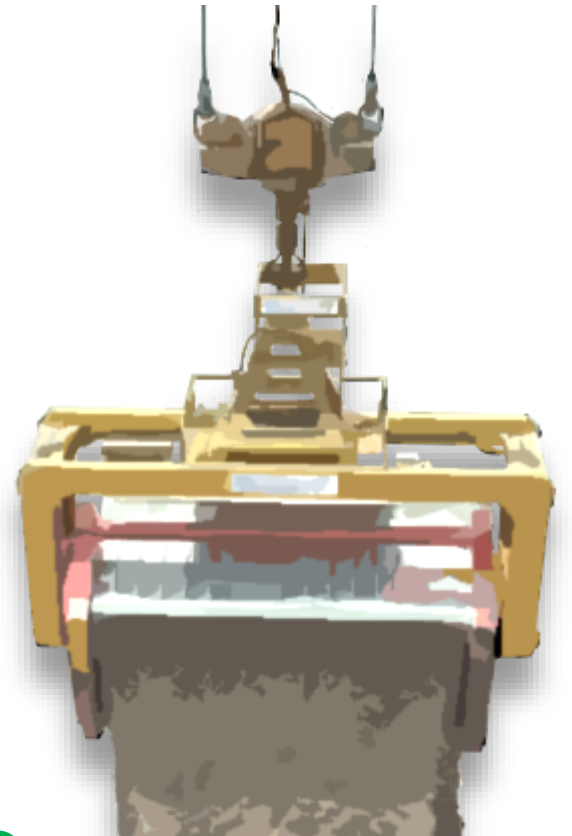
Containerised Bulk Handling

FILL | TRANSPORT | STORE | LOAD



So what is the CBH System?

Sealed open-top containers are used for:



So what is the CBH System?

Transport of commodity is done by:



ROAD



RAIL



OR BOTH
(BI-MODAL)

Containerised Bulk Handling

How does it work?

Using a 4 stage process, bulk is handled with minimal transfer points...

..resulting in a reducing loss of commodity and contamination than conventional bulk handling processes

1. **Fill** container at facility or mine
2. **Transport** container by road or rail
3. **Store** containers ready for unloading
4. **Unload** with rotating spreader



Containerised Bulk Handling



*Loads & SWL typical with using RAM's Rotating Spreader 'Revolver'

Containerised Bulk Handling

Can CBH be used on all types of crane?

Bulk rotating spreaders, such as 'Revolver' are available for all types of crane, from MHC's to Reach Stacker's

MHC**STS CRANE****SHIP CRANE****BRIDGE CRANE****REACH STACKER**

Containerised Bulk Handling

What equipment do I need for CBH?

Rotating Spreader



Misting system (optional)



Containerised Bulk Handling

What equipment do I need for CBH?

CONTAINERS



**EQUIPMENT NEEDED
AT THE MINE/BULK PRODUCER**

Containerised Bulk Handling

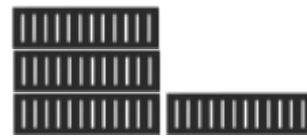
A large orange RAM spreader is shown in operation on the deck of a ship. The spreader is lifting a container, and its boom is extended upwards. The ship's deck and various structures are visible in the background. The scene is brightly lit, suggesting a sunny day.

HOW FLEXIBLE IS IT?

Containerised Bulk Handling

EXPORT

Pit to Ship



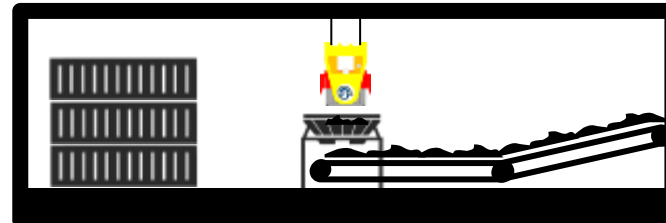
Fill at mine

Transport

Stack containers at port

Lift & unload directly into ships hold

Pit to Ship Loader



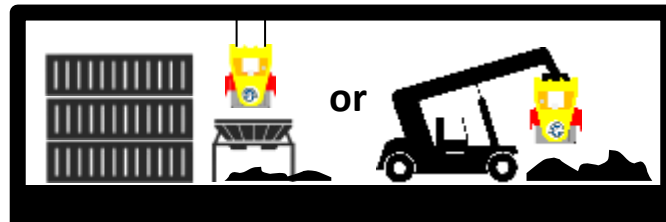
Fill at mine

Transport

Store containers in port's shed

Lift & unload onto conveyor ship loader

Pit to Shed



Fill at mine

Transport

Lift & unload into shed at port of facility

Containerised Bulk Handling

EXPORT

Shed to Ship (Internal Truck Loop Operations)



Shed to Ship (External Truck Loop Operations)



Containerised Bulk Handling

EXPORT – GRAINS

Farm to Ship

(External Truck Loop Operations)



Farm to Shed

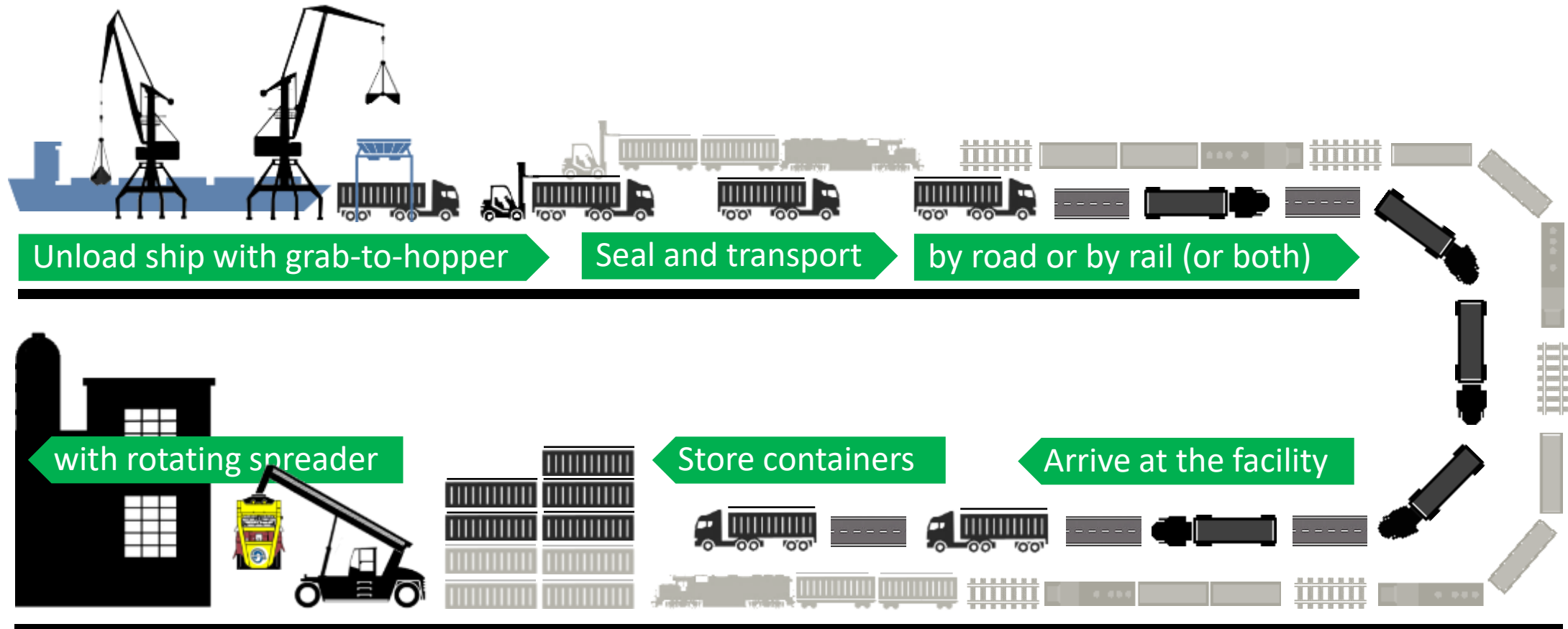
(Internal Truck Loop Operations)



Containerised Bulk Handling

IMPORT

Ship to Shed/Processing Facility



CBH
4 stage
process

Fill container at the mine or facility
Seal with lid
Transport
Load at final destination



RAM
SPREADERS

Containerised Bulk Handling

Benefits for Terminals

Gain new customers

Use existing equipment ✓

Flexible berths

No fixed bulk berth ✓

No dust

No local complaints ✓

Low cost

No expensive infrastructures ✓

Proven

High productivity ✓



CASE STUDIES

Case Study



COMPANY: Transnet Port Elizabeth

COMMODITY: Manganese

CRANE: Ship to Shore



Case Study



Case Study



CONTAINER & CBH BULK HANDLING TERMINAL



Case Study



CONTAINER & CBH BULK HANDLING TERMINAL

VEHICLE EXPORT TERMINAL



Case Study



CBH has been in operation since 2014 at Port Elizabeth Container Terminal

Handling an increasing large volume of bulk, in 2019 Transnet Port Terminals (TPT) placed a repeat order for a further 4 units of RAM CBH




Dust Free Loading in Port Elizabeth

Delivery of 4 Revolver spreaders helps Transnet Port Terminals commit to its sustainability agenda and reduce dust. April 2019

Summary

By easing the introduction of containerised bulk handling at Port Elizabeth Container Terminal (CECT) in South Africa, Transnet Port Terminals (TPT) placed a repeat order with RAM spreaders of a unit of the RAM Revolver bulk handling spreader.



TPT handles large volumes of bulk exports annually at the Port Elizabeth Container Terminal and is fully employed containerised bulk handling. The terminal invested in 17 units of RAM Revolver to help them service their base of customer orders.




Flexible Approach & Clever Use of Capital

Containerised Bulk Handling (CBH) allows for easy handling of bulk materials with a simple spreader change on the cranes. The cost of the CBH system is a fraction of the cost of new bulk loaders.

Speaking of the handling over versions of the Revolver, RAM spreaders Cameron Van Commenet found the just order of Revolvers in 2016 more than a year ago the CBH system has grown significantly. These new Revolvers will allow TPT to better meet customer requirements.

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www.ramspreaders.com



A Route to Market for Miners

With economies are flexible to find an new route to market using CBH for exporting bulk through standard container terminals, most until now has only been possible with heavy investment and an expensive infrastructure.



Clean & Green!

CBH is located near to the main town of Port Elizabeth and like all sites has a sensitive area.

The Amine bulk Handling system, using a batch mixing system is the greenest loading system in the world with zero visible dust emissions. It achieves 100% dust free loading of bulk.

- The Revolver's side view helps to disperse the bulk material as it falls to the very bottom of the batch.
- A batch level dust suppression system is installed on the bulk, which actively suppresses dust from rising up.

Local Community—Supporting Local School

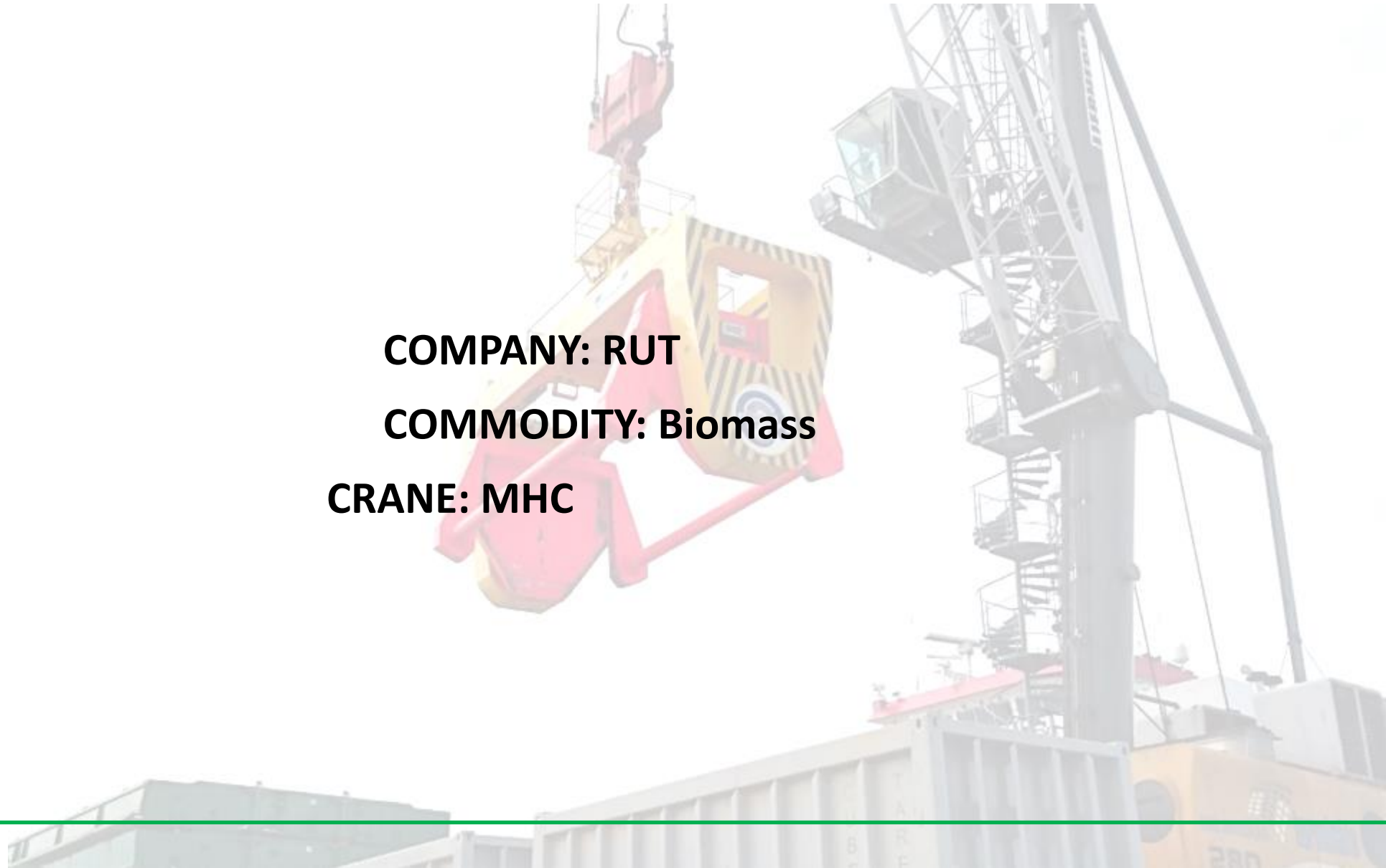
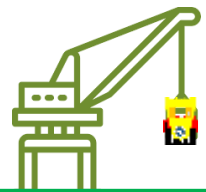
RAM Spreaders & Transnet Port Terminals are both socially aware companies, who as a result of the bulk handling project, are helping to support the local community by employing a local school to train staff on all possible training programs in the field of their skills and is now training.

The local Green Apple Preschool, close to the Port Elizabeth Container Terminal is also benefiting from the new project with RAM & TPT seeking to subsidise teachers and provide funding to help the school add three new classrooms. This will also train children in English to provide a great foundation of culture and in turn help the school continue to prosper.



Case Study

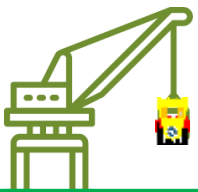
COMPANY: RUT
COMMODITY: Biomass
CRANE: MHC



Case Study

Riga Universal Terminal (RUT) became **the first** terminal in Europe to introduce the **Containerised Bulk Handling** system.

Since its introduction RUT have **doubled** their biomass export to cope with the increased demand and bring in new levels of revenue.



Case Study

With the system capable of lifting 35m³ per cycle, RUT utilized their existing MHC

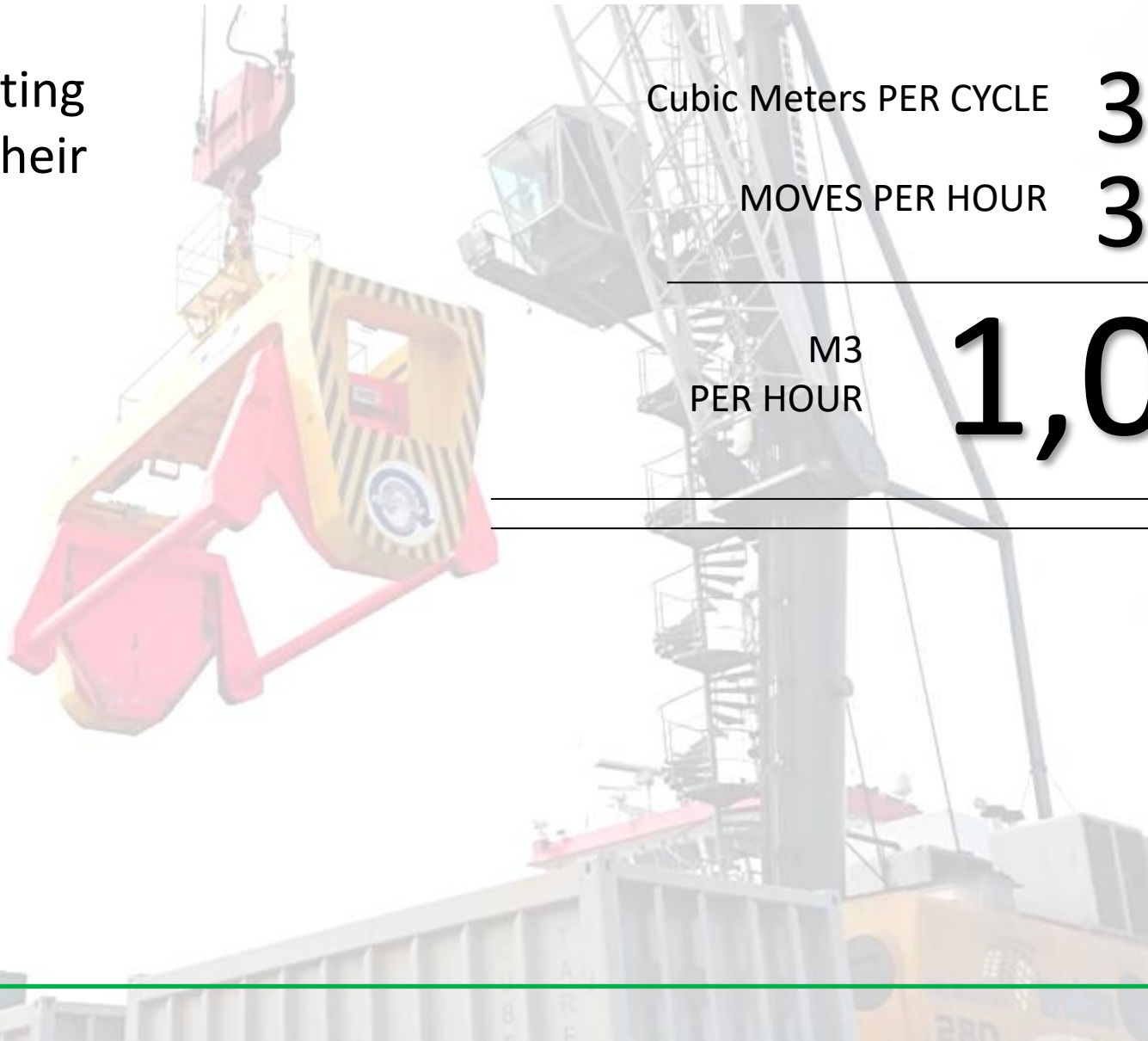
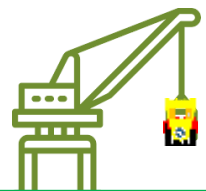
...and projected a **30 lifts per hour** capacity

allowing them to handle large volumes of biomass per hour

Cubic Meters PER CYCLE **35.00**

MOVES PER HOUR **30.00**

M³ PER HOUR **1,050**



Case Study



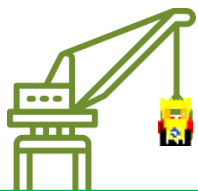
The main benefit from introducing the new technology is a significant optimization of terminal expenses and an increase in performance.

Now we can perform dry bulk handling operations involving a significantly smaller number of machines and human resources.

Saving on resources amount to almost 50%, he added.



Atis Šulte
Sales & Business
Development Director

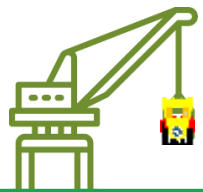


Case Study

LOCATION: Poti - Georgia

COMMODITY: Copper Concentrate

CRANE: MHC



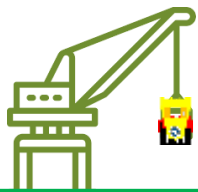
Case Study

Supporting local clients

CBH introduced to support local dry bulk clients

Flexibility at the port

Using existing port equipment with CBH allows the port flexibility in handling all commodities for local companies, especially for those who import, blend and export locally mined copper concentrate



GREENPORT

EFFICIENT SPREADER REDUCES ECO-IMPACT

14 Nov 2018

APM Terminals Poti, Georgia has commissioned a new revolving spreader to load copper concentrate into bulk vessels, improve efficiency and minimise environmental impact during bulk cargo loading operations.

At the terminal, the revolving spreader attaches to a mobile harbour crane as a regular spreader does.

The suspended spreader turns the container upside down and deposits the contents at the bottom of the vessel's hold. As the product is loaded into the vessel, a hatch-mounted misting system prevents the copper dust from being blown away.

'With this solution, we have addressed the needs of our customer, enabling both sides to become more efficient and environmentally friendly,' said Klaus Holm Laursen, managing director of APM Terminals Poti Turlibnara, 'with the same equipment and infrastructure, we can now expand into a market with the potential for several million tons of bulk cargo.'



The spreader means that the copper container lids avoid spillage, dusting and water contamination. Credit: APM Terminals Poti

Regulation compliance

To reduce spillage and waste before being transported to the terminal, copper concentrate is loaded in reinforced open top containers covered by a tarpaulin in a closed warehouse.

The overall process is compliant with all environmental IMO and REACH regulations as the concentrate never touches the ground, avoids spillage, dusting and water contamination, said APM Terminals Poti. It also improves workers' health & safety and significantly speeds up terminal and port operations and early vessel loading rate.

'There is also a clear cost and time saving. At the traditional bulk facility, we were happy if they would load 1,000 tons in a day using three cranes. Today we experience loading of 10,000 tons in a day on a single crane,' explained Michael Meglinsky, founder of Caucasian Metals Terminal, APM Terminals' business partner in the operation.

'We are seeing not only more product actually being loaded with less environmental impact, but we are also experiencing a cost advantage on the number of days we need to charter the vessel,' added Mr Meglinsky.



Case Study

A safe and secure way to handle bulk

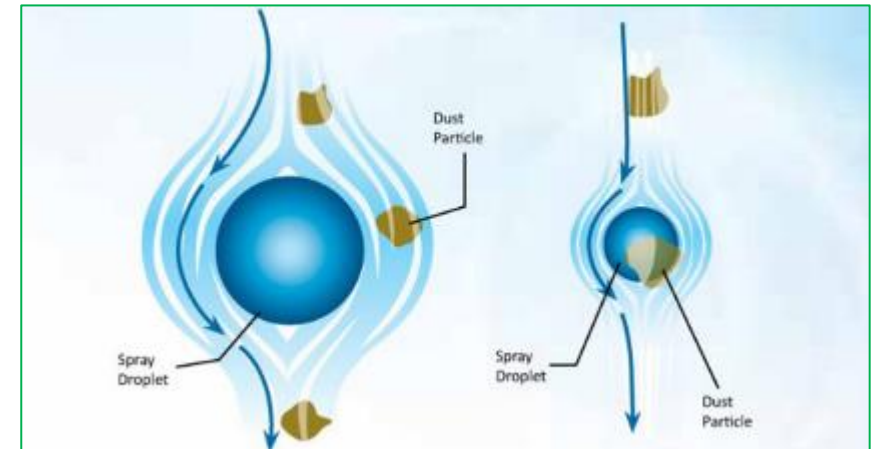
Handling dry bulk from the port using CBH, is *environmental best practice*.

Ports, such as Poti located close to a residential area, schools and recreational park, can handle dry bulk cleanly and safely with no harm to the environment or commodity.

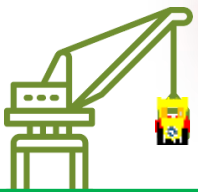
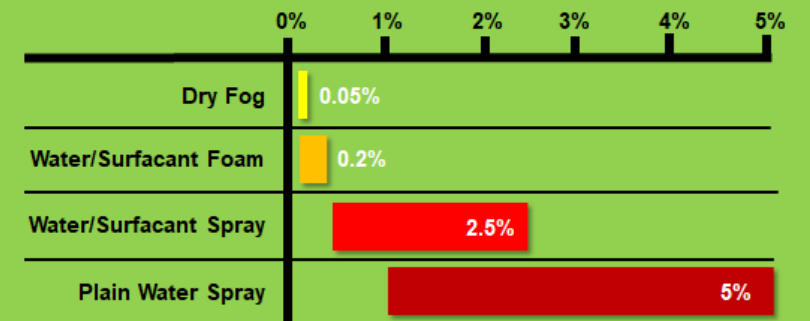


Case Study

CBH *adds very little energy* to the bulk material when unloded, and a dust suppression misting system contains the dust plume within the ships hatch



Amount of moisture added



TESTIMONIALS

Case Study Testimonials

Environmental benefits...

*“Turning DP World Adelaide from a standard container terminal into a bulk handling terminal **raised an interesting reaction**”.*

“The sailing squadron next to the terminal came to me one day to protest about the new system of bulk export being introduced at the terminal, and they wouldn’t allow us to operate the system as it would create red dust on their sailing boats”.

*“They had slack jaws when I told them **the system had already been running for six months with zero emissions**”*

DPW Adelaide



Ray Lee

Regional Director
DPW Australia | 2009-2011

Case Study Testimonials

...and terminal growth

“DPW Adelaide was an under utilized terminal with low berth occupancy and little growth prospects”

*“...to grow the terminal **we needed to think outside traditional income sources”***

DPW Adelaide



Ray Lee
Regional Director
DPW Australia | 2009-2011

Case Study Testimonials

Low capital expenditure

*“Patrick was able to utilize this new revolving spreader technology to export copper concentrate for our client **with very little capital**”*

*“Our Client was **extremely pleased** with the dust free solution”*

Patrick | Asciano



Adrian Howard
Commercial Director
Patrick Ports & Stevedoring

Case Study Testimonials

High loading rates minimize shipping costs

Miners Perspective

*“Environmentally **it is a very clean system** due to containers being emptied directly into the ship’s hold thereby **minimizing a number of dust generating points**”*

*“Loading rates of 15,000 wmt/day being achieved are such that it **helps to minimize shipping costs**”*



Jack Cole
North Park Mines

North Park Mines

Case Study – Further Examples

MOBILE HARBOUR CRANE



RUT Latvia - Grain



South Africa- Coal



Chile – Copper/ Potassium Salt



Maputo - Coal



Congo – Iron Ore



Chile – Copper/Zinc



Cuba - Zinc



USA – Wood Chip/Pellet



Mexico – Lead/Copper/Zinc

Case Study – Further Examples

BRIDGE CRANE & REACH STACKER



Peru - Copper



Mauritania - Magnetite



Bolivia - Urea



Turkey - Copper



Chile - Copper



Arizona/Mexico - Copper

Case Study – Further Examples

**SHIP AND
STS CRANE**



Argentina – Soya/Rice



South Africa- Manganese



Australia - Copper



Chile - Zinc



Argentina - Grain



Australia – Iron Ore



USA – Wood Chip/Pellet

The many benefits of Containerised Bulk Handling

Containerises the bulk

Low set up cost

Environmentally friendly

Award winning solution

No contamination

The many benefits of Containerised Bulk Handling

- ✓ Expand market opportunities for terminals
- ✓ Provides cost effective alternative logistics to shippers
- ✓ Innovative turnkey solution to industry
- ✓ Provides shipper and countries a faster route to market
- ✓ Implement “best practices” into the industry to attract business
- ✓ Responsible care for environment – good business ethic

Commodities Handled



Containerised Bulk Handling Operators

BHP Billiton

DP World

Eltham Coal

Exaro

First Quantum

OZ Minerals

Patrick

RuT

TPR

Transnet

Grindrod

Hillgrove Copper

Ironclad

Las Bambas

MMG

