



**ECO-FRIENDLY DESIGN
FOR DRY BULK MATERIAL LOADING
AND UNLOADING TERMINALS**



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Since 1908 complete turn-key projects

Bedeschi diversified Business Units can provide
Customers with complete turn-key solutions for:
Bulk Handling, Marine and Mining,
Container Logistics, Bricks





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Turn key solutions

For more than a century
Bedeschi is providing effective
and reliable solutions in a wide
variety of industries, capitalizing on
synergies and cross competences.





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Group Overview

2

production
sites in Italy

More than

20 sales

offices worldwide



BEDESCHI

Eco friendly design = Sustainability

In 1992, UN introduced the concept of sustainability, defined as “Development that meets the needs of the present without compromising the ability of the future generations to meet their own needs”.

Sustainable development includes three aspects: economic, social and environmental. In this optic, ports responsibility is very high if we consider the numerous risks of spillage and dust production during import/export of dry bulk cargo.



GREENING:
LOADING, UNLOADING AND HANDLING IN TERMINALS



Eco friendly design = Sustainability

To achieve a reduction of emissions, the first step could be the use eco-friendly bulk handling equipment. Bedeschi, thanks to its research and development in green technology, is able to design and produce machines which incorporate sophisticated dust control measures, able to reach the highest environmental standards. Bedeschi's references are increasing every year also thanks to its attention to the environment. There is an equilibrium to be found between Eco-friendly and efficient operation. How much business model is influencing sustainability, this we will discuss later.

GREENING:
LOADING, UNLOADING AND HANDLING IN TERMINALS

Shiploader Design

A typical design of a shiploader generally includes the following portions:

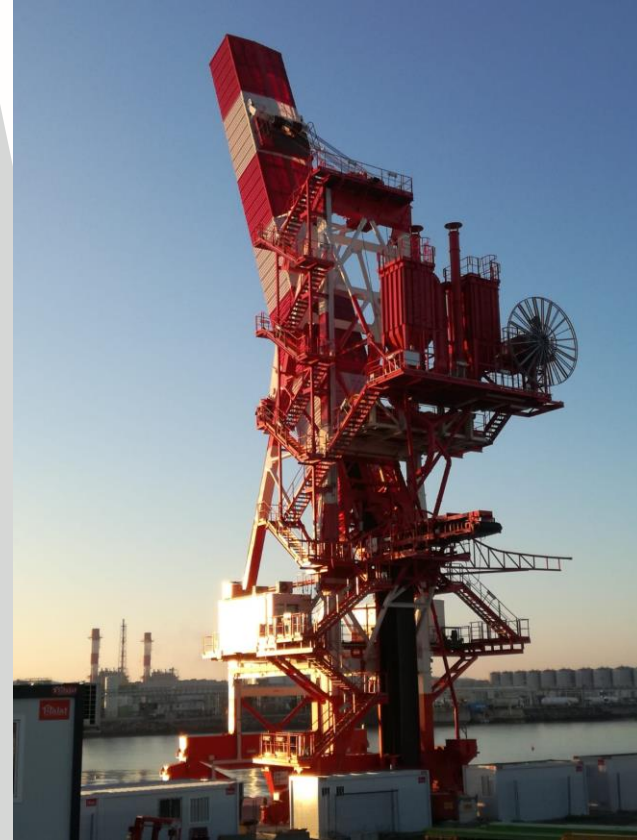
A longitudinal belt conveyor installed on the dock.

A tripper lifting the longitudinal belt conveyor installed on the dock.

A connection belt conveyor between the tripper and the conveyor installed on the shiploader boom.

The shiploader boom conveyor.

A loading chute to distribute the material in the cargo hold, that could be telescopic, trimming, slewing and/or tilting



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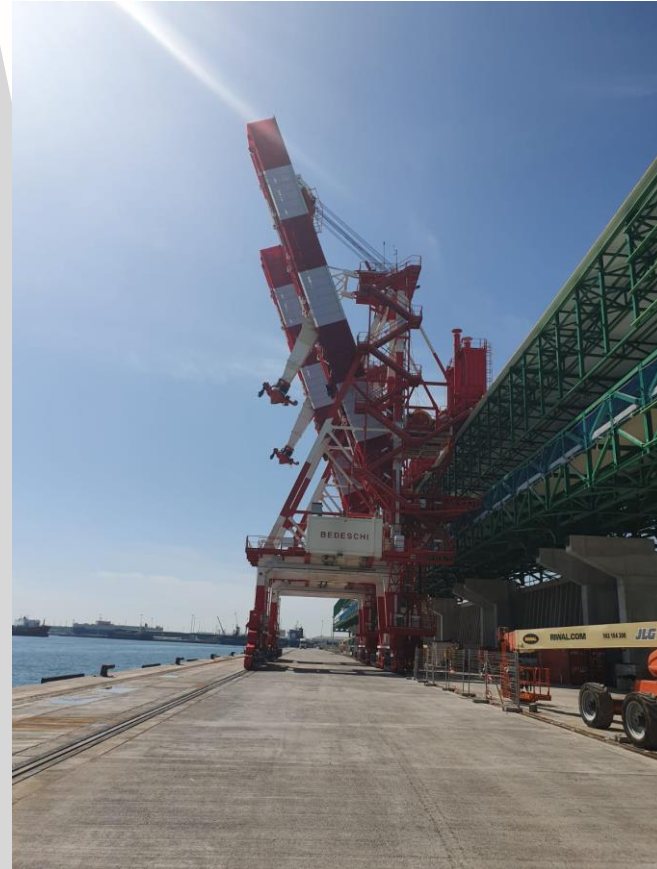
Shiploader Design

All the components are installed outdoors regardless weather conditions.

Wind is one of the main problems that increases dust on bulk material characterized by a granulometric size.

Considering that these machines operate outdoor, there are some solutions for pollution reduction listed hereinafter but they are not the only ones, as it depends also on the skills of the operators.

A skilled crew makes the difference and it is another point to discuss together with the influence of the stakeholders in the business.



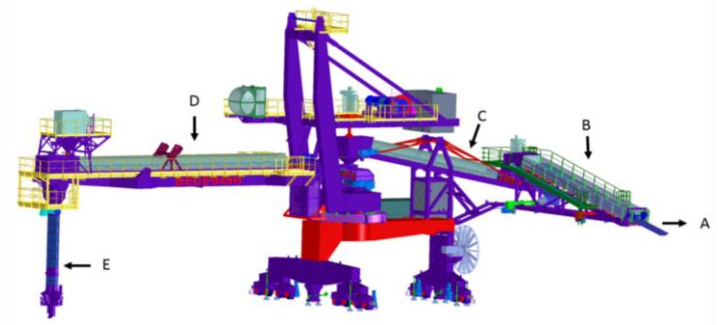
Shiploader Design

PORTION A

Conveying Speed-

Ideal belt conveyor speed based on the fines present in material (the higher the content, the lower will be the speed). If the normal speed of a belt conveyor is about 2 m/s, on the quay belt the speed should be reduced up to or less than 1 m/s.

Place a belt conveyor in an enclosed gallery, as to protect it from the wind and rain.



Shiploader Design

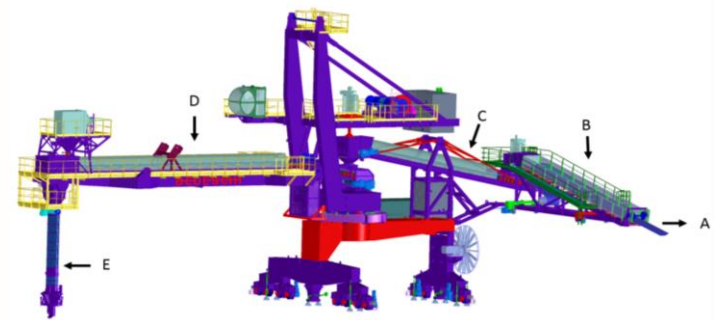
PORTION B

Enclosed tripper gallery in order to protect it from the wind

Belt transfer point to have suction point in order to dedust each point.

Misting system is not ideal as the mixed result will spill around the machines and then creates another source of dust when dried.

Nuisance filter are the preferred Bedeschi's choice.



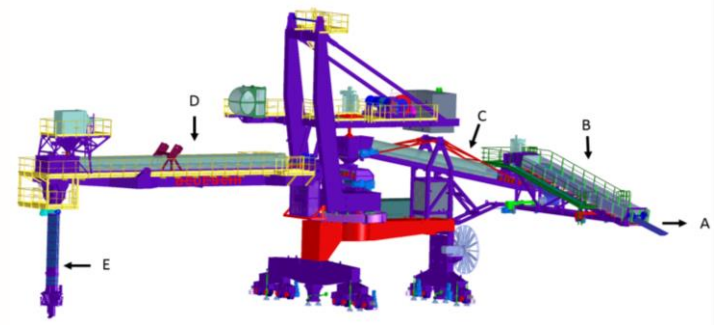
Shiploader Design

PORTION C

Enclosed gallery conveyor also valid here.

The belt speed is maintained slow.

If the conveyed material contain an high level of dust, instead of a connection belt conveyor, a chain conveyor or a screw conveyor completely sealed can be used.



Shiploader Design

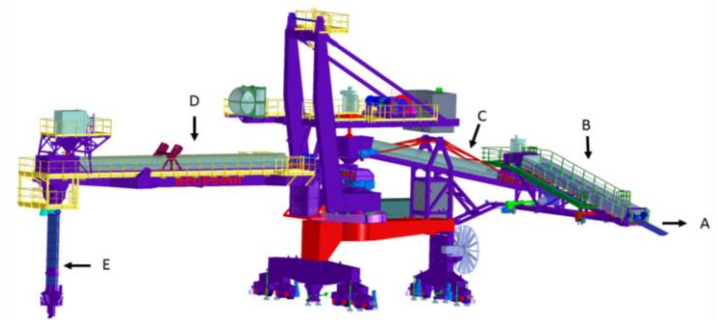
PORTION D

The shiploader boom could be equipped with:

Belt conveyor closed into the gallery and rubber belt protected with canopy. Loading and discharge points could be dedusted with bag filters /water spray systems.

The entire gallery could be maintained in light air depression to avoid dust exit.

Alternatively, a chain conveyor or screw conveyor completely sealed could be used.



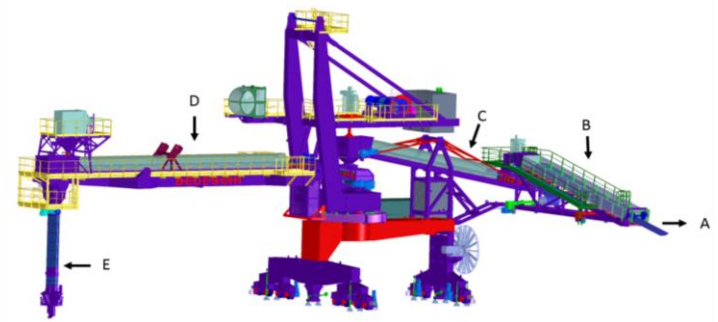
Shiploader Design

PORTION E

E - Loading chutes

The choice of the chute depends on the material's composition:
Fragile material (iron briquette as example) Dusty (cement for example) each material has its own needs.

Now we will see the most common types and their peculiarities.
As Bedeschi we use OEM suppliers for this, thus the choice we make in the applicaiton of different shapes of loading spouts is depending on the bulk handled only.





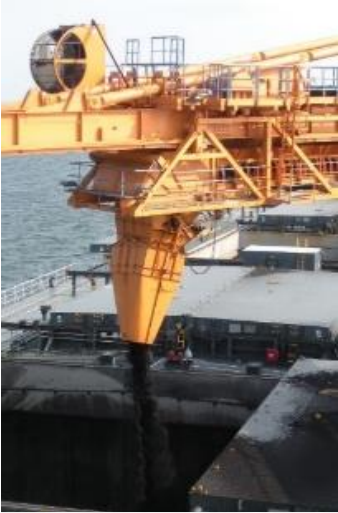
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Telescopic chute with tiltable hopper

Very low environmental impact, suitable for dusty products.

The telescopic chute is an ideal solution to prevent the problem of breaking particles and to minimize dust generation when loading bulk material. The design of telescopic chute ensures that material particles are kept in mass flow form and at low velocity. In fact the internal lining of the module cones minimize the liberation of dust particles without affecting loading rates. The extraction system, represented by the top boom filters, guarantees a perfect vacuum atmosphere into the vessel hold, preventing any dust emission. Due to the minimal free-fall and the low velocity that the material experiences, greatly reduced material degradation is evident when loading sized product.



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Trimming chute, slewing and tilting

Very good filling of holds, minimum impact in environment depending on type of product.

Suitable for low density products.

The final part of the chute, that can be oriented inside the cargo hold, allows a perfect filling of the vessel.

The material is compacted inside the chute, ensuring a compact flow and avoiding the separation of the dusting part from the granular one.

This design is applied by Bedeschi in most of its floating terminals also known as transhipper



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High speed jet conveyor

The conveyor thrower is installed at the bottom of the telescopic pipe helps better filling and distribution of material, suitable for granular and low density product.

The system permits through the jet conveyor to load every part of the cargo hold, ensuring the perfect filling.

This solution is applied with dustless material.



Voest Alpine
(USA)

HANDLING - BULK HANDLING





HANDLING - BULK HANDLING

Voestalpine (USA)

Hot briquetted iron (HBI) shiploader to its new direct reduction plant (DRP) in Corpus Christi, Texas, US. The scope of supply was to provide a pre-assembly solution delivering the machine from Venice directly to its working position, minimizing the assembling and commissioning time at site. A dedicated loading spiral chute has been designed by our engineers to avoid a too high a drop for material during vessel loading. This limits the dust production and keeps the chemical property of the material unchanged.



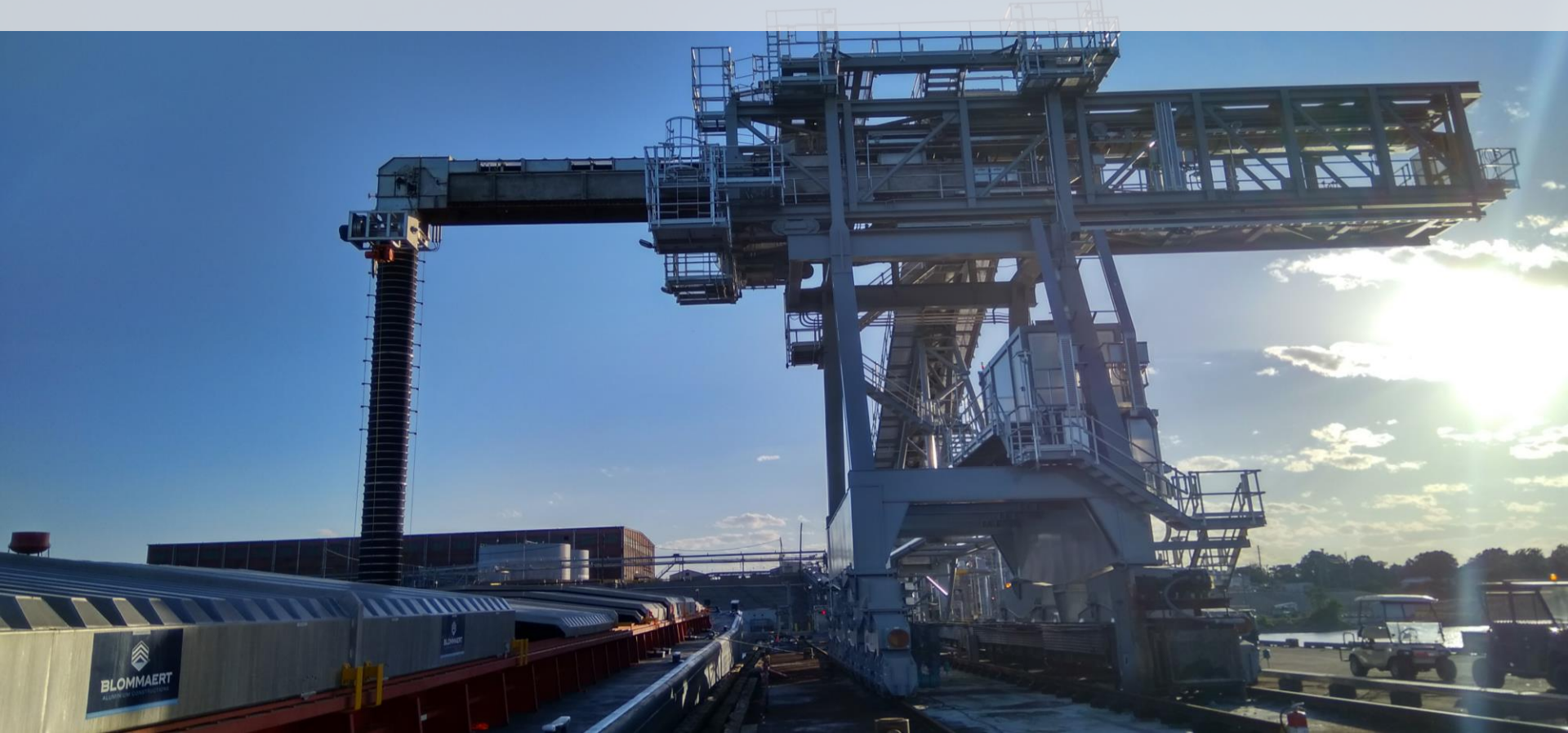
Material:	HBI
Design capacity:	2000 t/h



Honeywell

Norfolk VA

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Convent Louisiana

(USA)

HANDLING - BULK HANDLING





HANDLING - BULK HANDLING

Convent Louisiana (USA)

The Coal ship loading system consists of three (3) radial-tower type loading booms with two connecting conveyors. The shiploaders are designed to operate at a maximum rate of 6,000 TPH each. This maximum combined loading rate can be achieved by operating one or a combination of the three shiploaders, as each individual loader is designed for 6,000 TPH. All of the conveyors currently have been designed for an 84 in belt. The link belts are also rated for 6,000 TPH with 84 inch belts. Bedeschi designed all of the belt conveyors for the same belt width to ensure continuity of operation and spare part sharing. Dust control systems and drip trays has been provided for each conveyor to control environmental contamination. The system is capable of a 24-hour per day, 365 days a year, continuous operation without any adverse effect on operation or maintenance.



Material:	Coal
Design capacity:	6000 t/h



Cargill
(Australia)

HANDLING - BULK HANDLING





HANDLING - BULK HANDLING

Cargill (Australia)

One of the best examples of Bedeschi's engineering and manufacturing capabilities. This shiploader is fully mobile on rubber tires and can load grains and oilseeds on Panamax ships at a capacity of 1000 t/h received from trucks on a two lanes drive over hopper fully integrated and mobile with the shiloader itself, weigh, clean product by a twin set of scalpels, sample according to local standards and finally load product dust free by a Cleveland Cascade telescopic chute. Moreover, due to the reduced availability of the receiving quay, the machine was delivered at site fully erected and dry tested.



Material:	Grain
Design capacity:	1000 t/h



Thank you – Muchas Gracias

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