

**IBAU HAMBURG**



A MEMBER OF THE HAVER® GROUP

## Information



**IBAU HAMBURG**

**Ship unloaders**

**Road- or Port-Mobile**

**5.000 dwt, 15.000 dwt, 60.000 dwt**

## Road- or port-mobile ship unloaders in general

### 5.000 dwt class, 15.000 dwt class, 60.000 dwt class

#### Highly efficient ship unloading technology

IBAU HAMBURG's first harbour terminals were built in the mid 80s. In order to offer a complete range of material handling equipment, IBAU HAMBURG developed a ship unloader at the beginning of the 90s.

Since then our company is one of the most important suppliers of ship unloaders for the cement industry.

In addition, we took advantage of the decision to develop mechanical ship unloaders by applying the screw conveyor principle, and its energy

consumption being only 0,4 to 0,5 kWh/t of cement.

Therefore, in comparison to the vacuum systems, 60 to 65 % of energy for the cement unloading is saved.

According to the size of the ship and the terminal conditions, the following ship unloaders can be used:

- up to 5.000 dwt and 300 t/h unloading capacity,
- up to 15.000 dwt and 400 t/h unloading capacity,
- up to 60.000 dwt and 800 t/h unloading capacity.

Self-supporting constructions are used for the capacity class up to

15.000 dwt. Supporting structures are needed for ship unloaders of the handymax class with 20 m long unloading arms.

The weight of ship unloaders installed on trailers is about 30 t, while bigger ship unloaders for handymaxships weigh several hundred tons.

#### References make differences

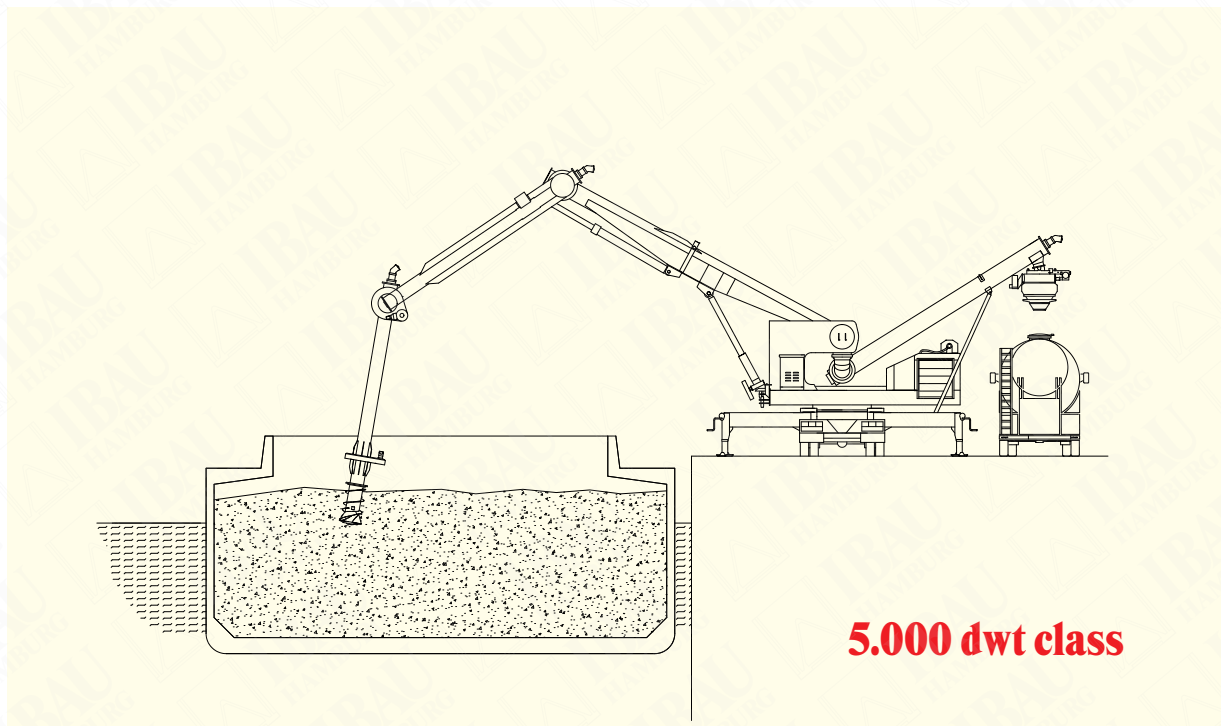
When IBAU HAMBURG was established as an engineering company in 1975, its core-activity area was the silo and materials handling technology. IBAU HAMBURG has more than 30 years of experience in storage

and transport of bulk material and is one of the world's leading companies.

Innovative products and technologies such as the IBAU Central cone silo have radically changed the storing of bulk material.

These years of experience help us to support our customers in implementing their projects by developing and applying customised systems and concepts of the highest quality.

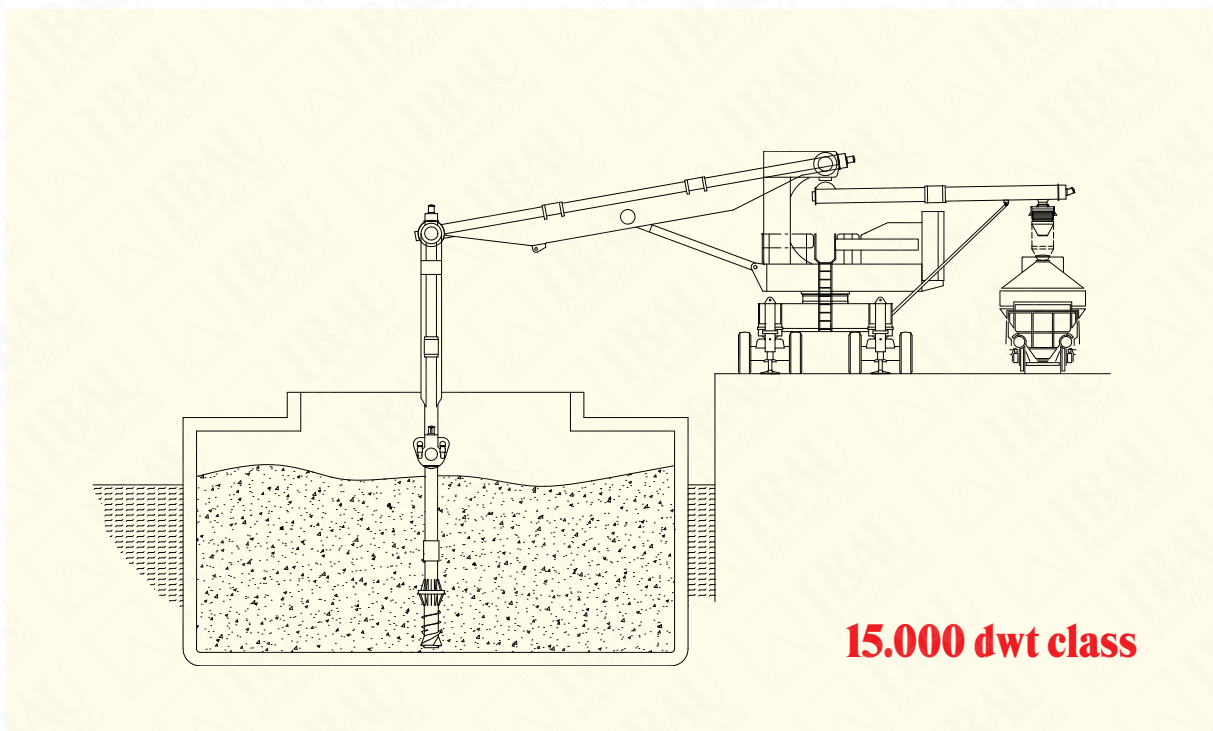
As an innovative company, IBAU HAMBURG continually develops its products and components and undergoes continuous quality improvements.



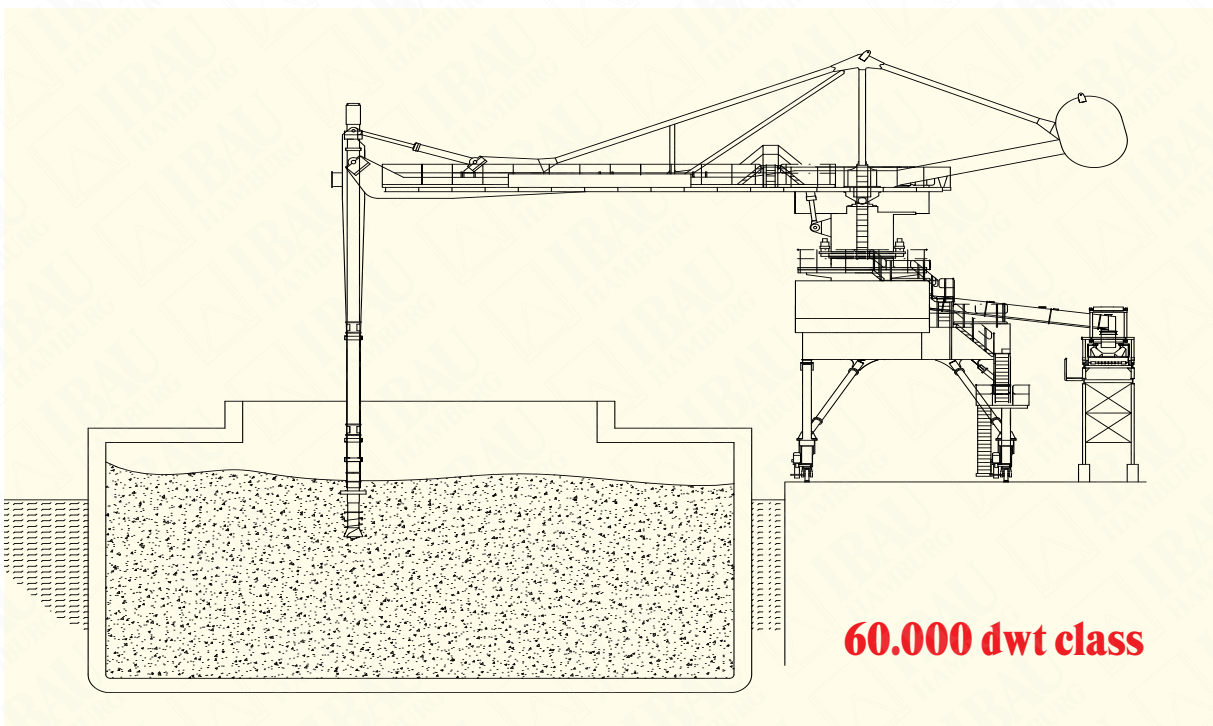
**5.000 dwt class**

Road-mobile ship unloader for < 5.000 dwt bulk carriers





Port-mobile ship unloader for < 15.000 dwt bulk carriers



High-capacity ship unloader for < 60.000 dwt bulk carriers



## Road-mobile ship unloader

### 5.000 dwt class

#### Road-mobile ship unloaders of the 5.000 dwt class

Mobile ship unloaders installed on trailers need to have a maximized manoeuvrability and it is required that they are ready for operation in 30 minutes starting at the transportation position.

During this process the IBAU HAMBURG Ship unloader neither needs support and relevant bold fastenings nor a hoisting winch.

The conveying capacity for the 5.000 dwt class developed by IBAU HAMBURG is actually a „rated capacity“ of 300 t/h, i.e. 30 % above the unloading capacity of common ship unloaders.

This corresponds to the maximum capacity of pneumatic ship unloaders in the mobile sector. These values can be reached due to the optimization of the construction as well as the improvement of the applied technology.

Ship unloaders of the 5.000 dwt class do not always need to be road-mobile. For example, for the port authorities of Bamberg, Germany, IBAU HAMBURG had to integrate a ship unloader in a very narrow space of the existing structures. Moreover, the ship unloader both needed to be able to rotate and to be suitable for being folded up for the parking position. This ship unloader can either feed a belt conveyor for a nearby cement terminal or a rail loading installation.



Road-mobile





ship unloader



# Road-mobile ship unloader 5.000 dwt class



1 Road-mobile ship unloader in transport position

2 Details of a ship unloader

3 Easy handling with hydraulic cylinders

4 Loading chute with dust filter

**Ready for operation in 30 minutes:**

5 Stabilization of the unit with outrigger and support jacks

6+7 Moving the loading screw into the loading position

8 Supporting the loading screw on the landside outriggers

9 Separating the screw system from the loading screw and slewing it to the ship's side.

10 Ready for operation









## Road-mobile ship unloader

**5.000 dwt class**



Port-mobile ship unloader for Tong Yang Cement Corporation, Korea



Stationary ship unloader at Bamberg Harbour, Germany





Road-mobile ship unloader with pneumatic conveying unit for Caledonian Slag Cement, Scotland



## Road-mobile pneumatic conveying system 5.000 dwt class



Road-mobile pneumatic conveying unit in transport position



Pneumatic conveying system at Lübeck Harbour, Germany





Road-mobile pneumatic conveying system during transport



# Port-mobile ship unloader

## 15.000 dwt class

### Port-mobile ship unloaders of the 15.000 dwt class

Because of their size, ship unloaders of the 15.000 dwt class are not classified as road-mobiles.

However, in a harbour terminal ship unloaders need to be mobile, in order to be moved into the parking position.

For the 15.000 dwt class the same material transport principle as for the smaller ship unloaders applies, i.e. the screw conveyor system.

The ship unloader has a platform which hosts a ball bearing slewing rim for each moving main and secondary arm, powerful transport and loading installations, as well as necessary secondary aggregates such as the control system, drives, hydraulic system and dust filters for an independent activity.

Because of the high bending strains and shocks of the mobile ship unloader, the screw bearing is very important.

That is why horizontal and vertical screws of IBAU Ship unloaders consist of decoupled parts, which are connected by an intermediate bearing.

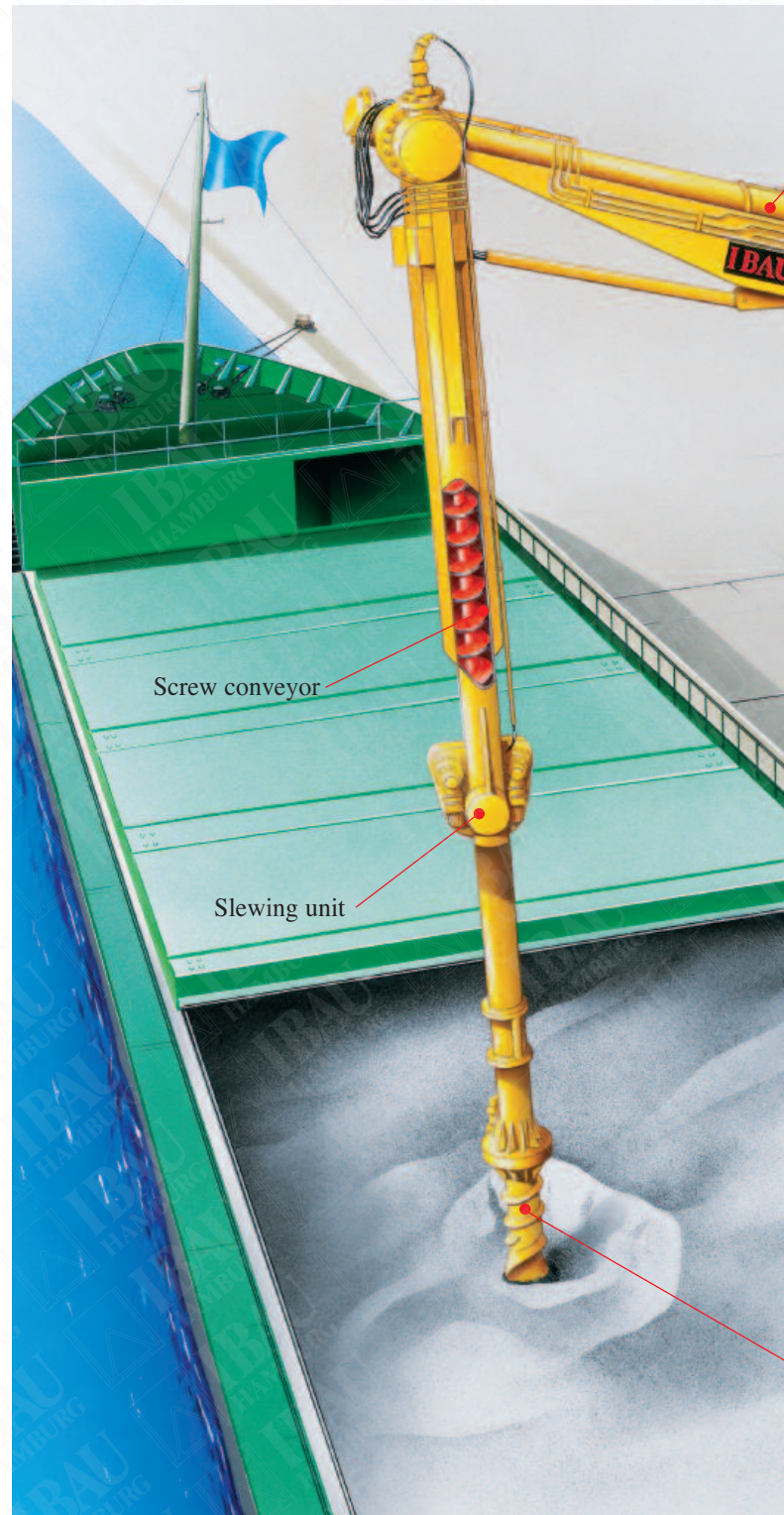
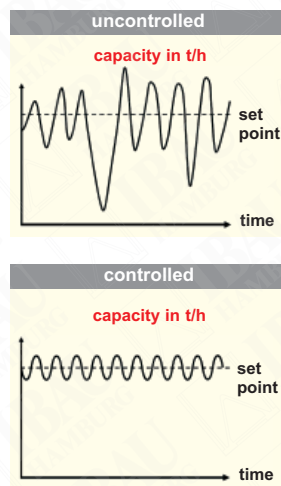
The bearings are cladded and continually lubricated.

The quantity of unloaded material is determined by the joint action of the material inlet feeder and the horizontal screw.

While the speed of the material pick-up is 0-20 l/min, the vertical screw conveyor works constantly at a 500 l/min speed.

The speed of the inlet feeder is determined by the required power of the vertical screw conveyor.

Such a control system avoids blockages and the conveying process is generally very regular and in the range of the set unloading capacity value.





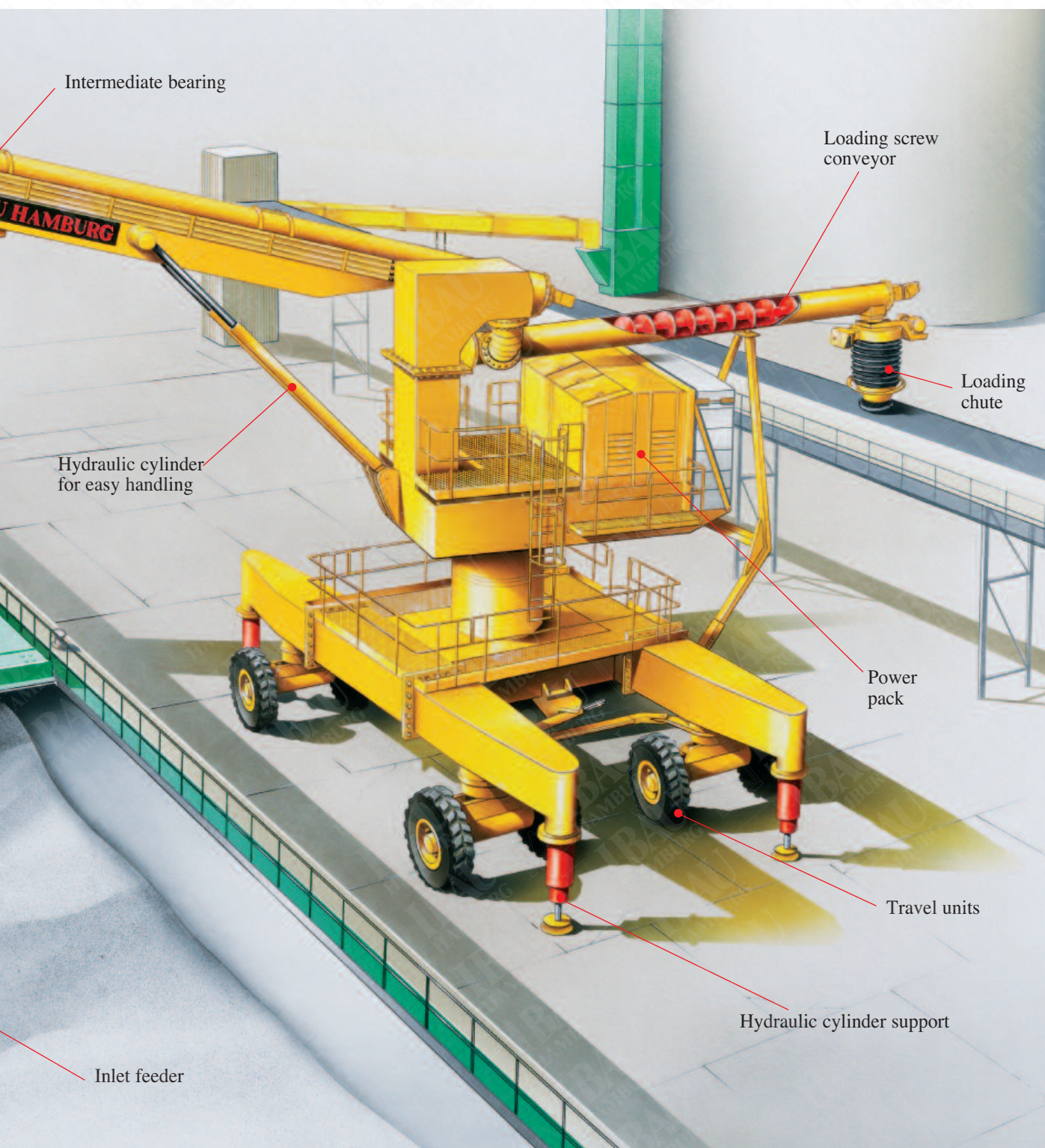


Illustration of the port-mobile ship unloader



## Port-mobile ship unloader 15.000 dwt class



Port-mobile ship unloader for Colacem, Savona, Italy



Support cylinders



Easy operation via remote control





Unloading procedure, layer by layer



# High-capacity ship unloader

## 60.000 dwt class

### High-capacity ship unloaders of the 60.000 dwt class

In order to meet the requirements of the 15.000 to 60.000 dwt ship unloader, IBAU HAMBURG has developed a module-type construction as well as a new concept.

This new concept incorporates the high quality of the former models and at the same time has several improvements that are superior to those existing on the market.

With a weight of about 240 tons, the new ship-unloader belongs to the lightweight-construction class, whereas IBAU HAMBURG has managed to maintain its efficiency, reliability and stability, thus establishing a new standard.

The ship unloader has been designed to be port-mobile and for a conveying capacity of 800 t/h – rated capacity.

The energy requirement for the unloading and the cement transport is less than 0,5 kW/t, thus setting a new standard.

The mechanical screw conveyors and the fluidslide principle have been combined for the material transport.

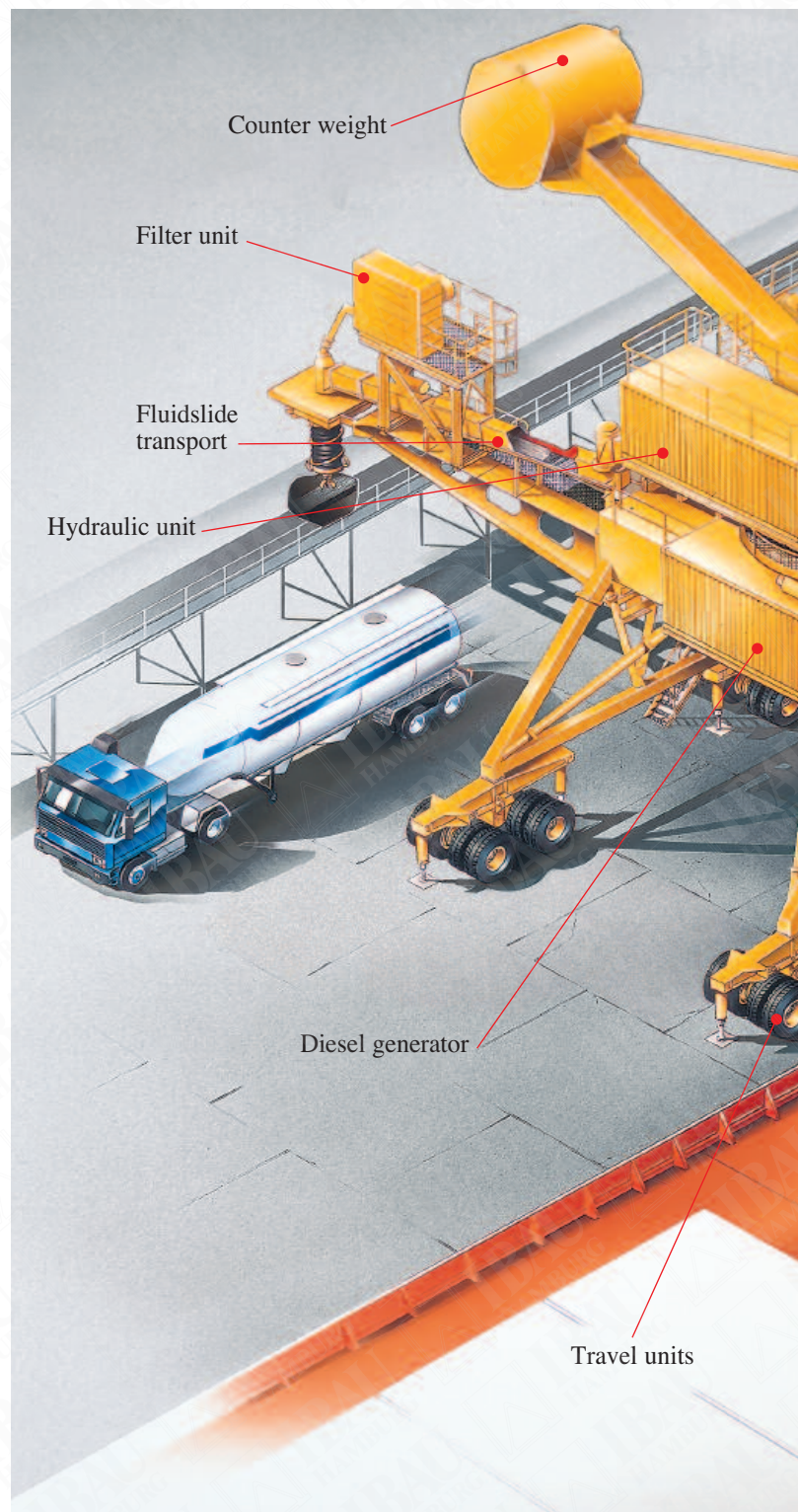
The material pick-up from the cargo holds is ensured by a vertical screw conveyor with a diameter of 500 mm and a counter-rotating inlet feeder.

Material is transported by the horizontal screw conveyor with a diameter of 700 mm as well as by the connected fluidslide transport which also allows a parallel truck loading.

With the 21 m long vertical and the 23 m long horizontal screws it is possible to unload even ships of the panamax-class.

When designing the high-capacity ship unloader not only the technical parameters were important but also a low weight load on the quay.

Other important factors are the improved stability and strength as well as an excellent ease of maintenance and serviceability, which implements a high reliability and availability.





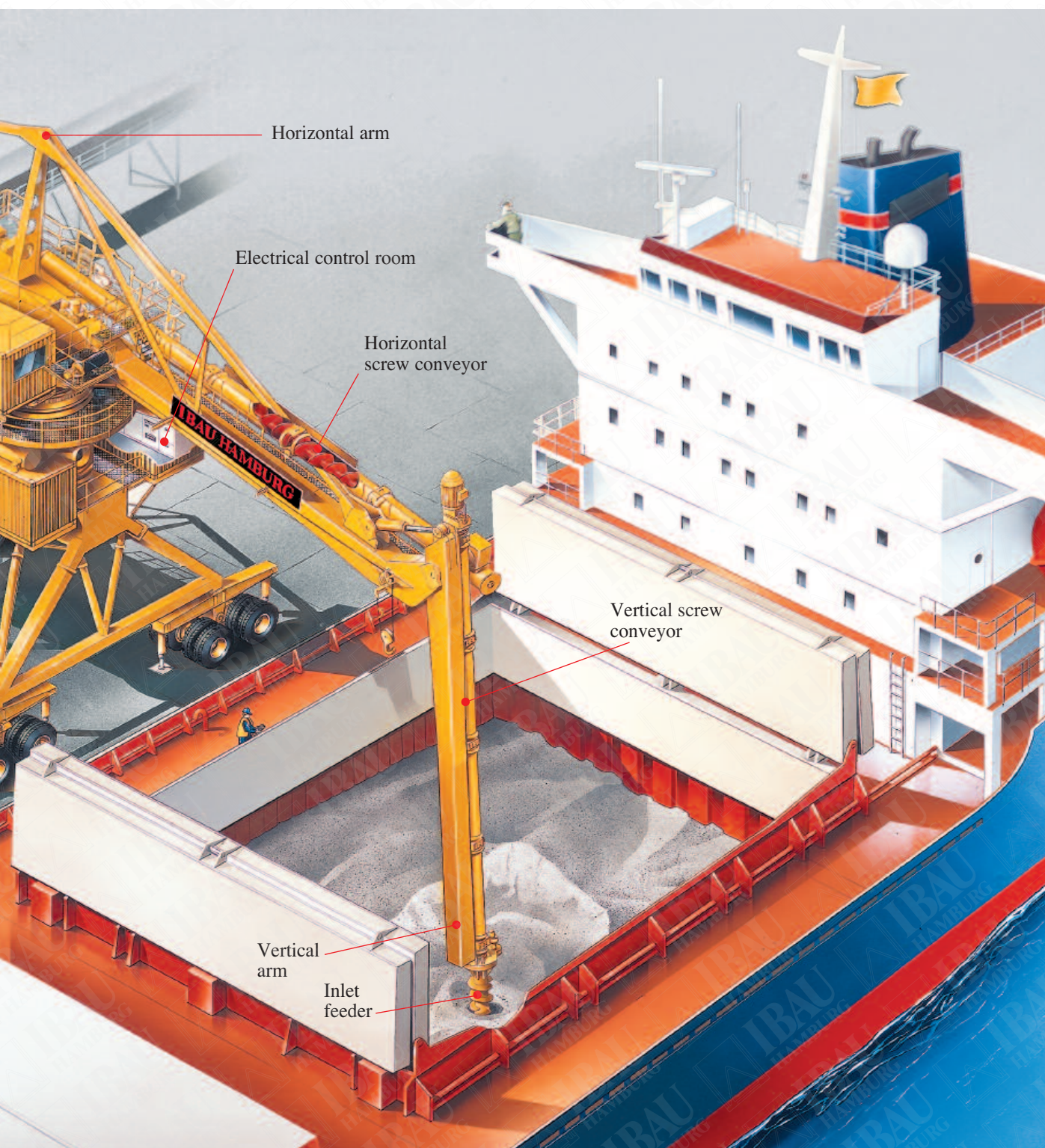


Illustration of the high-capacity ship unloader



## High-capacity ship unloader 60.000 dwt class



Ship unloader on rails feeding a belt conveyor via an airslide system



Ship unloader on rubber tyres with direct truck loading





Ship unloader on rails for Dangote Cement at Lagos Harbour, Nigeria



High-capacity ship unloader on wheels for Dangote Cement, Port Harcourt, Nigeria



## High-capacity ship unloader 60.000 dwt class



Port-mobile ship unloader on rubber tyres for Ceminter, Spain

Ship unloaders on tyres are used, if the quay needs to be cleared after the unloading.

Thus the ship unloader can be driven to a parking position.

This type of ship unloader can be manoeuvred more easily as its tyres can be turned by 90°.

During the unloading process the ship unloader has to be supported by hydraulic cylinders, i.e. during the unloading process the ship unloader is stationary.







Rail-mounted ship unloader for Deciom, Romania



The ship unloader on rails allows an efficient unloading.

This type of ship unloader can be moved during the unloading process, if it is equipped with a conveying belt for the feeding of the storage facilities.

This allows to reach all areas of the cargo holds and to empty them efficiently.



## High-capacity ship unloader 60.000 dwt class



High-capacity ship unloader





at Jurong Port, Singapore



## High-capacity ship unloader 60.000 dwt class



Ship unloader on rubber tyres for Continental





Florida Materials, Port Canaveral, USA



## High-capacity ship unloader 60.000 dwt class



Hydraulic clamp connection to the conveying pipeline

### Pneumatic material transport equipment

Instead of a conventional downstream belt conveyor, the cement can be pneumatically conveyed from the ship unloader via IBAU Pumps into the storage facilities. The conveying length can be up to 500 m, the throughput for each pump is 400 t/h. The material from the pumps can be injected into one pipeline. The ship unloader is equipped with a hydraulic clamping device, which connects the ship unloader safely and quickly with the pipeline in different unloading positions along the pier. At the end of the pipeline two-way valves are situated which distribute the cement into the selected silos.



Clean-up unit during operation





Pneumatic transport system located on the ship unloader



## High-capacity ship unloader 60.000 dwt class



Ship unloader during





transportation to the customer



## High-capacity ship unloader 60.000 dwt class



High-capacity ship unloader with





on-board pneumatic equipment



## IBAU HAMBURG - THE STATE-OF-THE-ART



Raw meal blending silo,  
Dyckerhoff Zement / Germany



Alumina silos with bulk loading,  
Qatalum, Qatar



High-capacity mixing plant  
HOLCIM, Antwerp / Belgium



Coal-fired power plant  
Mehrums / Germany



Ship unloader on rubber tyres for Continental  
Florida Materials, Port Canaveral / USA



M.V. CEMSEA and M.V. CEMSTAR selfdischarging  
cement carriers for Brise SchifffahrtsGes. / Germany

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