Van Aalst Bulk Handling
made to measure

Specialized in pneumatic bulk handling equipment for loading, unloading, conveying and storing of powders and dusty or abrasive materials such as:

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- Granulated slag
- Fly ash
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- Alumina

30 years G. v. Aalst Knowledge of Bulk Handling

VAN AALST BULK HANDLING BV

(International Trade Centre) **Engelandlaan 56**
2391 PN Hazerswoude-Dorp - The Netherlands

www.vanaalstbulkhandling.com

Head office: tel: +31 172 213 341 fax: +31 172 232 804
e-mail: info@vanaalstbulkhandling.com

USA, Van Aalst Bulk Handling Co: tel: +1 402 362 615 3 fax: +1 402 362 715 3
e-mail: dgeorge@vanaalstbulkhandling.com

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Clinker hoppers with dust extraction.

More and more clinker import terminals are being established. A lot of these are in Europe, but in the rest of the world, too, grinding mills are proliferating, in part because environmental regulations in various countries make it difficult to establish new greenfield cement factories.

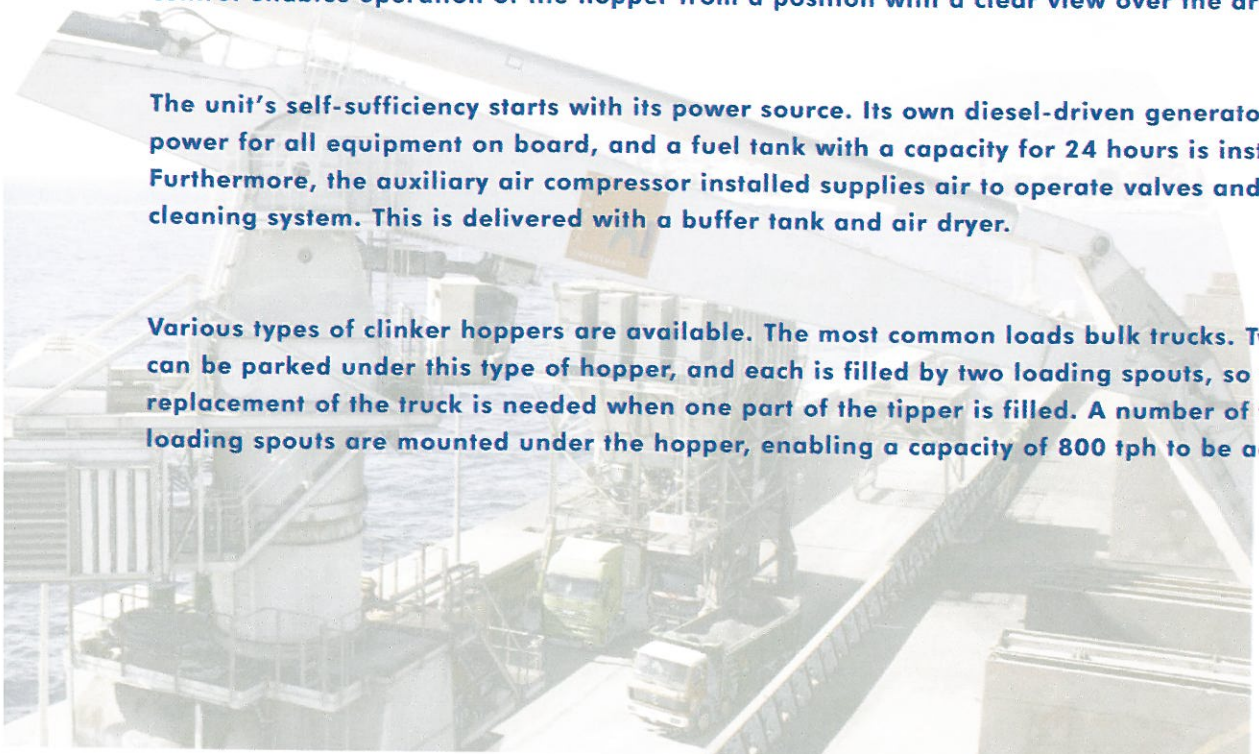
However, the environment must also be taken into account when unloading clinker from ships, and for this reason Van Aalst Bulk Handling BV has developed a hopper with dust extraction that is significantly improved compared to the existing systems for clinker import.

The new clinker hopper is best used together with an equilibrated crane with fixed forearm Because the grab is not hanging on wires it has hardly any out swing. The hopper can therefore be smaller. Furthermore, the equilibrated crane is hydraulically operated and can work at high speed, so even with a relatively small grab a high unloading capacity can be achieved. This combination, with no out swing, a small grab and a modestly sized hopper, means not only that there is no need for a large number of dust extraction filters, but power consumption is also minimised.

The hopper is also 100% self supporting and needs no shore power supply and no assistance during transport in the harbour. When the unloading crane moves to another ship's hold for unloading, the hopper can follow. The wheels of the hopper are equipped with hydraulic motors to make them self-propelled, reducing labour and operational costs. Furthermore, a remote control enables operation of the hopper from a position with a clear view over the drive way.

The unit's self-sufficiency starts with its power source. Its own diesel-driven generator supplies power for all equipment on board, and a fuel tank with a capacity for 24 hours is installed. Furthermore, the auxiliary air compressor installed supplies air to operate valves and the filter cleaning system. This is delivered with a buffer tank and air dryer.

Various types of clinker hoppers are available. The most common loads bulk trucks. Two trucks can be parked under this type of hopper, and each is filled by two loading spouts, so that no replacement of the truck is needed when one part of the tipper is filled. A number of four loading spouts are mounted under the hopper, enabling a capacity of 800 tph to be achieved.



The loading spouts, also called loading bellows, are intractable and equipped with a skirt. When the tipper truck is parked under the hopper, the spouts are lowered to the bottom of the truck and clinker is loaded. Soon a small mountain of clinker is formed under the skirt, which is detected by an infrared detector inside the bellow. The bellow gradually rises as the load increases.

The skirt at the loading spout ensures that no dust can escape, while the dust inside is extracted via the space between the outer and inner layer of the loading spout. Depending on the annual turnover of the clinker hopper, the inner bellow of the loading spout
can also be equipped with a lining of stainless steel bucket type rings or ceramic rings.

However, perhaps the most important feature on the hopper is the flap system that is mounted on top of the receipt area. This system operates like a non-return valve: when the material drops onto it, the flaps open and material drops into the receipt area; when no material is left on the flap, they close again. This means that no dust can rise out of the receipt part into the open grab section.

This flap system separates the "grab" part and a receipt part of the hopper. In the grab section, the grab is opened and the clinker drops via the flaps into the receipt part. From the receipt part the clinker flows to the loading bellows when the valves at the bottom of the receipt part are opened.

Both sections of the hopper – "grab" part and receipt part – are equipped with dust extraction filter/fan assemblies. These ensure that the dusty air is extracted and filtered before it is released into the open. The air flow is extracted through a series of pleated cartridges, made of spun bonded polyester, that have a dust emission of less than 5 mgr/Nm^3 air.

The dust cakes the outside of the filter elements, and reverse jet pulses of auxiliary air clean these regularly. The dust cake released drops down into the receipt part, on top of which a breather is installed to equalise the pressure inside and outside of it.

Although the hopper described is for clinker and outloading into bulktrucks, other materials, such as pet coke, sand and even cement, can be handled. Outloading can also be done to a single truck tanker or onto a belt conveyor.

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