

## Cleveland Cascades chutes for all cement loading applications

Cement is one of the most commonly produced construction materials in the world and is a staple of the dry bulk transportation industry. Along with its semi-manufactured counterpart, clinker, cement and clinker are traded globally in vast quantities. To minimize transportation costs, they are typically shipped by ocean freight and re-distributed locally by road and rail vehicles and tankers.

The particular properties of the material pose a number of challenges for suppliers of handling equipment. Cement is a very free flowing material with very small particle size and needs very careful handling to avoid dust pollution. Clinker is less dusty than cement, but is very abrasive and is often loaded at high material temperatures in excess of 90°C. Both cement and clinker need to be kept dry during transportation to ensure material quality.

One of the key features of the Cascade, controlled flow technology chute, from Cleveland Cascades is its ability to control dust creation at source and consequently cement and Clinker applications have always been a big part of the company's business. The company has developed a full range of loading chutes suitable for each stage of the cement and clinker distribution chain, including ship-loading chutes, open vehicle loading chutes and tanker loading chutes.

Both shiploaders and open vehicle loading chutes use the same Cascade technology, but whereas quayside shiploaders can be over 30 metres in length, vehicle chutes need to be much shorter and to accommodate more frequent loading patterns and more intricate logistics of tanker and open vehicle loading. While the vehicle loading chutes are lighter than shiploaders, they are designed with the same robust construction and similar operational



*Shiploading Cascade chute, loading cement clinker.*

functionality of the larger chutes. Material detection probes housed in the carrier, enable automatic raising of the chutes on detection of the material pile, to ensure continuous material loading. Limit switches in the hoist system can be set to limit travel and ensure optimum loading levels.

The Cascade loads material through a series of oppositely inclined cones, which creates a mass flow at low velocity, yet high volume. During its descent, the material is supported through the full length of the chute, ensuring a soft delivery from the outlet to the material pile, for every load. It therefore arrives at the load pile with minimal degradation. The controlled descent of the material prevents air separating the particles and largely eliminates dust generation at source.

Cleveland Cascades tanker loading chutes utilize a vertical free fall cone design. The free fall principle is highly effective when loading in to the enclosed space of a tanker and the system is fitted with a completely sealed closure cone which connects to the tanker inlet. A weatherproof shroud is fitted over vertical cones to ensure dust cannot escape into the environment, and also to allow for the effective extraction of dust-laden air if required. The shroud is built to the same proven, robust design used in Cascade chutes. Once loading is completed through the



*Road tanker loading chute, loading cement.*



*Open vehicle  
loading chutes,  
loading  
cement.*

chute, the closure cone delays lifting for a short period of time to ensure that any excess dust held up in the system, has settled. Cleveland Cascades has supplied numerous cement and

clinker chutes in all three of these applications across Europe, Asia, Africa and North and South America.

The wharf at Yamaguchi, Japan, has a Cleveland Cascades shiploader installed loading cement clinker up to a capacity of 650tph (tonnes per hour). The inclined cascade cones discharge material through a 20-metre-length chute and the cones have a 6mm ceramic liner, to withstand the high abrasion and high material temperature of clinker.

At Irish Cement in The Republic of Ireland, Cleveland Cascades has several vehicle loading chutes installed to load cement clinker enabling 14 trucks to be loaded per hour, each with a 28t load capacity. The cascade chute extends to 3.9 metres in length and the steel cones have 4mm ceramic liners to cope with the abrasion from clinker cement.

At Titan Cement in UK, Cleveland Cascades have multiple tanker loading chutes, loading cement in to road tankers. Each chute can load 150tph through a 2m long chute and they utilize a rubber seal at the outlet to ensure a perfect seal during loading. The air displacement is controlled by an internal extraction system which recycles the dust born material back in to the storage silo.

A big part of the package provided by Cleveland Cascades is ongoing product support, from the moment the product is delivered and throughout its operating life. Commissioning engineers can visit site to help install and optimize the operation of the chute according to customer needs, upon delivery. Manuals are comprehensive and detailed to give the operators the information they need to maintain the product and maximize its operational efficiency. To complete the support package, original OEM spare parts can be supplied with the original order and subsequently during the life time of the chute.