



Phosphate loading

The Port of Aqaba is located in the Kingdom of Jordan near the head of the Gulf of Aqaba which forms part of the Red Sea. The Port Corporation of Aqaba operates a large Phosphate export facility which incorporates two shiploading systems each capable of loading 2200 tons of material per hour, the facilities dating back over forty years.

Phosphate, which is produced as a constituent of fertiliser is an extremely dry and dusty material and the loading of ships with conventional loading systems resulted in very high levels of dust pollution, typically 200mg/m³ per loader, levels above 25mg/m³ are considered to be more than ideal. The Port Authority took the decision to implement a wide programme of improvements to port operations to help eliminate phosphate dust emissions, these works to include modifications to buildings, conveyor systems

and replacement of the loading chutes fitted to the shiploaders.

In anticipation of extensive commercial redevelopment of the surrounding areas and the need to minimise possibilities of dust pollution, a challenging maximum dust pollution level of 5mg/m³ during shiploading operations was set, this represents a 98% reduction on typical pollution levels anticipated during loading operations of this type.



Cleveland Cascade Limited has overcome the problems of handling many difficult-to-handle materials, completing hundreds of projects worldwide. In this case two shiploaders each with the capacity to handle 2200 tons of material per hour were to be retrofitted. The material particle size was specified as 40 micron to 2mm and a fully extended chute length of 17m was required to accommodate the largest vessels visiting the port. The solution provided were systems from the Cascade range of loading chutes incorporating ceramic linings to running services to provide an anticipated service life of fifty million tonnes.

The systems designed for the project also incorporated a number of special features to maximise the throughput of the facility, simplify maintenance and improve performance in operation. As shown below, the retracted loading chute can be hinged back and locked into a horizontal position during boom positioning to accommodate larger vessels, avoid obstructions and make the system more accessible for maintenance.



Cleveland Cascade engineers were able to provide a bespoke loading solution to the Port Authorities specific problems. Additionally, Cleveland Cascades undertook project management of the installation and commissioning phases which included integration of the new chute control unit into the existing shiploader control system.

In addition to full engineering, manufacturing and installation support, Cleveland Cascades also provided a detailed assessment report confirming how effective the system operated after commissioning. Using the latest air sampling techniques, air samples were drawn from several positions adjacent to the ongoing loading operation, once analysed the samples confirmed that air pollution levels of less than 5mg/m³ are achieved using the Cascade loading system. Air quality during loading has been transformed as can be clearly seen in the picture below which shows the system operating at maximum capacity.



This latest project by Cleveland Cascades compliments other projects undertaken on phosphate loading and handling in many countries including Syria, Morocco, Jordan, Tunisia, Algeria, Israel, Australia and Europe firmly establishing the companies loading systems as the industry standard best practice.



Compare this with operation of the old system which it replaced: