

## CASE STUDY

### Alimak rack and pinion elevator provides maintenance access to ammonium nitrate prill tower

An Alimak rack and pinion industrial elevator is pre-designed into Dyno Nobel's Moranbah ammonium nitrate plant, providing maintenance access to the 70m prill tower. Alimak utilised a crane to lower the elevator into the existing tower shaft during installation.

#### A GROWING DEMAND FOR MINING EXPLOSIVES

The Dyno Nobel ammonium nitrate plant, located in Queensland's coal-rich Bowen Basin, is part of Incitec Pivot's \$935 million Moranbah nitrate manufacturing complex. The fully-integrated back-to-gas complex includes ammonia, nitric acid and ammonium nitrate plants, producing the raw materials needed to service Australia's growing demand for mining explosives. Construction of the complex began in 2006, and after several scheduling delays, was completed in early 2012.

#### PROVIDING ACCESS TO THE PENTHOUSE

Included in the construction of the ammonium nitrate plant was the erection of a 70m prill tower to be used in the ammonium nitrate solidification process. Dyno Nobel specified the inclusion of an Alimak rack and pinion industrial elevator into the design of the prill tower, in order to provide operations and maintenance staff with access to the tower's top 'penthouse'.

Alimak worked closely with Dyno Nobel, providing engineering support for the design of the tie-in points and landings, pit design and electrical supply requirements.

#### INSTALLATION WITHIN A PRE-EXISTING ELEVATOR SHAFT

Installation of the industrial elevator proved challenging, with the elevator to be installed within a pre-existing shaft area of the prill tower. To accomplish this, elevator components were lowered from the 70m tower using cranes, while the Alimak installation team used a crane-hung 'dog-box' to access main tie-in points.

With a lifting height of 65m, providing access to the three landings of the prill tower, the Alimak industrial elevator is used for general maintenance on a daily basis and accommodates extra personnel and equipment during heavy-usage shutdown periods.



Dyno Nobel Ammonium Nitrate Plant, Moranbah, Australia

#### ELEVATOR DETAILS

Location:	Dyno Nobel Ammonium Nitrate Plate, Moranbah, Australia
Application:	Prill tower, access elevator
Elevator type:	Rack and Pinion
Elevator model:	Alimak SE 700
Capacity:	700 kg
Elevator car size:	1.04 m x 1.17 m x 2.17 m (W x L x H)
Speed:	1.0 m/s
Lifting height:	65 m

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