

Case study

World's Longest Conveyor China

Project Summary

Application: Fixed conveyors for material handling
– limestone for cement plant

Components

- Automation and drives
- 38 x 750kW GT3000 large
- 6 x 45kW GT3000
- DC Bus 2 x 6 SPDM 3k6, 2 x SPDM 1k5

Nidec's role

Nidec helped the customer by providing LV drives and an automation system to optimize conveyor performance. Nidec's GT series of low voltage drives is designed for motion control on industrial process lines as well as heavy duty pump and fan applications. These IGBT-based variable frequency drives offer unmatched levels of adaptability with very high levels of energy stability and user control. Nidec's ARTICS industrial automation control system offers state-of-the-art, accurate, reliable hi-tech solutions for mining industrial processes.



The Challenge:

Nidec had to contend with the longest belt conveyors ever built in Asia.

The 2 lines of parallel-long distance curve belt conveyors feed one of the biggest cement plants in the world with limestone at the rate of 80,000 tons/day.

The curved conveyors were designed to cross over 39km of mountains as well as roads and rivers. The customer needed efficient and reliable equipment, an important requirement for cost-effective production. Nidec was selected to provide reliable components and systems to allow the conveyors to operate in difficult conditions, over long distances and the toughest working environments.

The Solution:

In China, Nidec's components and system were installed in a line composed of 3 conveyors, 39km long, among which the longest is 16550m. The load sharing and remote control of the conveyor motors (16km for the longest conveyor) are crucial for the plant's performance. The motors are controlled by Nidec's GT3000 variable speed drive inverters, allowing a smooth start-up (even at full load) and sharing of torques on motors during the stop or start-up phases. The automation control system monitors production of the conveyor in order to:

- ascertain at any moment the conveyor's sections of loaded product as well as their percentage of charge
- control the upstream conveyor's supply to manage the conveyor load according to the profile
- adapt the motor sharing according to the load on the conveyor

Nidec drives, coupled with ARTICS high performance algorithms support machine output and equipment life improvement.

