

SUCCESS STORY

ABB mine hoisting system

Longgu Coal Mine, China



01 Outside view of Longgu Coal Mine with hoist towers

Customer need

Since China has a lack of oil and natural gas, coal continues to be a major source of the country's energy. Coal provides energy for 74 percent of China's total primary energy consumption and thus plays a critical role in the country's economic development. Longgu Coal Mine, with annual capacity around six million tons, has therefore been listed as a National Key Construction Project by the Chinese Government.

ABB's solutions

ABB's solutions feature the following:

- Advanced control system based on AC800M
 - Efficient functionality for safe and reliable operation
 - Dual safety circuits connected to safety relays that control the brake system and drive converter
 - Human – machine interface in Chinese
 - First fault functionality
 - Extensive error handling
- State-of-the-art drive system
 - Highly efficient power train
 - Low harmonic generation
- No reactive power consumption
- Low voltage drop
- Ability to operate on weak network
- Robust in-house mechanical solution
- Well proven design philosophy

In 2004, Xinwen Mining Group, one of the ten largest coal mining enterprises in China, awarded a significant contract to ABB for two production hoists for Longgu Coal Mine, the first of seven coal mines to be developed in Juye mining area, Shandong Province.

- Infinite lifetime
- Dedicated strength and brake calculation for each hoist
- FE support for development and special investigations
- Reliable brake system through redundancy

ABB's scope of supply

ABB has delivered two identical mine hoists for production, including both mechanical and electrical parts.

Technical data	
Payload	32 tons
Hoist speed	12.5 m/s
Hoist distance	835 m
Production capacity	970 tons/h
Main mechanical equipment	
Pulley	Ø 4.5 m
Shaft	1,996
Bearings	
Bearing houses	
Deflection sheaves	Ø 4.5 m
Hydraulic brake system	
Main electrical equipment	
Synchronous motor	4,800 kW
Drive	ACS 6000 DTC
Control system	
Shaft signaling	



01



02



03



04

- 01 Production hoist
- 02 Deflection sheave
- 03 ACS 6000 DTC drive
- 04 Mine hoist operation desk

Customer Benefits

- One single source supplier for both mechanical and electrical equipment facilitates project management for both ABB and Longgu Coal Mine
- Safe and reliable production
- Easy operation and maintenance
- Prompt local service with support from global expertise

Cooperation

Cooperation between ABB and Longgu for this project progressed very smoothly. “We have had very good cooperation with the ABB people”, says Yao Huibo, who is the engineer responsible for Hoist No. 1 and No. 2 at Longgu Coal Mine.

Facts about Longgu Coal Mine

Longgu Coal Mine began production in 2007. The Shandong Xinwen Mining Group invested in and built the mine. With its designed production capacity of 6 million tons per year, Longgu Coal Mine is currently one of China’s largest underground shaft mines in terms of production capacity. The entire mine area at Longgu provides 1.68 billion tons of coal reserves, of which 510 million are recoverable.

The coal is low ash, low sulfur, low phosphorus but high-quality coking coal with high calorific value. Longgu Coal Mine has two main production shafts to which ABB delivered two complete mine hoists. One service shaft where ABB delivered the control system, electrical equipment and brake system to the service hoist as well as one ventilation shaft. The total investment in the mine reached 3.06 billion RMB, and the designed service life cycle is about 70 years.

ABB Mining business is represented in the following countries: Australia, Brazil, Chile, China, Germany, North America, Peru, South Africa, Sweden and Switzerland. For contact details, please visit our website:

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