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Designers trusted the new coal production site to fieldbus technology



# Coal for Chongqing

Chinese plant designers trust their new coal production site to Turck's rugged fieldbus system BL67

In order to cover the constantly increasing demand for energy, China has continuously been expanding its coal production capacities. One of the beneficiary cities is Chongqing – one of China's so called direct-controlled municipalities (besides Beijing, Tianjin and Shanghai). Being home to more than 32 million people, the independent administra-

tive unit is the largest city worldwide. Its land area (around 82 square kilometers) is just a little smaller than Austria's entire land area.

In autumn 2006, the Shandong Electric Power Engineering and Consulting Institute (SDEPCI) began expanding the Yongchuan plant's capacity with another two 135 MW units for processing lower quality coal. The project was funded by the China Power Investment Corporation and the Chongqing Jiulong Power Co. Ltd. After a project duration of 16 months, both plants went online in January 2008.

Extensive transport system run through the entire plant in order to transport the coal from its repository to the coal mills that precede the burning kilns. This transport system has to be reliable at all times, in order to guarantee an unobstructed plant operation.

## Quick read

In order to guarantee a reliably running transportation system in spite of the harsh environments, plant designers decided to implement the peripheral devices via a fieldbus system. Turck's established BL67 series won the race.

This is why the plant designers made great demands on the automation solutions being used. Ultimately, countless sensors and actuators spread all over the plant area have to be operated despite dust, dampness, vibrations, noise or electromagnetic interferences.

A conventional automation architecture would not have met these demands, which is why the plant designers chose a modern fieldbus system for the signal transmission between the PLC and sensors/actuators. The proper fieldbus system – featuring a modular design and IP67 protection – not only guarantees interference-free communication between all devices involved, but it also provides a high degree of data integrity, protection against vibration and extensive diagnostic functionality.

### Defying dust and vibration

After analyzing fieldbus systems from different producers, the plant designers of Shandong LuNeng Engineering Co. Ltd. – entrusted with engineering and commissioning the new plant's automation solutions – chose Turck's BL67 series. In order to guarantee reliable operation in spite of dust and vibration, plant designers decided not to abandon IP67 protection – although each and every fieldbus station was to be installed in a control cabinet. Turck's fieldbus system convinced the plant designers with another option: single I/O modules can be swapped in full operation. In this way, BL67 allows plant operators to replace broken I/O modules and avoid expensive downtime. Short-circuit protection and distinct diagnostic functionality that provide a quick status overview complete the system's comprehensive safety equipment. Thanks to its modular design, the BL67 system can simply be expanded if necessary – whether digital, analog, temperature or other signals need to be integrated.

The entire coal plant incorporates two transport stations, two coal mills crushing the combustible in two steps and a coal bunker from which the coal dust is blown into the burning kilns. Between these stations, the coal is transported via 14 conveyor belts. Each conveyor belt features its own control cabinet that incorporates connectors, motor-circuit switches and the BL67 stations. The modular I/O stations transfer all the analog and digital signals that reflect the transport system's status – whether rate of feed, offset, distension, cracks or fill level data. The fieldbus stations are connected to the higher level PLC, Control Logix 5560 by Allen Bradley, via DeviceNet. After evaluating the obtained data, the PLC submits the plant's status to the management information system (MIS). The plant designers implemented a total of two fieldbus networks – one covering 900 meters and the other covering 400 meters.

Turck's BL67 system absolutely convinced the planning engineer, Xiangyang Bai, ultimately ensuring future cooperations with Shandong LuNeng Engineering: "BL67 is a very good fieldbus solution that we are already planning to use in future projects," says Bai.

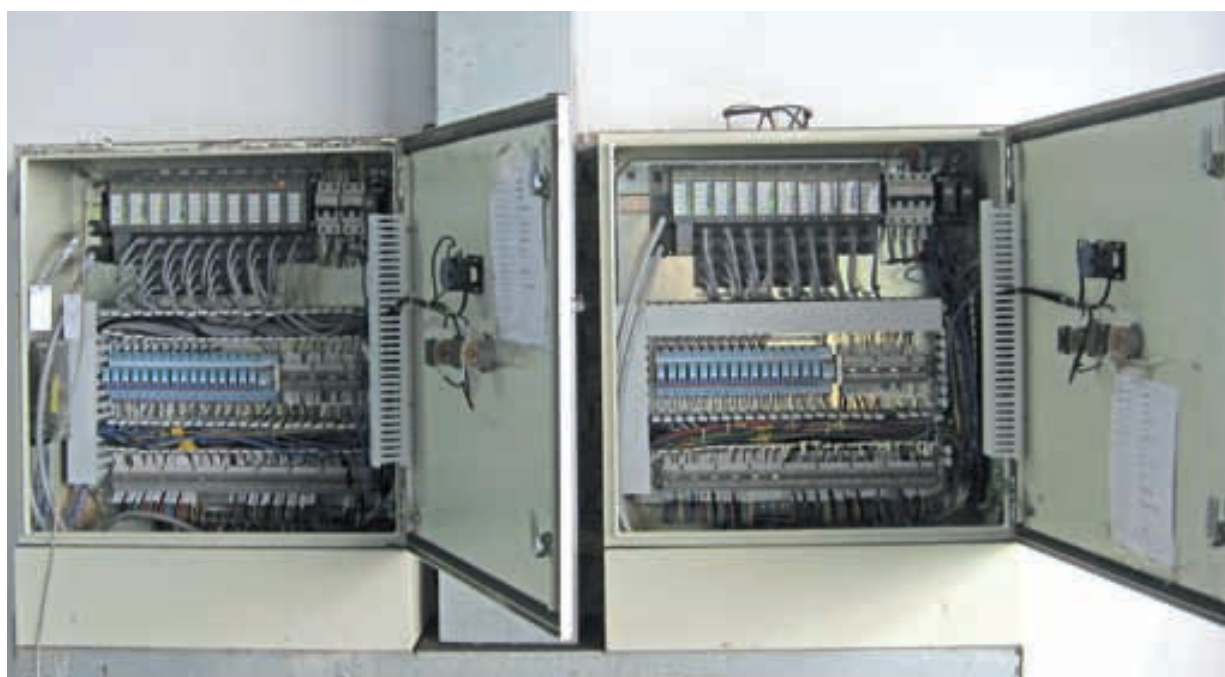
### The best backup

To guarantee continuous transportation of coal, designers trusted the Chongqing Yongchuan coal production site to the reliable, efficient and flexible fieldbus technology that provides error-proof combustible production. In Turck's IP67-rated fieldbus system, BL67, designers found a powerful solution that meets the highest demands. BL67 provides a high degree of reliability, simple maintenance and fast diagnostics, combined with easy and error free installation and low wiring costs – ultimately, the best backup a plant operator can have for the efficient and safe plant operation in harsh environments. ■



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**Xiangyang Bai,**  
Shandong LuNeng  
Engineering



**A total of 14 BL67 fieldbus stations coordinate the DeviceNet data transmission between field devices and the higher level PLC by Allen Bradley**