Conveyor belts: Carrying a load with Twaron®

Producing almost 75,000 kilotonnes of coal every year, Yanzhou Coal is China’s fourth biggest coal mining company. In 2015, they overhauled their existing network of underground industrial conveyor belts, installing belts reinforced with Teijin Aramid’s Twaron in order to minimize downtime and limit the environmental impact of their production process. The introduction of this innovative conveyor belt technology has proven successful so far, and more aramid-based developments are lined up at Yanzhou.

New technology for an old industry
Yanzhou Coal Mining Company has been in independent operation since 1998, and has been listed on the stock exchanges of Hong Kong, New York and Shanghai as a controlled subsidiary of the Yankuang Group. Since then, Yanzhou Coal has taken important steps to curb its environmental impact, in line with the Chinese government’s ambitious CO2 emission targets. “In 2005, the Chinese government set the target of reducing CO2 emissions by 40 to 45% per unit of GDP by 2020,” says Ma Gang, Deputy General Manager of Baodian Coal Mine at Yanzhou Coal. “As a state-owned company, we’ve had to adapt our operations to ensure sustainable business growth. In particular, we’ve made a concerted effort to become more sustainable and to improve the efficiency of our production processes. Introducing aramid-reinforced conveyor belts at our mines was a way of working towards both our aims.”
Significant technical advantages

Until 2015, Yanzhou Coal mainly used solid woven fabric and steel cord flame-retardant conveyor belts, with a maximum strength of 2500N/mm for the fabric belts and 3500N/mm for the steel cord belts. “With these belts, we were experiencing quite a lot of downtime because of maintenance issues, which would sometimes lead to huge knock-on costs for the company,” says Mr. Ma. “Aramid belts offer the same strength as belts made with fabric or steel, but with better performance in terms of energy consumption, product lifetimes, and transport capacity, as well as a lower cost of ownership. We’ve experienced these benefits first hand. For example, our Twaron-based conveyor belt works so well that the work load of our maintenance team has been roughly halved, and we’ve been able to reduce the total energy consumption at our mines by 25%. That’s quite a lot!”

An assisted introduction

“Introducing the Twaron-reinforced conveyor belts was a big decision for us,” says Mr. Ma. “Conveyor belts are an integral part of our facilities, and a lot depends on them. If one belt breaks, it can stop production at the whole mine while it is being fixed. Equally, we had a lot to gain from having more efficient belts. Thanks to the technical assistance of Teijin Aramid and Tangcun Industry, the belt manufacturer, we were able to introduce the belts successfully, and we now have minimal downtimes because of belt issues, as well as having increased transportation capacity. We’re happy we took this difficult decision!”

Scale-up on the horizon

Currently, Yanzhou Coal has installed over 5,000 meters of Twaron-based belts in the Baodian Coal Mine and the Jining area. “We’re very satisfied with the benefits of this technology,” says Mr. Ma. “In fact, we’ve planned to introduce these aramid belts at our other important coal mines, which will take roughly three years. We’re confident that Teijin’s materials can help us develop our core business and address market trends. More generally, we’re sure that aramid conveyor belts will be widely accepted by the coal mining industry – the only question is how fast this will be. We live in times of change!”

For more information, please visit www.teijinaramid.com