

# THE CHINA JOB

By building possibly the biggest vibrating screens in the world, an Australian bulk handling specialist has opened a potentially lucrative link into China. **By Noel Dyson**

**P**icture a vibrating screen that is 4.27m wide by 7.32m long and weighs 32.2 tonnes without its isolation frame.

Then picture constructing two such behemoths and shipping them to a coal mine in China and commissioning them within a tight delivery schedule.

This is what Joest Australia, a subsidiary of Jöst GmbH & Co KG of Germany, has done. It was hired to build two large double-deck vibrating screens to handle raw coal for a new mining project in China's Shaanxi province.

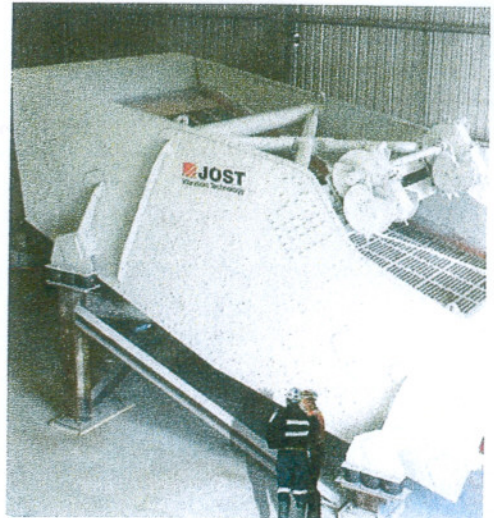
These are possibly the largest vibrating screens of their type ever built. Modelling technology Jöst invested in has made such a design and manufacturing feat possible.

Joest managing director Ian Laws believes these are possibly the largest

double-deck vibrating screens ever built. "There have been other machines made this wide but to my knowledge, they've only been single-deck machines," he said.

"This has only been possible due to the advancement in sophisticated design tools such as Finite Element Analysis modelling technologies now available to the engineers. Our technological ability is, I think, something we have to offer. Our knowledge of design and construction methods to make these machines work without problems — that's where we think we have an advantage over our competitors in the market.

"Jöst's investment in FEA methods has proven valuable in the development of large vibrating screens and will enable further advances in the design of large vibrating machines. That in turn will advance the



*This Joest Australia-built vibrating screen is possibly the largest of its type in the world.*

technology used in the mining industry throughout the world," Laws said.

Given the groundbreaking nature of the development, Jöst sent its design team lead engineer Thomas Hypki to Australia to witness the factory testing and collect vibration recordings for analysis and correlation to the FEA model in the head office's engineering department.

The double screen set-up Joest sent to China is capable of sorting coal into three sizes. Each unit will handle up to 1000 metric tonnes per hour of raw coal of less than 400mm in size and having a bulk density of 0.9 tonne per cubic metre and a moisture content of up to 10%.

Laws said selection of the screen media to handle this moist material was critical and special "flexible" polyurethane screen panels had been provided for the lower deck.

Transporting the machines to their Chinese mine destination raised its own set of problems. The transport dimensions for each unit were 5.29m wide by 8.95m long by 4.5m high. Special transport beams were designed and supplied to support the machines for their trip from Joest's Welshpool factory in Western Australia to Fremantle port and then during the sea voyage and subsequent Chinese road trip. The two units were also shrink-wrapped to protect them from the elements while in transit.

The cross-China journey posed its own problems. Laws said there had been a concern that the machines would not be able to fit through some of the tunnels on the way to their final destination. "Fortunately the tunnels were wide enough to get the screens through. Otherwise it would have meant a trip through mountains," he said.

Laws said he was hopeful of more work out of China, given Joest had received some

follow-up interest from there. The knowledge and ability to build bigger vibrating screens should stand Joest in good stead, given the trend for all types of mining equipment to get bigger.

"Look at dump trucks," Law explained. "Twenty years ago, a 50t dump truck was big. Then they got bigger, to say 85t and now they are much, much bigger. It's the same way with vibrating screens.

## China calling

WHEN a Chinese mine went looking for a supplier for two mammoth vibrating screens to sort coal, it turned to Joest Australia.

The vibrating screens sent to Shaanxi province are equipped with two Joest JVM Model JR1008 Exciters, the largest in the JVM range. These large exciters weigh 2.5t each and provide excitation of the screen through a specially designed drive beam.

The multi-slope (Banana) deck surfaces are arranged with the first deck stage at a 25-degree incline and the second deck at a 15-degree incline, providing high material velocity at the first stage to achieve "thin bed" screening.

The selection of deck angles, stroke and frequency is based on imparting optimum

vertical acceleration to the material to provide high capacity and efficient screening.

The screens were manufactured in Perth, WA and fully assembled for factory acceptance testing. The screens have been designed to accept "snap in" modular panels screen deck surfaces, an abrasive resistant plate top deck with 50mm hexagonal apertures and an "Elastoflex" polyurethane bottom deck system with 13mm square apertures.

The highly flexible lower screen surface reduces blinding and pegging to enhance screening performance. The "snap in" panel system makes replacement safe, easy and quick.