



<http://www.engineeringnews.co.za/article/kwatani-puts-exciter-quality-to-the-test-2016-11-28>

Kwatani Puts Exciter Quality To The Test

28TH NOVEMBER 2016



Assuring customers of the quality and reliability of Kwatani's locally manufactured exciter gearboxes means testing

them at full load before they leave the company's workshop. This is according to Kenny Mayhew-Ridgers, general manager engineering at Kwatani.

"As the designer and manufacturer of these products we want to be sure there are no issues with the running temperatures, oil cooling and noise emissions," Mayhew-Ridgers says. "The only way to do that confidently is by applying the load that the machine will be subject to during its lifespan on site."

It is vital that movement in the gearbox is finely synchronised to ensure uniform linear excitation, this is a primary advantage of an exciter

gearbox over the alternative of unbalanced motors – which exert torsional loads on the drive beam of the screen through unbalanced motion before they reach the point of self-synchronisation.

Kwatani, previously known as Joest Kwatani, has operated in South Africa for more than four decades and is known for its vibrating screens and feeders, drives, controllers, conveyor feeders and dryers. The company also leads the field in terms of the sheer size of its exciters. For this reason, the facilities for testing these large units – located at Kwatani's Spartan premises near Johannesburg – are similarly above-average in scale.

“Our largest exciter can displace 20 tonnes with 10 mm movement – so this needs a strong, heavy frame,” he says. “We designed a full-scale test rig so the gearbox can endure a full load on its bearings, and it must withstand this without generating undue noise or heat.”

To ensure that the vibrations do not carry into the Kwatani's test building, the rig is placed on a secure sub-frame to dampen the movement and dynamics to the floor.

“We also put the rig at an angle, because it is important to test the oil flow in the position in which the unit is going to be used – to make sure there are no oil leaks,” he says. “We have spent many research and development hours on fluid dynamics to simulate the flow of oil inside the exciter gearboxes, leading to some very rewarding solutions.”

He says that after almost two years of full-load testing, Kwatani leads the industry in terms of the way it tests exciters.

“We build the exciters ourselves – everything except the bearings – and use a highly qualified consultant and specialised foundry to ensure the best quality castings for our exciter housings,” Mayhew-Ridgers says.

The other advantage of Kwatani's facility is that a variable speed drive (VSD) has been connected to specialised monitoring software, allowing experiments to be conducted on the gearbox at various speeds. This checks whether there are any critical or 'natural' frequencies created by rotating equipment and records important aspects of operation like the torque generated.

"This also makes it possible to become much more accurate when specifying components like drive motors –where we can specify size and capacity in a more scientific way," he says. "We might find, for instance, that a smaller motor will start the motion just as well as a larger unit allowing a saving on capital costs and energy consumed."

The test frame can also be used to test different condition monitoring solutions, by installing the necessary tools and conducting computer monitoring; even the performance of newly developed isolators under the machine can be tested with results escalated to suppliers about how their items could be further enhanced for better results.

He says the company's compact design of a dual motor base – where the motor base can stand on a pedestal between two machines and drive them both – also makes it easier for a mine's process plant to accommodate this technology. Previously, an important factor in deciding between the installation of a gearbox exciter or unbalanced motors on a screen was the space available in the plant; now there is a gearbox solution with a smaller footprint.

"Using exciter gearboxes, the design of larger size screens can be lighter and more stable," says Mayhew-Ridgers, "whereas unbalanced motors on these screens can weigh a ton each; and then you typically need four of them – so the screen and drive beam must accordingly also be of heavier manufacture and in most cases the installation also requires more input power."

Kwatani's approach is to leverage its proprietary testing and measuring technology to help customers reduce the total cost of ownership; this includes a service to conduct condition monitoring of customers' assets. The company is a level 3 BBBEE empowering contributor and is 30% black-owned, making it the first in its class to exceed the mining charter requirements in South Africa. 

Phone: +27 (0)11 622 3744

Fax: +27 (0)11 622 9350

Email: newsdesk@engineeringnews.co.za

Website: <http://www.engineeringnews.co.za>

To subscribe email

subscriptions@creamermmedia.co.za or [click here](#)

To advertise email

advertising@creamermmedia.co.za or [click here](#)