

## HYDRAULICS & PNEUMATICS

# Bringing new life to old machinery

**C**onstruction equipment manufacturer Pan Mixers believes that the durability of its equipment sees many customers using plants that are well over ten years old. However, in a move that brings new life to older machinery, while still assisting customers through the tough economic climate, the company is focusing on upgrading machinery.

Pan Mixers director **Robert Ebeling** says that the current trend in South Africa is to upgrade machinery rather than replace it, and the company is seeing an increasing number of clients opting for upgrades that bring older equipment up to date.

"The past ten years has brought about great advances in the electronics and hydraulics industries, while the machinery design has largely remained the same. We can now control components and their movement more accurately than in the past," he says.

"This is carried out by installing linear transducers and rotary encoders to moving

components, which then continually informs the programmable logic controller (PLC) in the machine where the component is."

Knowing the position of the component at any time allows a client to accurately control the speed of the component.

"Once the client has accuracy of movement, it needs to control the physical movement. This is done by using high-resolution hydraulic controls," adds Pan Mixers codirector **Walter Ebeling**.

The combination of the electronic sensing system and a hydraulic system that interacts through the PLC means that clients can start a component slowly, resulting in a decreased chance of crashing on start-up.

"As [the machine] accelerates, clients can level off the speed at any point and slow it down. Therefore, by the time it reaches the end of the process of movement, it does not have to stop suddenly," Walter Ebeling explains.

Sudden stops to the machine exert a force that increases wear and tear; however, as the



**WALTER EBELING**

Pan Mixers continues to innovate in accordance with industry changes

system ensures proportional control, components do not have to be moved at a fixed speed. "This means that clients can make the speeds much faster, because they can accelerate and decelerate progressively, resulting in faster cycle times, greater productivity and lower maintenance," he adds.

In upgrading older machinery, Pan Mixers

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**RE1400**

The company believes that replacing certain components increases efficiency

uses variable-speed drives (VSDs) on the vibrators, which has proved successful for the company. "VSDs also allow for acceleration and deceleration of the electric motors. The benefit of adding a brake resistor on the drive is that it can stop motors faster than ever before," says Walter Ebeling.

Robert Ebeling says that machines with-

out VSDs would have a braking time of anything up to 1,5 seconds. "With a VSD, it is 0,3 of a second. The importance of this is that it greatly improves quality. When vibration is gradually stopped, the vibrating force shakes the mould, which then degrades the concrete product that a customer has been trying to compact. Stopping vibration quickly means that the compaction stays intact, while the cycle time is also decreased by 11% or 12%, which immediately improves the productivity of the machinery."

Pan Mixers has been supplying VSDs in its equipment for the past ten years, but is also able to install them on older machinery. "Upgrading, rather than replacing equipment, works in many instances," Walter Ebeling explains, citing another important progression in Pan Mixers' large RE1400 machines. "Instead of using rubber mountings to control the vibration force of the mould, Pan

Mixers has replaced the rubbers that hold the mould down with air bellows.

"The air bellows respond much faster in movement to the vibration of the moulds than a rubber mounting can. So, instead of holding the mould down with a semirigid component that cannot respond to the movement of the vibration on the mould surface, the faster response time increases the vibrational force," he adds.

Robert Ebeling notes that customers have dramatically increased the compaction of products by installing bellows on an existing plant, at a cost of about R 20 000. "Producing a better product, and using less cement, offsets this relatively small cost," he says.

With the new South African Bureau of Standards directive for paving slabs having been released, in January 2010, and the economy unlikely rebound too quickly, Pan Mixers is ensuring that its clients are ready to meet the challenges of becoming more productive and more competitive in different markets.

"Pan Mixers continues to innovate according to changes in industry laws and the economic climate. We are working to assist our customers by making older machines more productive, while lowering maintenance costs. It really comes down to producing better products, more quickly," Walter Ebeling concludes.

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