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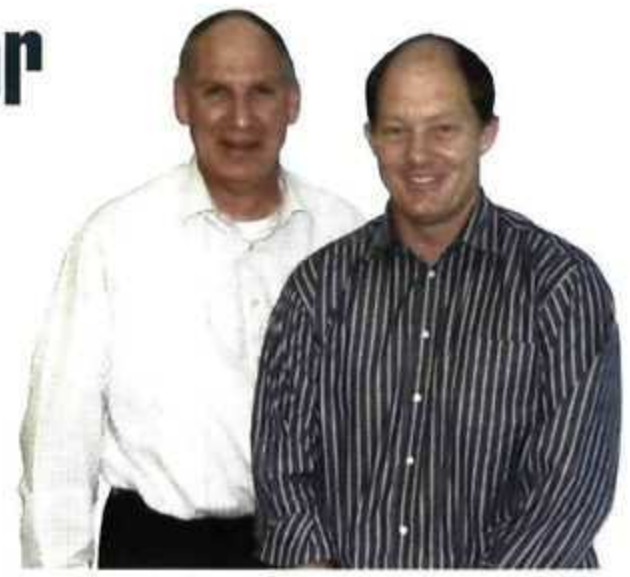
New vehicle solutions for the concrete industry

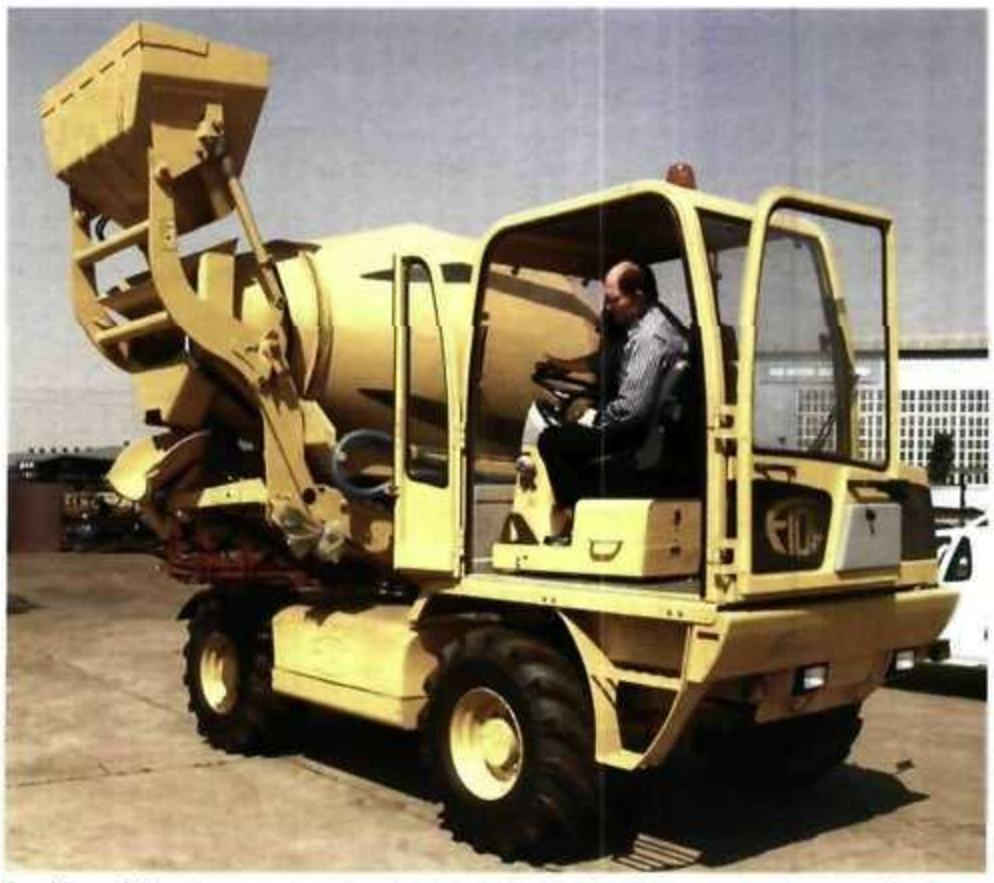
Pan Mixers SA, a leading manufacturer of concrete block, brick and paving machinery, turbine and counter-current pan mixers and batching plants for the concrete, refractory and ceramic industries, has broadened its offering by adding Fiori self-loading concrete mixers and Sermac concrete pumps to its product offering. *MechTech* talks to Michael Dörner, general manager and Walter Ebeling, director, about the special features of these two vehicles.



Michael Dörner, general manager and Walter Ebeling, director, Pan Mixers SA.

On a typical building site in rural South Africa, you will find a drum mixer with eight or nine people with wheelbarrows carrying the cement, sand and aggregate to feed it. These are crudely measured by counting shovelfuls, water is added until it feels right, and then, once mixed, the cement must again be loaded into a little tipper or wheelbarrows to be taken to where it is needed. "Each batch is different, there is no quality control and the whole process is very labour intensive," says Ebeling.

To overcome these problems, Pan Mixers SA has begun to import and distribute a self-loading concrete mixing vehicle from Italy. Fiori self-loading concrete mixers have been specifically designed at the Milan University of Technology to optimise concrete mixing technology and to render the on-site concrete-making process as easy and reliable as possible. "These are gorgeous machines!" Ebeling exclaims as he climbs into the cabin of a Fiori DB 460 SL, a vehicle with a 4,0 m^3 mixing drum and a self-loading bucket. "We initially imported six and have sold four already. This one is destined for the DRC."



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The vehicle is designed to be driven to the stockpiles, usually to one side of the building site, just like a normal vehicle, but once there it is much more than normal. "It is four-wheel drive with three different steering options: normal front wheel steering with the back wheels locked; crab steer to allow the mixer to be moved sideways; and pinch steer to allow for turning in very tight circles," Ebeling explains.

"When you reach the stockpile, you open a side door and swing the whole steering console with steering wheel around to face the direction of loading," he says and immediately demonstrates. He then starts the engine and begins to demonstrate the controls. "It has its own loading bucket, so you drive into the material that needs loading into the bucket. Each aggregate, including the cement, is then weighed, lifted and discharged into the mixer drum."

In the cabin, Ebeling shows us an electronic scale. Once all materials are weighed off, a mixing batch record can be printed off from the scale, giving a permanent record of every mix for quality purposes. Mixing happens in the specially designed mixing drum which ensures that there is no segregation between large and small aggregates which can be a problem in similar types of machines. The required amount of water is accurately metered and added to the drum from the vehicle's own water tanks, and mixing begins. Once loaded, the cabin is turned to face forward again and the vehicle driven to the point of use, just like a ready-mix cement mixer. Once there, the cabin can again be rotated and the concrete poured

exactly where it is needed.

Another special feature of the vehicle is the fixed discharge height. "Instead of moving the discharge-end and the trough of the mixer down to pour the concrete, the closed-end of the drum is lifted up. While this is more difficult to achieve, it has significant advantages in that the clearance heights of the discharge trough are always the same and the trough itself need not move," Dörner adds. In addition, the whole mixer can be rotated, along with the attached discharge trough, enabling discharge at any position to the side and the back of the vehicle.

"This is the only self-loading machine capable of making ISO TC71-quality concrete," claims Ebeling. It takes away the 'hit-and-miss' approach to concrete associated with the labour intensive alternatives, but maintains all the flexibility that mixing on site offers."

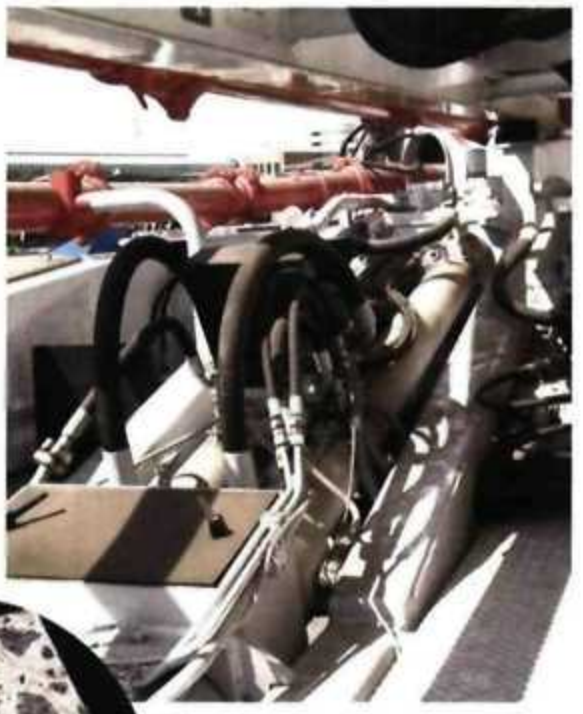
"It offers high volume, good production efficiency and good quality concrete," adds Dörner. "The concrete is when and where you need it and, unlike ready-mix, you can make any quantity you want," he says. "Frankipile SA has more than 20 of these mixers, because for piling, while they don't need a lot of concrete, they need good concrete and they need to pour as soon as the pile is drilled. They cannot afford to wait for a ready-mix truck to travel through the traffic."

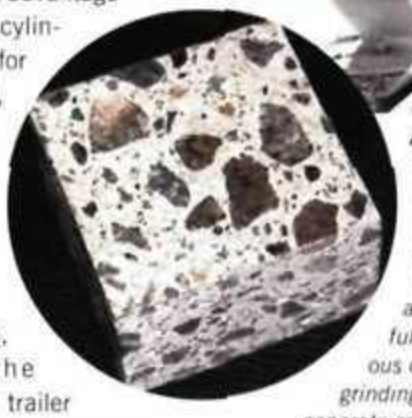
A second special vehicle to have become part of Pan Mixers' product offering recently is its concrete pump. "We started importing a range of Sermac concrete pumps, both mobile and static, last year. Not the best time; but we are committed to the long-term market. This one is a 36 m version because the boom is 36 m long. It has a four segment Z type boom and the concrete pipe can be folded and unfolded in very tight places," Ebeling tells *MechTech*. "It is perfect for any kind of high accurate floor screeding, where you don't want the ready-mix truck inside the factory. You can simply park outside and pump the concrete up the hydraulic boom extension to position the concrete exactly where it is needed in the enclosed building.

"When we imported the pumps, we found that the vehicles were classified as special vehicles, not only because of the weight, but because of the overhang between the rear axles and the back of the pump. It has been a long exercise getting the vehicle certified as a special vehicle. As far as we know we now have the only road-registered 36 m concrete pump in the region."

The pump uses two hydraulically-driven pistons to pump the concrete though two cylinders. The concrete is sucked into the one cylinder at the same time as it is being pushed out of the other. As soon as the pumping piston reaches full stroke, the pulling and pushing reverses and an S-valve moves across to the full cylinder's outlet to give continuous concrete flow. The pump and boom are driven by hydraulics from a PTO taken from the truck's drive shaft and is controlled using a hand-held remote.

The pump is mounted on a Mercedes 2628. "Because of the power of the Mercedes, we have reduced the pumping capacity from 160 m^3 per hour to 140 m^3. There is an advantage here because the cylinders are still sized for the higher capacity, which enables us to pump stickier and more difficult concretes," Dörner informs *MechTech*.





Above: *The Sermac concrete pump uses two hydraulically driven pistons to pump the concrete through two cylinders. When the pumping piston reaches full stroke, the pulling and pushing reverses and an S-valve moves across to the full cylinder's outlet to give continuous concrete flow.* ***Left:*** *HTC concrete grinding equipment can grind and polish concrete so that it looks like marble.*

Smaller pumps, for example the 100 m^3/h Sermac trailer pump, also form part of the new range. "These are mobile but not road registered. They can be used with extension pipes and booms to suit any concrete pumping applications, high rise buildings, for example, which have to be built up floor by floor."

These vehicles and several other new concrete technologies were on show at Pan Mixers' Second Annual International Product Fair held in Jet Park on September 15 and 16. Also of note were:

- Franz Ludwig microwave moisture sensing equipment with new technology suitable for ready-mix trucks.
- Finke automatic oxide dosing systems for colouring concrete products.
- Rettenmeier production board manufacturers.
- Leyde industrial chemicals to prevent concrete from sticking to machinery.
- BFS concrete pipe making machinery.
- Wil el Mil wet-pressed concrete machinery.
- Abece Roof tile machinery.
- HTC concrete grinding technology.
- Eurostar planetary pan mixers for ready-mix concrete.
- PMSA machinery including an automatic product handling system.

"The HTC concrete grinding equipment is the next new thing," says Ebeling. "It is useful for refurbishing existing concrete but not only that. You can grind and polish concrete so that it looks like marble. It is ideal for shopping centres, for finishing concrete floors to replace carpeting or tiling or epoxy finishing," he adds. "The company has also developed an additive to increase the surface hardness 10-fold, simply by activating the free cement released during the grinding process." The concrete surface has excellent wear resistance and ease of maintenance for cleaning and reduced dust build-up and is ideal for showrooms and stores or factory production areas. Existing floors and new floors can be treated as long as the concrete strength exceeds 25 MPa. The best results are achieved with floor of around 30 MPa.

HTC also has a range of abrasion cleaning disks called the Twister range for cleaning anything from wood, tiles, vinyl even travertine and marble without the use of chemicals, "fantastic, not only from a cost saving point of view but also an environmental point of view!" Ebeling concludes.

Clem Sunter talked about future scenarios for the economies of the world and South Africa and there were several other presentations on new trends in the industry. ❑