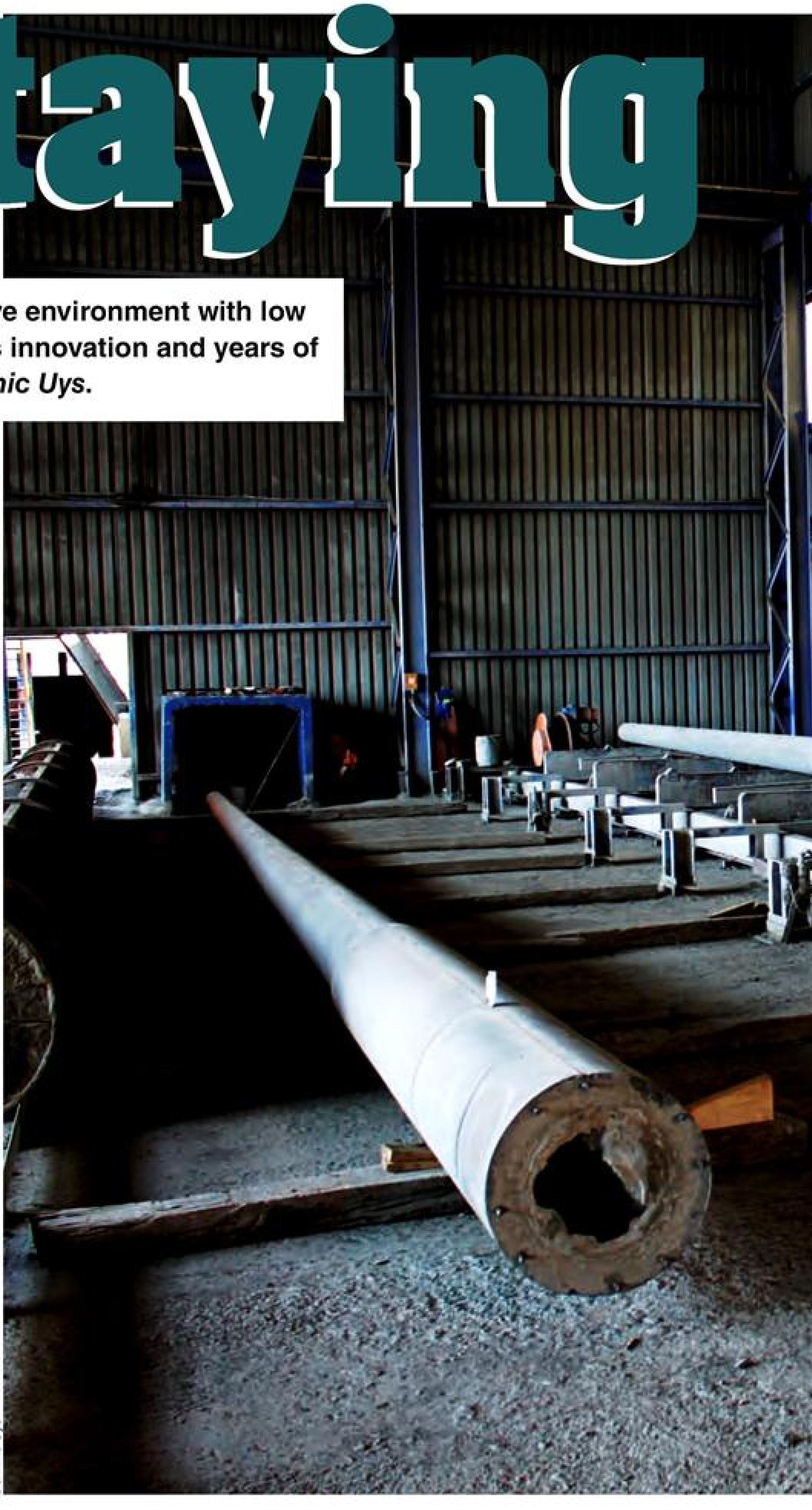
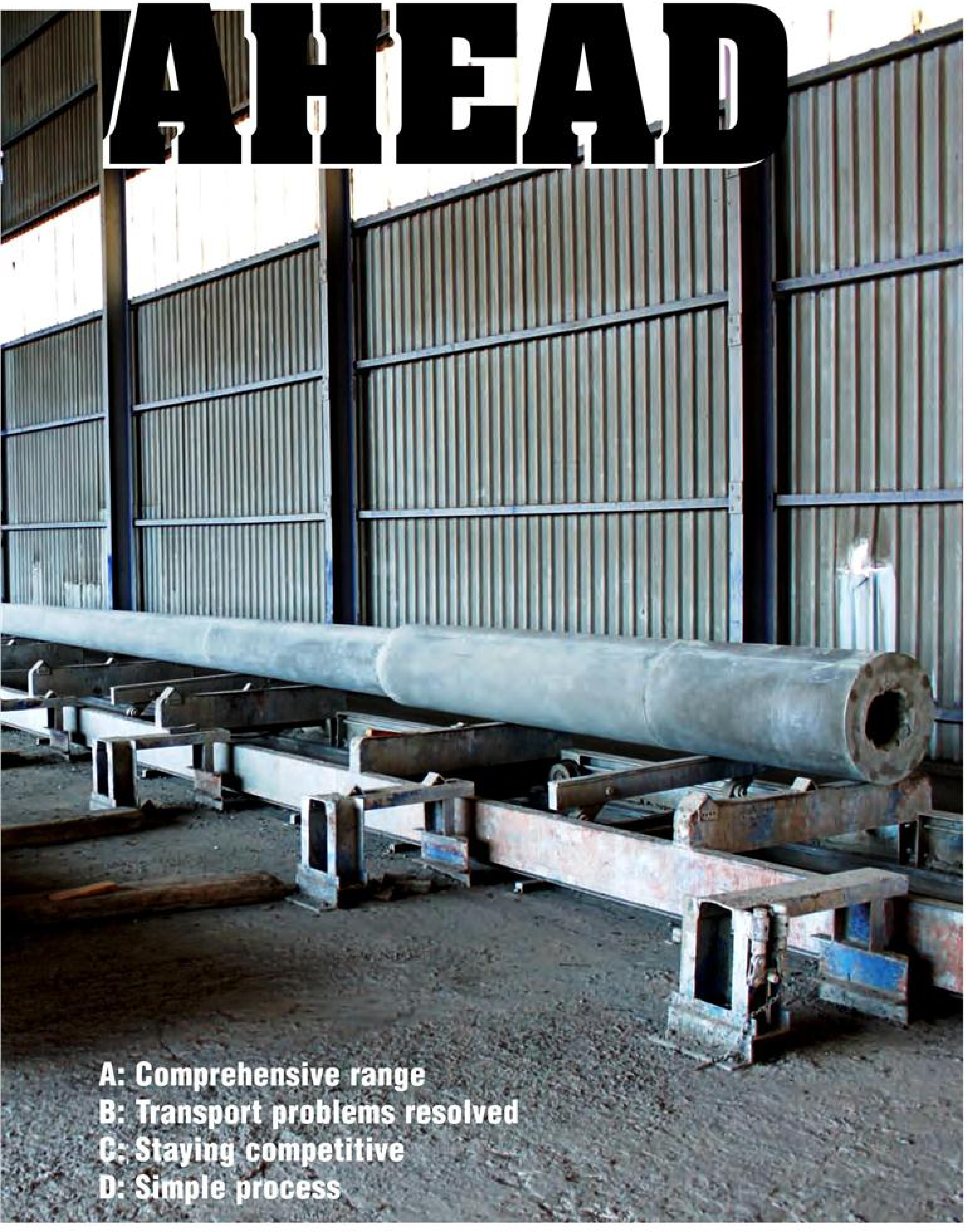
Staying

Surviving in a competitive environment with low barriers to entry requires innovation and years of experience, writes *Dominic Uys*.


Dominic Uys

The use of precast-concrete components in the construction and civil-engineering sectors has proven worthwhile over the years. Competition has increased and, although the economic downturn resulted in a decrease of about 30% in precast sales in the country, 94-year-old Murray & Roberts subsidiary Rocla is keeping ahead of the game. Distribution is a challenge the company has overcome and secret moulds are coveted to avoid industry duplication while speed-enhancing techniques give the company a competitive edge.

AHEAD



A: Comprehensive range
B: Transport problems resolved
C: Staying competitive
D: Simple process

QUARRY SOUTHERN AFRICA
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A: Comprehensive range

Pipe-production core

The company has a comprehensive range of precast products in its repertoire, including culverts, wall units, low-cost toilets, retaining walls and road barriers. Its core business remains the production of precast pipes. According to Rocla's sales and marketing director, Craig Waterson, although the company constantly develops new precast units to keep the business ahead of its competitors, precast-pipe production is still its core product.

Photographs by Dominic Uys

Rocla's core business remains the production of precast pipes which accounts for approximately 70% of the company's sales.

Low-tech

The majority of precast-concrete production is still relatively low-tech so it is served by a large number of small players. Most units manufactured only require the right mould and some knowledge on concrete.

An alternative mould

"Many companies use ordinary shuttering to manufacture products," Waterson points out. "However, there are others, like us, who make use of custom-made steel moulds."

Although the initial cost of a steel mould may be relatively high, Waterson points out that a single mould could have an effective life of approximately 30 years.

Along with this, some of the most basic precast units are still in demand and have the potential to introduce respectable revenue streams. As an example, Waterson points to the area where concrete planks are produced. "There is absolutely nothing fancy about the concrete plank but some clients, like Eskom, use them to cover underground cabling," he says. The sale of concrete planks tends to be consistent so it is a good product to keep.

B: Transport problems resolved

As with most quarry products, the cost of transportation tends to become prohibitive when the client needs the units to be transported further than 200 km or 300 km.

Transport percentage high

"Most of the larger items we transport are classified as abnormal load," Waterson points out. "Permits and transportation can, therefore, become an issue." He states that, for every R1 800 spent on precast-concrete units, around R300 goes into transportation which amounts to around 16% to 17% of the total cost of transporting the finished product.

Branching out

Viable distribution

A challenge in the sector is that, even though precast concrete is a value-added product, it still has a viable distribution radius.

The issue of transportation has led larger players like Rocla to branch out significantly. "We set up factories in 11 locations around the country so that we can be within a 200 km radius of most of our intended delivery locations," Waterson says.

Erecting factories in numerous locations reduces transport costs.

C: Staying competitive

Complex products

"Staying competitive in a business where the technology is slow to change is a challenge," Waterson admits. The company still tries to keep the knowledge it gains out of the reach of the competition.

Complex products such as the company's new wingwall units and station boxes present a number of challenges in terms of the construction of the mould and casting of the concrete. The company also designs custom moulds for clients. "If we are going to manufacture sufficient units for a client, we will customise the moulds," Waterson says.

Moulds for new units are exclusively manufactured in-house. Waterson says that the company has had to do this in order to keep the particulars of its moulds secret. "The fact of the matter is that, if we outsource our new moulds to a specialist, it is likely that the same kind of mould will be made for the next customer who asks for a similar solution," he says.

Complex products like the precast wingwall and precast toe can be challenging.

Photographs by Dominic Uys

Complexity challenging

Production moulds

The company has a maintenance and fabrication department which is constantly repairing and building moulds for production.

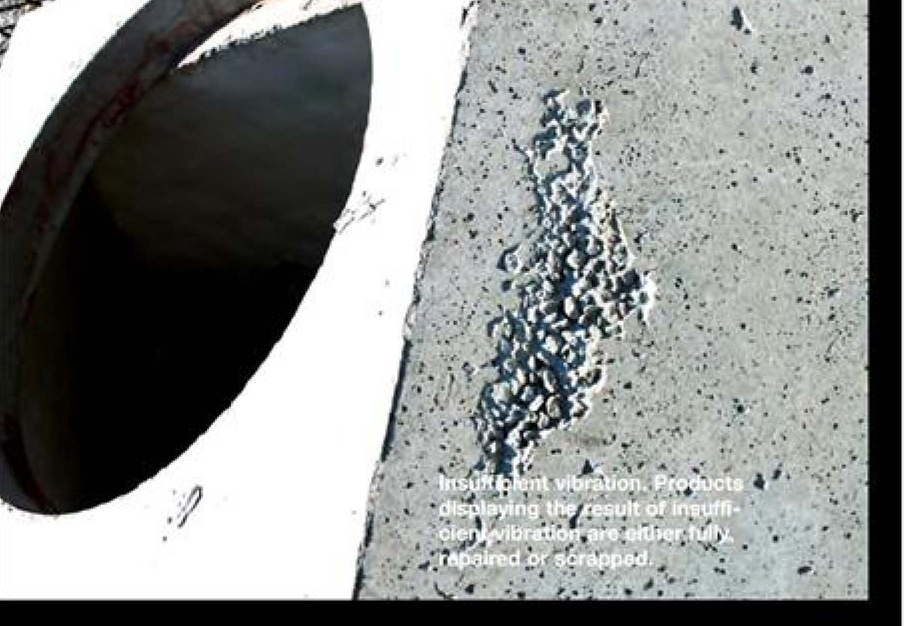
To produce moulded units like culverts,for example, the crew builds the rebar frame and inserts plastic spacers into it in order to keep the steel at the centre of the mould.

With complex shapes such as the wingwalls, however, plastic spacers do not work and the manufacturing team needs to weld steel spacer bars into place.

An important part of casting the concrete is to vibrate the mould in order to release any trapped air bubbles.

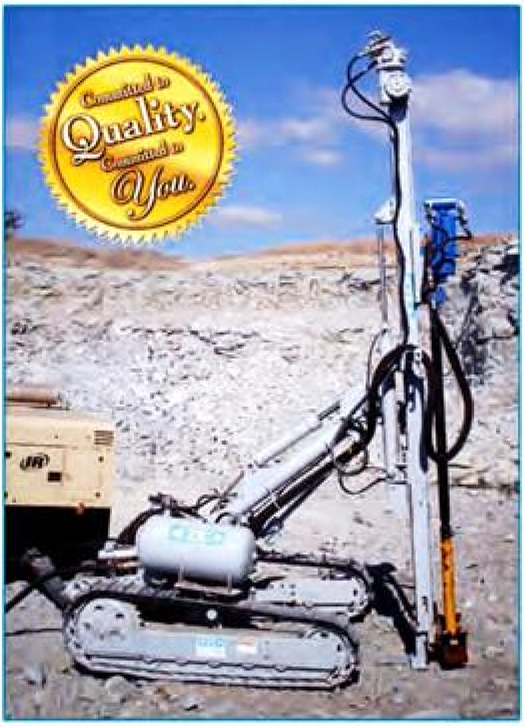
The complexity of a mould does play a part in this process and one of the challenges of working with a new mould is to determine how to release the air trapped within the mix.

"If a unit is cast too quickly and not vibrated for the correct time period, it results in imperfections," Waterson says. Ideally the mould should be filled in stages and vibrated after each stage. If there are not enough stages, air cannot escape during the vibration process.



Insufficient vibration. Products displaying the result of insufficient vibration are either fully repaired or scrapped.


POWERSCREEN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FRD

D: Simple process

To reduce curing time to approximately six hours, the mould is covered and steamed at a maximum of 60°C. The unit is then lifted from the mould and left outside to cure for another week.

Uncomplicated and visible

The company uses a variety of processes, none too complicated, for all its products – from steaming to dry-mix concrete – and insists on only using pure cement.

Visibility is the name of the game and the company uses this for "subliminal" marketing purposes.

Custom moulds

The company is best known for the production of pipes of up to 2,5 m in diameter.

Methods for completion

Pipes with a diameter of up to 2,5 m are manufactured by means of roller suspension. In this process, a mould is suspended on a shaft and concrete is fed into the mould via a conveyor belt. The mould is then spun on the shaft in order to achieve an even distribution of concrete.

Waterson says that this method uses a drier mix of concrete in order to reduce slump inside the mould. "In terms of ingredients, we use a dolomite aggregate because, if the flow through the pipe is acidic, it will attack the concrete and the aggregate simultaneously."

If another aggregate is used, as Waterson points out, only the cement is eaten away and the pipe will have a significantly shorter lifespan. "We tend to realise around four times longer life out of our pipes using this aggregate in comparison with others."

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Secret weapon

Spinning concrete

The best weapon in the company's arsenal, by far, is its spun concrete pole. As the name suggests, the mould is partially filled with concrete and spun at high speed to evenly distribute the concrete.

In addition, the concrete is prestressed which makes the product extremely flexible.

To test the poles, samples are bent to an offset of about 4 m. Rocla claims to be the only player in the South African market to provide this product. It has proven popular in the installation of power and telephone lines, among other uses.

"As these poles do not have scrap value, the site is relatively safe," Waterson states.

Photographs by Dominic Uys

The company has a "secret weapon" in spun-concrete poles.

Valuable visibility

Manufacturer evident

A final trick to remain competitive is maintaining visibility. "Rocla" appears on all products. "While these units are being installed, they are bound to stand around where they are going to be noticed," says Waterson. "Whether it is by the roadside or on a construction site, we want potential clients to see the origin of the precast units." Staying ahead in a game which is not difficult to play requires constant change. It will be interesting to watch Rocla's next move in a turbulent construction sector. ■

Prominent branding serves as "subliminal" advertising.

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Tete beckons

A precast-manufacturing facility is planned for coal-rich Tete.

The infrastructure boom driven by coal-mining activity in Mozambique's Tete province has led Rocla to research the feasibility of establishing a precast-manufacturing plant in the region.

The company already supplies Mozambique via its Nelspruit operation but a plant in the northern regions of the province, at the heart of the action, will give the company a huge competitive edge. This move could substantially decrease the high costs associated with carting precast items to site, as well as the challenges associated with a lack of overland transport infrastructure. ■