

Environment-friendly brick-making plant commissioned

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Environment-friendly concrete brick manufacturer Cape Brick, in March upgraded its existing mixing plant at its manufacturing plant in Philippi, in the Western Cape, to a 1 500-ℓ-capacity mixing plant to manufacture concrete bricks comprising 70% recycled crushed aggregates (RCAs).

The mixing plant, which took three months to upgrade, manufactures the concrete for the company's full range of concrete bricks and blocks, including retaining wall blocks, which are sold either as 7 MPa or 14 MPa products.

"The upgraded mixing plant has manufactured about six-million brick-equivalent units since it was commissioned," Cape Brick MD **Anthony Gracie** tells *Engineering News*.

Commissioning of the mixing plant's industrial supervisory control and data acquisition management system, as well as the building which covers it, is yet to take place.

Cape Brick's in-house waste stockpile challenge prompted the use of recycled material. This idea was subsequently expanded on when the company realised it could solve the challenge of disposing of other companies' building waste material.

Depending on brick and related-product demand, Cape Brick uses up to 70 000 t/y of RCA, which is sourced from reinforced concrete at demolition sites. The RCA is predominantly supplied by Cape Town-based demolition company Ross Demolitions and crushing contractor CDEL Services.

The reinforced concrete is either crushed and used as road-building layer-works materials or dumped in a landfill site, if not recycled.

Cape Bricks decided to upgrade the mixing plant, as its existing mixing plant was too small and was only semiautomatic, which resulted in varying moisture content in the company's product.

Increasing the size of the existing mixing

plant enables Cape Brick to mix the concrete for longer, which results in a better mix consistency and, in turn, reduces the percentage of cement required to produce the bricks.

Gracie says the new mixing plant consists of a fully automated four-bin batching system, a 1 500 ℓ counter-current pan mixer, fitted with a moisture-measuring system, a VB4x block machine, stacker and destacker, with racking for 4 000 production pallets, which was supplied by Jet Park-based concrete-products equipment company Pan Mixers South Africa (PMSA).

PMSA has constructed its own showroom, which is almost entirely made from its own concrete products and manufacturing equipment, to broaden the knowledge about concrete and concrete equipment available to the public and industry.

Manufacturing Process

Cape Brick's manufacturing process starts with the initial placement of the RCA raw material into the fully automated four-bin batching system.

The batching plant then automatically weighs off the mixture into the exact proportions and transports it into the mixer where the cement, water and additives are combined.

The mix is then stirred for a predetermined time before being dropped into the block machine, which extrudes the mixture into the final brick product.

The RCA products are sold at a similar price as the concrete products made from virgin aggregates. "There is no difference between the two products in terms of engineering grade and load-bearing capabilities, except that the colour of the final product may vary," notes Gracie.

Cape Brick works towards a 0% reject rate by ensuring that a consistent moisture content is maintained in the mix.

The company aims to maintain a steady 70% recycled-component rate this year and to ensure that its crushing plant can deliver enough RCA to the block manufacturing plant, concludes Gracie.

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