

Masa AG, 56626 Andernach, Germany

New concrete block and paving plant in Scotland

Building materials provider Cemex UK opened on 16 November 2007 a new concrete block and paving factory at West Calder near Livingston in Scotland. The £5 million factory represents a significant investment in the region and it has created 10 new jobs by allowing switching from single-shift production to two-shift production. One of the largest concrete block and paving machines available has been installed in the new Cemex factory. The Masa concrete block machine constitutes the core of the new state-of-the-art factory being built by building materials solutions company, Cemex UK.

■ Mark Küppers, CPI worldwide, Germany ■

In Scotland Cemex UK employs almost 400 people at 38 locations that cover quarries, ready-mixed concrete, the current block and paving plant, production of roof tiles, cement logistics and road construction and maintenance. Cemex UK produces a range of block paving to suit both industrial and domestic applications from private drives to large pedestrian areas. The comprehensive range also includes products such as Uni-Ecoloc, a high performance concrete block permeable paving system that allows water to drain voids filled with granular material and Uni-Block, a high performance paving system with a fully interlocking shape, which can be laid in any pattern.

The £5 million investment at West Calder is part of Cemex's £60 million national investment programme which aims to create a company focused on technical excellence, quality and service. Local suppliers have been used to provide the civil and structural design and materials for the building works. Aggregates were supplied by Cemex UK's

Cowieslinn quarry and ready mixed concrete from the Ratho plant near Edinburgh. Flexibility has also been built into the design to allow for block and paving volume and size adjustments, depending on customer demand.

The official opening ceremony was performed by local Member of Parliament, Jim Devine, in the company of local councillors and the West Lothian Provost, while children from nearby St Mary's Primary School helped mark the occasion by planting 100 trees, as part of Cemex's commitment to sustainable development.

Cemex's new, purpose-built plant is strategically placed for supplying the growing number of customers, including builders merchants, house builders and contractors across Scotland and the North of England. It covers a 2,000 square metre area, replaces the company's 24 year old facility on-site and is contained within a warehouse to minimise noise and visual impact. It is fully automated using state of the art controls to ensure that high standards are maintained throughout the production process. The new plant essentially consists of high -

quality machinery from two specialist concrete plant and equipment manufacturers. The Danish Haarup Maskinfabrik A/S provided the various raw material handling and mixing elements and the German Masa Group supplied the downstream block-making and block-handling systems.

4500 litre mixer with 132 kW motor

The raw ingredients are filled into the intake hopper and transported by the feed conveyors. The feed conveyor is rated at 250 tonnes/hr and the Hopper has a capacity of 15 m³ - approximately one lorry load. There is an additional dust extraction system installed. Above the feeds there are 6 x 100tonne storage bins for sand and aggregates and fly ash. In addition 2 x 100 tonne cement silos are filled with cement. Tankers deliver to the silos with exhausts filtered to meet ecological dust standards.

The 4500 litre pan-type counterflow mixer unit with 132 kW motor is manufactured by Haarup, Denmark. The aggregates are batched and weighed and then fed via sky



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hoist into the mixer, while water is accurately metered into the pan via a flowmeter. Every 3 minutes a 7 tonne batch is mixed. That means that the Haarup mixer is able to mix 140 tonnes/hr. The Würschum dosing system conveys pneumatically granules pigments for paver colouring. There are four basic colours that are mixed to give the individual colours. The use of filter cyclones and mixer dust extraction make it even more versatile.

Concrete block machine

The concrete block machine Masa XL 9.1 is the heart of the plant. It is the largest concrete block machine in Scotland and it is capable of producing 24 blocks every 12 seconds or 48 pavers per cycle. The Masa XL 9.1 machine can produce about 55.000 concrete blocks or about 2.000 m² pavers without face concrete per 8-hour shift. The machine is used to produce different block products and over pavers. In the near future this will include Cemex's new ReadyFlow permeable paving products as well as the new Barbican and Chelsea Hydrosett permeable paving products. More than 25 moulds are available for different sizes and shapes of blocks and pavers. All moulds in the West Calder factory are



6 x 100tonne storage bins and the 2 x 100 tonne cement silos



7 tonne batch every 3 minutes are produced by the Haarup 4500 litre mixer. On the left: the Würschum four-colours dosing system

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The concrete block machine Masa XL 9.1 is the heart of the plant

minutes. In the wet inspection the blocks and pavers are checked for height and weight.

The finger car picks up pallets of wet products, turns round 180 degrees and slots them into the curing racks. After that it moves down the chamber and removes a dry batch for packing.

The chamber totally holds 4620 pallets in 14 racks (330 pallets per rack) and 22 stacks per row. The galvanized racks were delivered by HS Anlagentechnik, Germany. The curing system was delivered by CDS from UK. The climatic measures are about 35° - 40° C and 90-95 % relative humidity. Gas oil burners are situated at the back of the chambers, with fans in the ceiling and

After this the blocks or pavers will be stored in the yard area for 7 - 10 days before going out to construction projects and builders merchants.

The West Calder plant is operating with 5.000 steel pallets, delivered by Eterniti Steels. An industrial hoover cleans the pallets which prevents them becoming ground away by the concrete mix. A sophisticated dust extraction system operates to ensure clean air.

Two separate, Masa-designed containerized compartments contain all electrical (Masa-Powertainer) and hydraulic (Masa-Hydrautainer) services. The containers are air-conditioned and mounted at a high level above the floor.

Conclusion

The West Calder plant promises to set a landmark in Scotland, and the capability to produce huge amounts of blocks and pavers will strengthen Cemex' position in Scotland in near future tremendously. ■



Production of 24 concrete blocks per cycle (440 x 215 x 100 mm)

manufactured by Rampf, Germany. The process of changing the moulds was drastically simplified at the Masa Record XL 9.1 and it takes less than 10 minutes.

For the protection of the operators an acoustic chamber was designed to reduce noise environment.

Wet Inspection and Curing

Leaving the block machine, the pallets are conveyed to a large curing chamber via a quality control station. In addition to automatic controls by a full automated laser measuring system occurs a manual control. Each batch is inspected manually every 30

minutes behind the racks to circulate the heat. The products cure over night to achieve the required strength.

Product handling

Two cubers organize depalleting and remodelling of the concrete block layers. The cubers are equipped with servo systems to operate very fast. They can assemble different cubes (e.g. void cubes). Next follows the vertical and horizontal plastic stripping applied by 4 automatic strappers from OMS, Italy, while a separate machine covers the products with clear or Cemex branded stretch hood plastic packaging.



Quality control station



The finger car picks up the pallets



Depalletizing, remodelling and cubing



Strapping and handling of the cubes

FURTHER INFORMATION



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