

Ketton conversion

Castle Cement's Ketton Works has been the subject of a major project aimed at significantly reducing the internal movements of clinker within the site boundary and thereby minimising dust emissions to atmosphere. After a competitive tender process, the turnkey UK£3m project was awarded to Fairport Engineering, the Adlington-based minerals processing and materials handling design and build contractor. Paul Fitton, Fairport's managing director, believed that the award of this prestigious contract was as much about Fairport's value for money offering as the long and successful history that Fairport has enjoyed over the years with Castle Cement in general and Ketton in particular.

As the UK agent for the Ventomatic range of bagging machines, Fairport Engineering's association with Ketton dates back to 1990 when it installed a 3200 bags/h bagging plant at the works. More recently, in 1996, Fairport and Ventomatic successfully upgraded the plant's facilities by installing a system that could fill 4000 bags/h. This latter project also included a new packing building, complete with sieves and packing machine that was complemented by a comprehensive electrical and control system package with a check weighing facility. The filled bags were then conveyed to a new warehouse where they were palletised and shrink-wrapped before being loaded onto road vehicles for delivery.

Recent clinker handling

The recent clinker handling project, completed in early 2003,



essentially comprised two sections of work. Firstly, to provide an enclosed independent clinker import station that would allow road vehicles to discharge and feed clinker onto the existing pan conveyor system feeding clinker store No 8. Secondly, to be able to divert clinker produced from No 7 kiln into a rejects silo from where it could either be conveyed, by a new pan conveyor, to the No 8 clinker store or loaded to road vehicles, in an enclosed facility with a second clinker import station.

The independent No 8 clinker store import facility is housed in a clad building designed to receive 25m³ tipping lorries at a rate of approximately 150tph of clinker. A Redler Bulk Unloading Unit was selected to offload lorry deliveries onto the belt conveyor, which fed the imported clinker onto the existing pan conveyor feeding clinker store No 8. The building was fitted with an automatically opening and closing Megadoor system and a dedicated dust extraction and filtration facility.

Clinker diversions

In order to divert clinker from kiln No 7, modifications were made to an existing transfer house, which allowed two new pan conveyors in series to accept clinker from this kiln and transport it to a new rejects silo. Two Aumund 105tph pan conveyors, 22m and 24m centres respectively had drives individually rated at 5.5 and 7.5kW. The rejects silo, which was mounted on load cells, was located at the top of a totally enclosed building, enabling it to use gravity to discharge into road vehicles by means of an extendible loading bellows, minimising dust arising during loading. Material from the rejects silo can also be extracted by a vibrating feeder and fed onto a new belt conveyor. This allows clinker to be transported to a new pan conveyor, which feeds to the top of clinker store No 8. The new Aumund pan conveyor has a 90kW drive and is approximately 240m centres with a clinker carrying capacity of some 255tph.

The enclosed facility is also designed to receive 25m³ tipping lorries at a rate of approximately 150tph of imported clinker. A second Redler Bulk Unloading Unit was selected for lorry unloading, which discharged onto a belt conveyor and fed the imported clinker onto the new pan conveyor feeding clinker store No 8. The building was fitted with two automatically opening and closing Megadoor systems, one for rejects traffic and the other for import vehicles and a dedicated dust extraction and filtration facility. The independent import facility was completed and operational in autumn 2002 and the full system was commissioned and put to work in early 2003 to coincide with a planned kiln shutdown period.

Corus at Castle

Over the last two years Corus Process Engineering has carried out the refurbishment of two clinker breaker rotor assemblies for Castle Cement, Ketton Works.

The refurbishment involves completely stripping down the rotor assembly, dismantling the hammers, support pins and bushes, and removal of all bearings and bearing housings.

The rotor is then inspected in Corus' large centre lathe and remedial work is carried out if required, which involves welding and re-machining to ensure the rotor is running concentric and true.

Hard face welding is carried out on the outside diameters of the rotor discs, using specially selected welding consumables and a technique developed by ourselves, to provide a hard wearing surface and increase the operating life of the rotor assembly.

Upon completion of the hard face welding, the rotor is fitted with new hammers, support pins, and bushes, and the bearings and bearing housings are re-assembled before the whole assembly is balanced and final inspection is carried out.

Until recently the rotor assembly was taken out and refurbished annually, however the first one refurbished at Corus Process Engineering, using methods discussed and agreed with Castle Cement engineers, has now been in service for 18 months and indications are that the operating life of the assembly will be extended to two years.