

Rock and Roll

Precia-Molen install a fully automated loading and weighing system for RockTron

RockTron's brand new £30 million eco-mineral processing plant at Fiddler's Ferry, near Widnes, Cheshire, has been designed to process around 800,000 tonnes of both fresh and stockpiled fly ash per annum. The latest investment demonstrates the company's strong commitment to offering a sustainable, alternative source of valuable, environmentally coherent minerals for industrial use.

It also has immediate implications for the cement and concrete industries in that RockTron can now provide a consistent supply of high-quality main constituents for cement and blended cements, which can outperform ground granulated blast-furnace slag (ggbs) on price. The environmental benefits gained are highly significant – as over 100 million tonnes of waste fly ash are dumped in UK landfill sites each year.

The RockTron recycling plant can process 100% of both fresh and stockpiled fly ash, offering five valuable new eco-minerals. Two of the most significant are aluminosilicate solid glass spheres classified as 'Alpha' and 'Delta' – and it has been claimed that these two cementitious products will provide the biggest environmental opportunity for the cement and concrete industries to reduce CO₂ emissions over the next 25 years.

RockTron have calculated that, in the UK alone, using 500,000 tonnes of its eco-minerals on a one-to-one basis with CEM1 cement, some 400,000 tonnes of carbon emissions can be reduced. RockTron Alpha fully conforms to BS EN 450-1:2005 + A1:2007, as well as exceeding the highest standards on particle size fineness and very low levels of LOI (Loss On Ignition) – the carbon content.

The company's main aim is to demonstrate that its recycled materials can outperform on quality, durability and price, especially when applied in the cement and concrete sectors.

From the outset of the high-profile Fiddler's Ferry project, RockTron appointed their build partners with care, commissioning leading weighing specialists Precia-Molen to design and install a fully automated loading and weighing system to meet the diverse needs of the new facility.

Key criteria

The new weighing and driver self-loading system had to meet four key criteria for RockTron:



Precia-Molen have designed and built an automated weighing and traffic-management system for RockTron based around their GeneSYS3 hardware

- Minimal staffing levels for vehicle control, weighing and loading operations.
- Full integration with the existing RockTron sales order system.
- A robust and resilient system designed to ensure 24/7 operation.
- To replace the normal out-loading procedures using a weighbridge.

To meet all of RockTron's operational requirements, Precia-Molen have designed and built an automated weighing and traffic-management system based around their GeneSYS3 hardware.

The bespoke system has integrated the operation of three VS400 18m long surface-mounted weighbridges, allowing vehicle arrivals 24h a day and drivers to receive despatch instructions, load, weigh and exit in an entirely automated operation. A BT lorry loading weigher has also been supplied, which is said to be the first of its type installed in the UK, with full Board of Trade approval (avoids the need to install a very long weighbridge and still maintains a full driver-operated control).

Precia Molen have provided a complete turnkey package on the project, incorporating

seven driver consoles, traffic barriers/light control and an electronic arrivals message board.

Smooth operator

All incoming drivers arrive at the cab height BI300 driver console where, via a dialogue display, they are asked to input a unique identification number. The GeneSYS3 system validates whether that vehicle is an authorized user of the site and if it is identified, a RFID card is issued to the driver.

The vehicle waits at the lorry reception park and is updated via the electronic message board display. Once a loading point is available, the vehicle is invited to proceed to the entry barrier and console where the driver presents the RFID card, which, in turn, opens the barrier and the lorry is directed to the loading point.

Once the vehicle is positioned on the weighbridge (under the loading point), the driver exits and proceeds to the self-loading driver console where he/she is prompted to present the RFID card, confirming that the lorry is at the designated loading point and correctly positioned on the weighbridge.

The GeneSYS3 system interrogates the vehicle file to verify the actual tare weight by comparing it with the tare weight of the vehicle kept on the file, ensuring there is no existing product in the vehicle. Once loading commences, real-time interaction is initiated between GeneSYS3 and the plant PLC control. This interface ensures safety interlocks are observed and provides clear instructions to the driver. Importantly, the system uses two-stage loading to ensure vehicles are not overloaded.

If a lorry is directed to the BT loading station, a similar process is initiated. Once loading begins, there is again real-time interaction between GeneSYS3 and the PLC control unit to ensure safety interlocks are observed. However, drivers using this station must slowly drive forward as the target weight increases, as displayed on the remote display.

The RFID card is inserted into the driver console and once the gross vehicle weight is recorded the driver proceeds to the exit console. The RFID card is retained and despatch documentation is produced for the driver, after which the traffic barriers open and the vehicle leaves the site.

As part of the installation, Precia-Molen have supplied four FX belt weighers, which help RockTron monitor the effectiveness of the production process by communicating with the plant PLC, via a ProfiBus DP network.

Key benefits

The inclusion of the BT weighing infrastructure within the system has provided significant benefits for RockTron, as the loading station represents a substantial saving on labour costs, eliminating the preparation of a weighbridge foundation in excess of 24m in length.

The BT weighing infrastructure comprises a fully weighed conveyor connected to the chassis by two articulations placed along the feed centre line, supported at the opposite end by one or two strain gauge cells. These instruments are for Class 1 trade use only and perform the same functions as a weighbridge or hopper scale, making them suitable for installation in confined spaces (4,500mm in length and 400mm in height).



All incoming drivers are asked to input an identification number in the driver console

Conclusion

Precia-Molen have installed a fit-for-purpose automated system which has surpassed all of RockTron's key objectives. Operating 24h a day, seven days a week, GeneSYS3 is an advanced loading and despatch system that will help the client handle increased production levels while maintaining low staffing levels. The system is flexible and will expand to match RockTron's requirements, as the company looks to grow over the coming years.

John Bance, director of operations,

commented: "The new loading and weighing system has proved itself in operation at our Fiddler's Ferry plant. We worked very closely with Precia-Molen to deploy a fully automated loading system which meets the needs of our customers and hauliers, while providing the detailed load management information we require to run our business efficiently."

For more information contact Precia-Molen UK Ltd on tel: (01527) 590320; fax: (01527) 590301; email: sales@preciamolen.co.uk; or visit: www.preciamolen.com