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Fairport provides engineering and project management solutions for the gypsum industry

Above: The completed San Martin de la Vega plasterboard plant.

The Saint-Gobain Placo Ibérica gypsum plasterboard plant in San Martin de la Vega, Spain, required the close collaboration of several companies to see it through to fruition. In this paper, Fairport Engineering Ltd explains its role in the venture.

Spanish-based Saint-Gobain Placo Ibérica, part of the Saint-Gobain group, has recently completed the establishment of a new plasterboard production facility at San Martin de la Vega, close to Madrid. The new plasterboard plant complements the existing plaster manufacturing facilities and is based on the high quality gypsum deposits that occur in this area of Spain. In early 2005, Saint-Gobain Gypsum Engineering invited Fairport Engineering Ltd to assist them with a design study focusing on the materials processing and handling requirements of this new plant. Fairport was then appointed to work with Saint-Gobain Placo Ibérica and other partners, to carry out the actual design and build the rock-handling project.

The manufacture of plasterboard is a continuous process that relies heavily on achieving a continuous and stable level of purity in the gypsum being fed to the board-making plant. Gypsum deposits in themselves are relatively low-lying and are either flat or dip at a shallow angle and have a generally good consistency of chemical purity throughout the deposit. Once mined, processing consists

of size reduction and classification before homogenising to provide as consistent as possible a feed to the 'kettles'. The 'kettles' calcine the mined gypsum to produce the 'stucco' that is ultimately used to produce the plasterboard in the board-making plant. This being the case, it is evident that the front-end minerals processing and materials handling elements of a new production facility, whilst representing a relatively small portion of the overall capital investment, need to be designed to achieve this key operational objective.

The new front-end minerals processing and handling facility at San Martin is designed to process 600t/h of gypsum and produce a homogenised -50mm product, suitable for pulverisation and calcination prior to use in board production. ROQ material nominally -1200mm is scalped over a grizzly, which separates at 50mm. Oversize from the grizzly feeder passes directly to a jaw crusher for primary crushing to nominally -200mm in open circuit. The conveyor from the primary crusher discharge is fitted with a permanent magnet and a metal detector to remove all metal. This conveyor then discharges onto a double decked screen where size separations are made at 100mm and 50mm. This screen operates in closed circuit with a secondary rolls crusher in order to achieve a product that is nominally -50mm and can be transported onward to the homogenising facility.

The homogenising facility operates in two halves at any one time – one half being for laying down and the other half being for recovery. The incoming -50mm material is distributed horizontally over the laying down half of the covered store thus creating a layered stockpile of gypsum that consists of different layers of quality. When the laying down half becomes the recovery half automated 'bucket reclaimers' recover the gypsum rock in a vertical plane. This mechanism of horizontal laying down and vertical recovery, prior to pulverisation and calcining allows the gypsum purity to be maintained.

In delivering the rock-handling project on a 'turnkey' basis, excluding the civil and building structure works, Fairport was able to co-operate with a wide range of European suppliers and sub-contractors. The primary and secondary crushers were provided by Laron, of Spain, the conveyors and gantries were provided and installed by Cintassa, again of Spain, and the homogenising machines were supplied and installed by Bedeschi of Italy. Secondary steelwork, chutes and mechanical installation was undertaken by Ditecsa of Spain. Specialist Electrical Services of England undertook the supply and installation of the electrical works and Fairport's in-house systems control team provided the control system for the plant.

Above: Primary and secondary systems.

Below: Homogenisation store.

Part of Fairport's brief was to manage the on-site construction works. During the early stages of the project, Fairport undertook formal design reviews and risk assessments that allowed a detailed installation plan to be developed and implemented during the course of the project's construction. This included method statements and risk assessments being submitted prior to the start of the work on site and the updating and enhancement of these as necessary as work progressed towards completion and commissioning.

This project provides yet another example of Fairport's ability to design and build minerals processing plants in conjunction with major blue chip clients. In this case, both parties could develop through the feasibility stage a focused understanding of the key operational and life-time parameters that would be required to deliver a successful project for all concerned. For more details of Fairport's engineering and project management expertise, please contact Linda White, marketing and communications manager, or visit www.fairport.co.uk.