

A gypsum quarry in Italy gets a production boost from a MOBICAT EVO

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A Kleemann MOBICAT MC 110 Z EVO jaw crusher is delivering great performance in an Italian gypsum quarry managed by Gyproc Saint-Gobain.

Italy is one of the major producers in Europe of gypsum, a material found in abundance in Piedmont, Sicily and the Marches, as well as in Emilia-Romagna. In this latter region, gypsum is found in the province of Bologna, but its occurrence becomes more pronounced in the Vena del Gesso Romagnola, where a gypsum ridge with an average width of 1.5 km runs for about 25 km. The Vena del Gesso Romagnola is thus a ridge of calcium sulphate dihydrate ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$) of great importance, not the least because it is the only geological formation composed entirely of gypsum of such size in Europe.

The Gyproc quarry of Monte Tondo

The Monte Tondo quarry lies in the province of Ravenna on the edge of the Vena del Gesso Romagnola nature reserve. At first, the quarry was mined using the methods and logistics of the time, i.e., by digging tunnels from which the material was directly mined. Now extraction is performed by the open pit mining method with drilling and blasting to create slopes and descending steps. In 2005, Saint-Gobain acquired British Plaster Board (BPB), which had taken over the quarry in the late 1980s; today the Monte Tondo quarry is one of eight in Italy managed by Gyproc Saint-Gobain, a division of the French multinational ranked first in the market of drywall construction systems and gypsum-based plasters and finishes. In Italy, Gyproc Saint-Gobain is a well-established presence with headquarters in Milan and eight gypsum quarries. The Monte Tondo quarry, which currently produces about 200,000 tonnes of pure gypsum (>90% purity), supplies the drywall systems and plasters plant in Casola Valsenio.

Kleemann contributes to improving the production cycle

In June 2016, the Monte Tondo quarry took delivery of a Kleemann MOBICAT MC 110 Z EVO mobile jaw crusher to add to the other equipment of the fleet assigned to production. The jaw crusher is the first Kleemann product that Gyproc Saint-Gobain Italia has bought and it marks an important step towards boosting the quarry's productivity. Before arrival of the new jaw crusher, the existing cycle was organised so that after the blasts, oversize material was transported by dumper to a chute where it was reduced by a large

underground primary crushing plant. Then the material was processed by a secondary crusher and the final product was loaded onto trucks for transport to the production plant. Though this system gave excellent performance over the years, it was a burden to maintain, especially in view of the reduced absorption by the factory due to a drop in market demand. This lower demand was accompanied by a fall in the quantity of material sold to cement plants, which used the gypsum for production of Portland cement leading production, in the past with peaks of 600,000 tonnes/year, to stabilise at the current 200,000 tonnes/year.

Nevertheless, the change was also forced by logistical and operational considerations as pointed out by Roberto Margutti, Mining Technical Manager of Gyproc Saint Gobain: "The purchase of the Kleemann mobile jaw crusher is part of a broader plan of production rationalisation, which also has the purpose of improving safety conditions to an even higher degree. Essentially, the mobile jaw crusher makes it possible to transfer the primary crushing process next to the area where the material is accumulated after the blasts and to reduce it to a size of 0-160 mm before it arrives at the secondary crushing plant underground." The MC 110 Z EVO, besides eliminating the use of the previous primary crushing plant, now being decommissioned, has improved the performance of the secondary crushing process, which by receiving a smaller, more uniform output size, can produce more without requiring the frequent maintenance it was forced to undergo. As a result, the purchase of the Kleemann jaw crusher has been a decisive factor for attaining the goals set by technical management.

Like all Kleemann mobile crushers, the MC 110 Z EVO offers a set of advantages. At the Monte Tondo quarry it can produce 210 tonnes/h by crushing a material with LA 27 values: a crushability of 50% and bulk density of 1.35 t/m³. The blocks of calcium sulphate are reduced from an output size of 0-500 mm to 0-160 mm, ideal for secondary crushing which is now advantaged by a better flow in production. This is achievable thanks to the features of the MC 110 Z EVO, including the independent double-deck prescreen that efficiently levels the material in the hopper to allow constant production volumes. Production capacity is additionally improved thanks to the Continuous Feed System. The jaw crusher also has the advantage of offering limited consumption despite the high power in relation to its size thanks to the diesel-directdrive. The result is a system with a 30% reduction in consumption compared to mobile crushers fitted with traditional hydraulic systems.

As commented by the quarry's technical manager, Silvano Sartor, the mobile jaw crusher has and will increasingly have a positive impact on production: "This jaw crusher has been a major purchase because it's part of a plan that will allow us to calibrate production based on the actual demand of the production plant and at the same time lead to logistical improvements by avoiding personnel from being spread out in

different areas of the quarry far from each other, as was the case, with clear advantages in safety and productivity. During this initial phase, by avoiding the use of a large underground plant, we are already seeing an overall improvement in the organisation of the production cycle and a reduction in management costs.”

Source: Kleemann GmbH