



Job Report Surface Mining

2200 SM: Test application in limestone in João Pessoa / Brazil



Wirtgen Surface Mining:

2200 SM: Test application in a limestone quarry in João Pessoa / Brazil

Harald Lissberg, June 2004

Situation:

The company Cimpor is among the leading suppliers of cement and concrete in Brazil. One of their largest quarries is in the Northeast of the country, in João Pessoa in the State of Paraíba. This limestone quarry extends over an area of 393 hectares and includes a plant for the production of cement.

With an annual production volume of 660,000 tons, this plant makes Cimpor the largest producer of clinker in the region.

From the beginning, the limestone was mined conventionally using the drilling and blasting method.

In the course of time, however, this mining method came up against its limits as the mine operator was confronted with an increasingly urgent problem: The quarry borders on a residential area, and constant blasting caused excessive vibrations as well as dust and noise. Therefore, Cimpor was looking for an alternative mining method.



Material:

The formations of the limestone in the quarry can be described as very diverse. On average, the material has a density of 2.1 g/cm³. In addition, the limestone has a compressive strength of 13 MPa and a tensile strength of 3 MPa.



Structure:

The structure of the limestone in the upper layers is heavily rugged. The horizontal and vertical rock formations and their varying sizes are shown in the pictures with the limestone benches. In the middle of the benches layers with a thickness of approximately 25 cm can be found which are irregularly interspersed with vertical cracks. The lower area of the benches consists of formations in blocks. The material is in general of a very tough nature.

It was therefore proposed at the beginning of 2003 that Cimpor should use a Wirtgen Surface Miner 2200 SM for a test period of 90 days. The different tests that were carried out in the various limestone formations produced very positive results and Cimpor bought the Wirtgen Surface Miner. Cimpor was impressed by the high performance of the 2200 SM: the Surface Miner was invincible even in the most diverse limestone formations.



The decision to purchase was, however, also influenced by the three different working modes of the machine, offering the user a high degree of flexibility: In addition to direct loading of the cut material on trucks via a conveyor in one machine pass, the material can also be deposited in windrows behind the machine or discharged laterally by means of the slewable conveyor. This method offers the advantage that the material can immediately be mixed with other materials prior to subsequent processing.

A further argument in favour of the Wirtgen Surface Miner were the low operating costs as the special machine can work in the mining area independent of the operation of additional machinery or personnel. The people in João Pessoa are happy because the operation of the production site will, in future, continue smoothly without drilling and blasting or the use of a crusher.

Performance results:

The most recent performance results from April 2004 produced again remarkable figures:

- ▶ Performance/production rate: 400t/h
- ▶ Fuel consumption: 90l/h – 100l/h
- ▶ Water consumption: 1.500l/h
- ▶ Wear of cutting tools: 0.004/t





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