



Job Report Surface Mining

2200 SM: Dolomite mining in a gravel quarry near Hornstein / Austria



Wirtgen Surface Mining:

2200 SM: Non-blasting dolomite mining in a gravel quarry near Hornstein/Austria

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Situation:

The company Josef Fröstl GmbH is a supplier of gravel material. One of its quarries is located in Hornstein in Austria.

At this existing dolomite quarry, material had formerly been obtained by drilling and blasting.

The company Josef Fröstl GmbH decided to reactivate the old dolomite quarry in order to extend its product range and planned to install a simple mining and processing system.

The overall site is triangular in form, measuring some 300 m along each side. A pipeline, which extends from Hungary to Vienna, runs along one of the sides. A high-voltage line also crosses the mining site. Drilling and blasting measures for the mining of material are thus only possible subject to limitations and significant requirements.

In order to find an alternative mining method, the company opted for a trial operation with a Wirtgen Surface Miner 2200 SM. The trial operation aimed to demonstrate a high production rate and low operating costs.

The excellent results achieved by the Wirtgen Surface Miner 2200 SM during the trial operation prompted the company to purchase the machine.

In April 2002, operation with the Surface Miner 2200 SM got under way.

Material data:

Material:	dolomite rock
Density:	2,5 g/cm ³
Compressive strength:	approx. 78 MPa
Tensile strength:	max. 5.5 MPa

Structure:

The dolomite has a pronounced fractured internal structure in extensive parts of the quarry. That is to say, there are visibly discernable fissure systems running along three planes, positioned vertically above one another and spaced less than 2 cm apart. The degree of cementation on the fissure surfaces varies. Karstic sections can be identified in places. These show signs of leaching and contain sprinklings of foreign material.

The material is brittle and, when cut, it mainly breaks along the visible fissured surfaces.



The following effective performances were achieved:
230 t/h

With a size distribution of:

- 60% from 0 to 32 mm
- 40% from 32 to 200 mm

The plant can thus continue operating smoothly in future,
without drilling or blasting and without using a crusher.

The dolomite is milled with the aid of the Wirtgen Surface Miner 2200 SM. During the milling process, the material is comminuted so that it only needs to be sieved to the correct fraction.

Small quantities of grains of over 150 mm are either subsequently comminuted at the quarry using a rock crusher with a low throughput or they are transported by truck to the crusher at the main plant.

In order to ensure low operating costs (spare parts and wearing parts as well as personnel costs) and a high hourly milling rate, the Wirtgen Surface Miner 2200 SM was used without a conveyor and the milled material was deposited behind the machine.

The material is gathered together with a wheeled loader and loaded directly into the sieving plant.

While being operated in windrow mode, the Wirtgen Surface Miner can be operated by just one machine operator. In an area of 200 m in length by 120 m in width, the machine can mill continuously, even in curves.



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