



Job Report Surface Mining

# 2500 SM: Selective mining of limestone in the plant Pannedam / India



## Wirtgen Surface Mining:

### 2100 SM, 2500 SM: Selective mining of limestone in the plant Pannedam / India

Harald Lissberg, December 2004

## Madras Cement, Pannedam cement plant

### Situation:

In 1995 Madras Cement commissioned its new Pannedam cement plant. This new plant was built on a "green field". This plant was planned to receive the limestone from a new mine to be opened just next to this plant. The mine was planned to be operated by means of Surface Miners since



the benefits of the Surface Mining technology were obvious particularly for this new mine. However, the quality of the limestone from this deposit varies heavily. This was the major reason that Madras Cement considered the Surface Mining technology for this project. The Surface Miner gives Madras Cement the opportunity to mine the different qualities selectively from one pit or to move the Wirtgen Surface Miner quickly from one pit to the next one.

Apart from selective mining as the major reason for the selection of a Wirtgen Surface Miner, further advantages of

the machines improve the productivity:

- Surface Miners can work as close as 10 metres to the habitat / agricultural fields. This is an advantage compared to the minimum distance of some 100 metres which the mining regulations require to be observed in case of drilling and blasting.



- A Surface Miner is environment-friendly:
  - Reduced noise emission
  - Reduced fugitive dust emission
  - Total elimination of ground vibration
  - No blasting
  - No fly rocks
- The application procedure for a mining permit is faster than for a blasting operation.
- The use of Surface Miners simplifies the operation (breaking, crushing and loading are combined in one single operation), maintenance and supervision – due to the one-machine concept.

- No secondary blasting / breaking of boulders is required.
- Surface Miner eliminate primary crushing as the output size is < 80 mm, and thus energy is saved, which otherwise would have been required for the primary crushing process.
- Surface Miner produce a smooth, clean and even floor facilitating the movement of the hauling equipment, minimizing wear and tear of the tyres and chassis of the hauling equipment.

- As a result, operating costs are reduced considerably.

Three Wirtgen Surface Miners of the type 2100 SM are in operation to provide the plant with the required amount of limestone.

For the extension of the plant and the subsequent mine extension the new Wirtgen Surface Miner 2500 SM was ordered. This machine was commissioned in June 2001 and tested in a preliminary test bed of 150 m x 50 m.



**Material data:**

- Material: Limestone
- Density: 2,2 t/bcum
- Uniaxial compressive strength: 30 to 50 MPa
- Structure: The limestone is mainly massive without visible fractures.

**Performance data:**

Trucks with capacities of 28 to 30 t payload were loaded.

During the performance test the machine reached the following production:

- Cutting performance: average 870 t/h, max. 1,064 t/h
- Effective production: 613 t/h

This effective production includes times for truck changes and turning of the machine.

The gradation of the milled material was in 90 % of the material minus 100 mm.



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