# Wirtgen Surface Miner Technology Maximizes Output at Indian Coal Mine

Indian company uses highly productive and extremely reliable Wirtgen 220 SM 3.8 surface miner, which specializes in soft rock mining, in a coal mine in the Indian state of Odisha.

India has extensive coal reserves and uses them as the country’s most important source of energy, covering about half of its primary energy needs with coal. One of the country’s largest coal mines, the Bhubaneswari coal mine, is located near the town of Talcher in the eastern Indian state of Odisha, where coal has been mined since the 1990s. The Indian company Bhubaneswari Coal Mines Ltd. (BCML) has operated the open-cast mine since 2011, and successfully uses Wirtgen surface miners here.

**Safe, 24/7 Operations**

Mining operations at the Bhubaneswari coal mine are conducted 24 hours a day to permanently supply the nearby coal-fired power plants with the raw materials they need to generate electricity. As a result, the company mines more than 25 million tons of coal annually with a uniaxial compressive strength of up to 35 MPa. At the open-cast mine, the company completely refrains from blasting and drilling – instead, BCML relies on the safe method of cutting the soft rock. Bairagi Sahu, Associated Vice President BCML, is highly satisfied with the 7 machines: “When it comes to performance, the Wirtgen surface miners are simply the best on the market. At our mine, we sometimes cut up to 1,800 tons of coal per hour with one surface miner.”

In addition, eliminating the need for drilling and blasting and instead using surface mining technology results in a number of other benefits. First of all, it increases the safety of open-cast mining by eliminating the need to store and handle explosives. Enhanced slope stability and therefore less rockfall also contribute to greater safety. Surface miner technology also eliminates the need to close the mine for blasting, which delays production. In addition, mine operators no longer need to spend time obtaining the required permits, hiring certified blasters, or compiling the associated documentation.

**Optimized Exploitation of Deposits**

Mining with Wirtgen surface miners also offers considerable financial benefits. The flat surfaces created during the mining process serve as stable roadways that facilitate fast truck haulage. This increases the transport capacity of the entire truck fleet, and the quality of the road surface even reduces wear and tear to each truck’s tires, frame, and suspension, allowing the operators to use standard trucks. The resulting reduction in transport costs helps mining companies lower production costs per ton of material.

In contrast to drilling and blasting, the use of surface miners makes mining vibration-free and significantly reduces noise and dust emissions. As a result, the material can be mined close to industrial sites and other infrastructure facilities such as pipelines, railroad tracks, or high-voltage lines that cannot be exposed to vibrations. This improves the exploitation of the deposit and with it, the overburden-to-coal ratio, allowing the operator to generate additional revenues.

**The 220 SM 3.8: An Intelligent Solution for Soft Rock**

The only requirement for companies to fully leverage the benefits of the surface mining process is to use intelligent machine solutions. The 220 SM 3.8 is one such solution that has demonstrated its exceptional value at mines around the world, including the Bhubaneswari coal mine. This powerhouse with an operating weight of 58 t is propelled by a robust Cummins diesel engine with an output of 708 kW. Thanks to high-pressure injection and intelligent engine management, the engine is extremely fuel-efficient. At the same time, the diesel tank with a capacity of 2,300 l makes it possible to operate the machine around the clock with only one stop to refuel per day, resulting in unrivaled productivity. A cooling system with a demand-driven fan speed also helps to reduce fuel consumption and at the same time reduces noise emissions.

*A Windrowing Specialist*

The 220 SM 3.8 is designed for mining all types of soft rock. This is particularly evident in the design of the 3.80-meter-wide cutting drum. As such, high, narrow holder bases on the drum ensure that the material flows smoothly while requiring minimal energy. In addition, the shape of the holders in combination with the arrangement of the cutting tools minimizes the amount of fines in the material, which is continuously deposited in a windrow directly behind the machine. “With this mining method, we can clearly see the quality of the coal due to the difference in color between the coal and the light-colored overburden, allowing us to mine the material cost-effectively,” says Om Prakash, Chief Operating Officer, BCML, describing one of the key advantages of the method.

*Reliable, Around-the-Clock Output*

In open pit mining, nothing is more important than the reliable availability of the machines. As a result, all of the 220 SM 3.8’s components are designed for extremely demanding open-cast mining applications. For example, additional filters in all of the machine’s circuits and a pressurized hydraulic reservoir ensure maximum purity in the hydraulic system for smooth operations. The clean oil in turn extends the service life of the downstream components, which also contributes to higher machine availability. The components’ long service life and the miner’s minimal downtime ultimately result in greater productivity and cost-effectiveness.

*Unparalleled User-Friendliness*

The 220 SM 3.8 also stands out in terms of occupational safety. The standard ROPS-FOPS operator’s cabin features additional soundproofing and vibration isolation, allowing the operator to work with maximum focus for many hours without the risk of fatigue. The ergonomically designed and clearly arranged controls are integrated into the armrests of the driver’s seat, and all of the machine’s key functions are logically incorporated into the multifunctional joysticks. This means that the operator can operate the machine intuitively in just a few steps and fully concentrate on high-precision mining.

For optimum visibility, the fully air-conditioned, spacious cabin features generously-sized windows and is positioned so that the operator always has a clear view of the cutting edge. An optional camera system also gives the operator an excellent overview of the work area, even behind the machine. In short, ideal conditions for productive operations.

The 220 SM 3.8 is also designed to be easy to service and maintain. All of the maintenance and service points are easily accessible from the ground or inside. The walk-in engine compartment also makes it possible to quickly and easily inspect the engine. The machine’s air, fuel, and hydraulic oil filters are also directly accessible. Ultimately, the intelligent maintenance concept also results in higher machine availability.

**The Bottom Line: An All-Around Impressive Machine**

The new 220 SM 3.8 has succeeded in fully meeting the operator’s expectations in daily use at the Bhubaneswari coal mine: “The Wirtgen surface miner has proven itself across the board at our mine,” says BCML Chief Operating Officer Om Prakash, summing up Wirtgen’s latest innovation on an extremely positive note.

Photos:

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|  | W\_photo\_220SM-3-8\_00013\_HIThe new 220 SM 3.8 surface miner from Wirtgen extracts coal with maximum precision and extremely cost-effectively near the town of Talcher in eastern India. |

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|  | W\_photo\_220SM-3-8\_00007\_HI One highlight of Wirtgen’s 220 SM 3.8 is the spacious ROPS/FOPS operator’s cabin. It can be heated or air-conditioned and is soundproofed and isolated from vibrations. All of the machine’s key functions have been integrated into the multifunctional joystick. |

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|  | W\_photo\_220SM-3-8\_00019\_HI Wirtgen’s surface miner selectively mines raw materials up to a cutting depth of 350 mm and a uniaxial compressive strength of 35 MPa. The windrowing method separates the cutting process from that of loading the material onto trucks. |

*Please note: These photos are for preview purposes only. For printing in publications, please use the photographs in 300 dpi resolution that are available for download from the Wirtgen GmbH/Wirtgen Group websites.*

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