

Maximum Performance in Soft Rock

# SURFACE MINER 220 SM(i) 3.8



# MAXIMUM PERFORMANCE IN SOFT ROCK



The design of the 3.8-m cutting drum unit installed in the 220 SM(i) 3.8 has been optimized for the mining of soft rock to ensure maximum productivity at minimum operating costs.

The Surface Miner extracts primary resources by cutting to a depth of up to 350 mm.

The compact 220 SM(i) 3.8 is the ideal candidate for use in small-scale to large-scale mining operations.

Natural resources are extracted in a single, environmentally sustainable operation without drilling and blasting, yielding material of high quality.

When mining with the cut-to-ground process, the material extracted is continuously deposited behind the machine.

## WIRTGEN SURFACE MINERS



### **60-TON CLASS**

- > Cutting width up to 3,800 mm
- > Cutting depth up to 350 mm



### **120-TON CLASS**

- > Cutting width up to 2,750 mm
- > Cutting depth up to 650 mm



### **200-TON CLASS**

- > Cutting width up to 4,200 mm
- > Cutting depth up to 830 mm

# OVERVIEW OF HIGHLIGHTS

## Perfectly Equipped

### 01 High-Production Cutting Drum Unit

- > Efficient 3.8-m cutting drum for maximum performance in soft rock
- > Cutting drum housing optimized for windrowing applications to minimize wear during operation
- > Effective scraper blade deposits the cut material as an even surface
- > Six different cutting drum speeds minimize tool wear

### 02 High-Performance Engine Technology

- > High-powered Cummins diesel engine
- > Large diesel tank for extended uptimes
- > Controlled fan speed for low noise emission levels and reduced diesel consumption

### 03 Durable Components

- > Track units in heavy-duty design
- > Large-displacement engine (30 l)
- > High-volume hydraulic pumps and numerous hydraulic fluid pressure filters

### 04 Reliable Operation

- > Pre-pressurized hydraulic tank
- > Powerful water system with efficient filtering system
- > Hydraulic side plate cylinders with integrated heavy-duty displacement sensors
- > Central lubrication system with three separate lubricating circuits

### 05 Effective Safety Concept

- > Sound-insulated, anti-vibration mounted ROPS / FOPS cabin
- > Trainer's seat inside the ROPS / FOPS cabin
- > Quick and easy replacement of cutting tools
- > Mechanical lockout of electrical system during machine stoppages / maintenance (battery and starter isolators)
- > Manual activation of hydraulic valves allows safe maneuvering of the machine in emergency operation
- > Simple mechanical lock to prevent sudden inadvertent lowering of the machine during maintenance procedures



## 06 Ease of Operation and High Operator Comfort

- > High-precision **LEVEL PRO PLUS** leveling system
- > Ergonomically optimized cabin and operating concept
- > Automated lowering and raising of the cutting drum for the simple, accurate production of ramps in opencast mining
- > Automatic parallel machine height adjustment, front and rear
- > 5-V USB port and 12-V and 24-V sockets inside the cabin

## 07 Quick Manoeuvring

- > Hydraulic all-track steering system with Ackermann steering geometry to minimize wear during turning
- > Electronic optimization of tractive power to ensure maximum traction
- > Large ground clearance for quick maneuvering on difficult ground
- > Reversing camera and reverse assist for smooth maneuvering

## 08 Intelligent Maintenance Concept

- > Easy access to points of maintenance and servicing
- > Walk-in engine compartment
- > Plain text displays for quick troubleshooting
- > Easy cleaning of cooling system
- > Hydraulic tank can be easily removed for cleaning purposes

## 09 Efficient Machine Management

- > Standardized data interface for different customer systems



# HIGH-PRODUCTION CUTTING DRUM UNIT

Mining soft rock at maximum production rates and cost efficiency - the 3.8-m wide cutting drum unit of the 220 SM(i) 3.8 has been developed to meet exactly these criteria for success. It cuts soft rock in a highly productive and efficient process, depositing it as an even windrow behind the machine.

## Efficient 3.8-m Cutting Drum

The cutting drum has been designed specifically for high-quality windrowing applications in soft rock, such as coal or salt. It operates to the highest possible cutting performance while making ideal use of the engine power at low specific fuel

consumption rates. The drum is fitted with high, slender holder bases which optimize the flow of material while minimizing energy expenditure. Yet another positive effect: a minimum fines content due to optimized material transport.

## Optimized Cutting Drum Housing

Tailored to real-life requirements, the cutting drum unit optimizes the flow of material. This results in a significant reduction of wear and tear of the cutting drum housing, holders, picks and scraper blade.

01



- 01 The picks are arranged in a specific pattern tailored to the windrowing method.
- 02 Depositing the cut material as an even surface reduces wear and tear of the rear track units.

### Effective Scraper Blade

Designed in accordance with field requirements, the scraper blade deposits the cut material behind the machine as an even surface.

### Six Cutting Drum Speeds

Six different cutting drum speeds can be set to allow perfect adjustment to operational requirements. This feature significantly reduces cutting tool wear and minimizes diesel consumption while increasing productivity at the same time.



### Extraction of Soft Rocks with Maximum Productivity

Specially designed and constructed 3.8 m cutting drum

# HIGH-PERFORMANCE ENGINE TECHNOLOGY

The surface miner's tremendous engine performance makes a significant contribution towards achieving high cutting performance and high daily production rates.

## High-Powered Cummins Diesel Engine

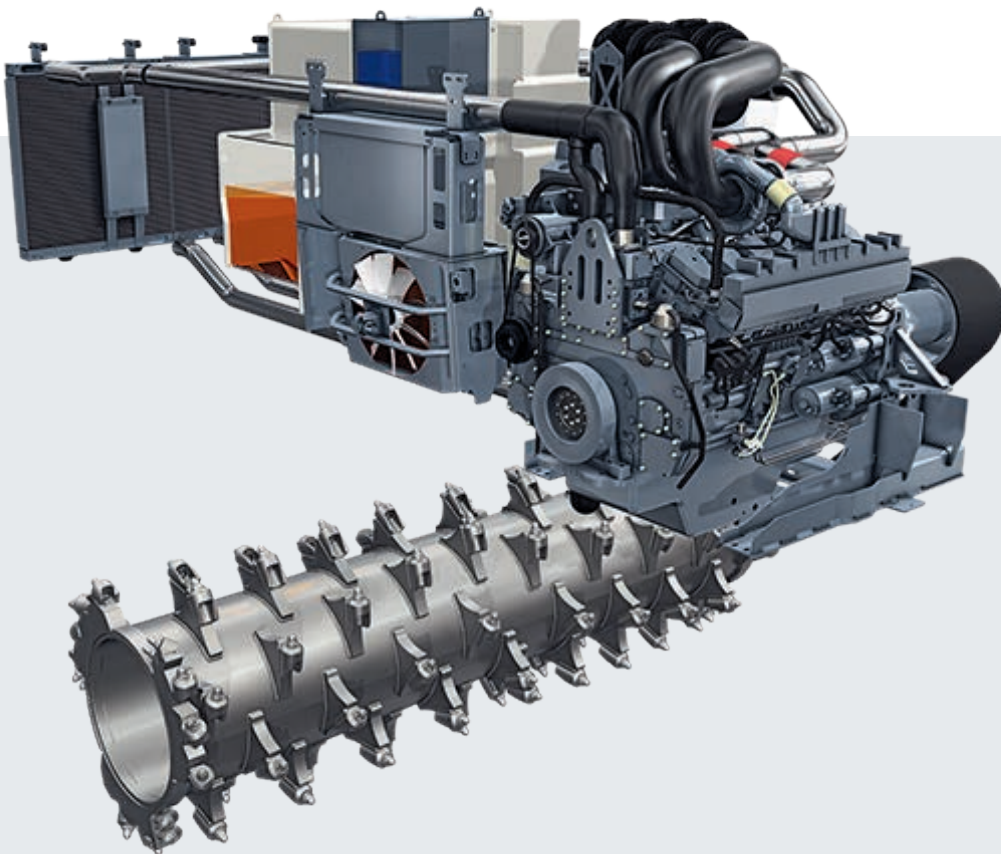
The 220 SM(i) 3.8 is equipped with a high-powered Cummins diesel engine. The engine impresses with minimum fuel consumption thanks to high-pressure injection and an intelligent technology used in the 220 SM 3.8 complies with the emission standards of US Tier 2 (EU not regulated). The 220 SMi 3.8 complies with the stringent specifications of exhaust emission standards EU Stage 5 / US Tier 4f.

## Large Diesel Tank

The large diesel tank of the 220 SM(i) 3.8 holds 2,300 l litres of diesel to ensure extended uptimes without the need for refuelling. This results in less idle time needed for refuelling.

## Fan Speed Control

The cooling system and fan speed governed in accordance with requirements ensure reduced fuel consumption and lower noise emission levels.



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01 Thanks to its high-powered engine, the 220 SM(i) 3.8 is an ideal candidate for tough opencast mining operations.

02 The miner's mechanical cutting drum drive via power belt ensures high efficiency when extracting natural resources using the windrowing method.

## Rugged and Powerful

Long-life, economy-optimized mining engine

## Fuel-efficient Cooling

Load-dependent cooling fan speed





# DESIGNED WITH DURABILITY IN MIND





# DURABLE COMPONENTS

**Built for the Toughest Jobs.**

Heavy duty components

**High Machine Utilization Rates**

Wear-resistant materials

01



**01** Sturdy design extends the service life of the track units.

**02** High productivity comes as standard with the 220 SM(i) 3.8.



All components of the 220 SM(i) 3.8 have been designed for use in extremely tough open-pit mining operations. The result: exceptional durability of the components and minimized downtimes of the miner for increased productivity and cost efficiency.

#### **Track Units in Heavy-Duty Design**

In open-pit mining operations, the track units are exposed to extremely high levels of stress and strain. Heavy-duty track units fitted with sturdy double grouser track pads enable the 220 SM(i) 3.8 to achieve high advance rates even in difficult mining situations. The generous design of all track components additionally increases the machine's availability at extended uptimes.

#### **Large-Displacement Engine (30 l)**

Large displacement ensures a long life of the diesel engine, which results in high availability and reliable performance of the entire machine.

#### **High-Volume Hydraulic Pumps**

Reliable machine operation on a permanent basis is ensured by the high-volume hydraulic pumps installed in the 220 SM(i) 3.8. The large number of pressure filters additionally protects the hydraulic system against contamination by solid particles.

# RELIABLE OPERATION

Nothing is more important in opencast mining than the reliable long-term availability of the machine. That is why we have designed the main components of the miner to ensure their extended service life even when exposed to extreme levels of stress and strain.

## Pre-Pressurized Hydraulic Tank

The pre-pressurized hydraulic tank prevents dust and dirt from entering the hydraulic system. Filters installed in all hydraulic circuits keep the system clean to ensure reliable operation. Clean oil not only makes a significant contribution towards extending the service life of downstream components but also ensures optimum transmission of power.

## Powerful Water System

Reliable operation of the water system is of utmost importance to minimize the development of dust. Clean water is needed for this purpose which is, however, rarely found in opencast mining operations. Filter elements with an extra-large sieve surface have therefore been installed in the water system to ensure smooth operation of the system and thus a permanent reduction of dust development.

01



### Hydraulic Side Plate Cylinders with Heavy-Duty Displacement Sensors

The ground is scanned by heavy-duty displacement sensors integrated into the hydraulic side plate cylinders. The measured results are used to produce bench floors and haulage roads of unrivalled evenness.

### Central Lubrication System with Three Lubricating Circuits

The central lubrication system with three separate lubricating circuits can be relied on to supply all lubrication points of the 220 SM(i) 3.8. Lubrication is monitored in an automated process and ensures the optimal supply of all lubrication points and thus an extended uptime of the machine.



02

**01** The hydraulic side plate cylinders are equipped with sturdy displacement sensors.

**02** High machine availability ensures permanently high daily production rates in soft rock.



**Maximum Continuous Mining Performance**

Reliable operations

# EFFECTIVE SAFETY CONCEPT

01



**Compliant with Stringent Safety Regulations**

Safety for operating and maintenance personnel



The safety of machine operators and maintenance staff is a top priority in opencast mining. The 220 SM(i) 3.8 is designed to fully comply even with strict mining regulations.

#### **ROPS / FOPS Cabin as Standard**

The anti-vibration mounted, fully soundproofed cabin enables the operator to work at ease for many hours.

#### **Trainer's Seat Inside the Cabin**

The additional seat inside the cabin permits operators to be trained under real-life conditions.

#### **Quick and Easy Replacement of Cutting Tools**

The hydraulically opening scraper blade provides ready and safe access to the cutting drum from the rear. The cutting tools are replaced with the engine switched off. Ample room to move, hydraulic tool extractor and drum turning device are additional features which simplify the process.

#### **Lockout of Electrical System**

Accidental start-up of the machine can be prevented mechanically by locking the battery and starter isolators so that maintenance procedures (e.g. replacement of cutting tools) can be safely performed while the machine is stationary.

#### **Lock Preventing Sudden Inadvertent Lowering of the Machine**

The simple mechanical lock installed at the lifting columns for maintenance purposes safely prevents the machine from lowering.

#### **Manual Valves for Emergency Operation**

The manual activation of hydraulic valves enables the machine to be safely maneuvered to a parking area in emergency operation.



**01** The operator and the trainer are protected from external hazards in the ROPS / FOPS cabin.

**02** Simple lockout of the battery and starter isolators.

**03** The battery-operated hydraulic drum turning device enables cutting tools to be replaced with the engine switched off.



# EASE OF OPERATION PAIRED WITH OPERATOR COMFORT

01



**Everything under Control**  
Intuitive, ergonomic operating concept

**Always Makes the Grade**  
LEVEL PRO PLUS



**01** The clearly structured, ergonomically designed cabin is paired with ease of operation to reduce stress and increase productivity.

**02** The additional-**LEVEL PRO PLUS** leveling system can be mounted in the operator's immediate field of view.



Ease of operation, ergonomic design and operator comfort are key efficiency drivers. Taken together, they translate into increased productivity and profitability in every job.

#### **LEVEL PRO PLUS Leveling System**

The **LEVEL PRO PLUS** leveling system, which has proven its worth in both road construction and mining operations, offers easy, intuitive operation. Sensors installed at the side plates and an additional slope sensor can be used to produce a precisely defined horizontal or inclined surface. The machine is pre-fitted for GPS or laser-based control or for leveling by means of Multiplex ultrasonic sensors.

#### **Ergonomically Optimized Operating Concept**

The ergonomically designed controls have been integrated into the armrest of the operator's seat. All important machine features have been intelligently combined in the multifunctional joysticks. The operator's seat with spring and air cushioning can be fully adjusted to the operator's personal preferences. In addition, the spacious cabin offers heating and air-conditioning as well as ample room to move.

#### **Automated Lowering and Raising of the Cutting Drum**

This innovative complementary feature enables the 220 SM(i) 3.8 to produce the ramps needed in opencast mining accurately in an automated process and within an extremely short period of time.

#### **Parallel Height Adjustment**

Parallel height adjustment of the miner at the front and rear can be performed conveniently at the mere push of a button.

#### **5-V USB Port and 12-V and 24-V Sockets**

Separate ancillary equipment can be connected via a 5-Volt USB port and 12-Volt and 24-Volt sockets installed in the operator's cabin.

# QUICK MANEUVERING

Experience has shown that the terrain of opencast mining operations often holds unexpected challenges. This is where maximum traction, maneuverability and high ground clearance are needed. The 220 SM(i) 3.8 meets these requirements effortlessly.

## Hydraulic All-Track Steering System

The miner's hydraulic all-track steering system with Ackermann steering geometry minimizes wear during turning maneuvers.

In combination with the machine's compact dimensions, excellent maneuverability is ensured even in tight working conditions. As a result, the 220 SM(i) 3.8 is repositioned quickly to keep interruptions of the productive cutting process as brief as possible.



**Outstanding Maneuverability**  
Hydraulic all-track steering

**Fast Maneuvering**  
Rear view camera

**01** Small turning radii and large ground clearance are hallmarks of the machine.

**02** Quick maneuvering using the reversing camera improves the overall productivity of the machine.



#### **Optimization of Tractive Power**

Electronic optimization of the machine's tractive power guarantees maximum traction of all four track units to ensure high advance rates and cutting performance.

#### **Large Ground Clearance**

The separately height-adjustable track units offering large ground clearance and integrated stroke measurement systems enable effortless maneuvering of the machine even on uneven ground.

#### **Reversing Camera**

The reversing camera offers a good view towards the rear, thus allowing for the quick and safe maneuvering of the machine. The reverse assist system provides additional support to the machine operator.

# INTELLIGENT MAINTENANCE CONCEPT

01



**Minimum Maintenance Time and Effort**

Walk-in engine compartment

**Fast and Simple**

Good accessibility

- 01** Ready access to the engine and cooling system.
- 02** The 220 SM(i) 3.8 offers ready access for maintenance procedures - both in the workshop and in the field.
- 03** Convenient access to the engine and cooling system.



Operations in opencast mining require machine availability around the clock - minimizing maintenance requirements is therefore of vital importance. The intelligent maintenance concept of the 220 SM(i) 3.8 increases production time, extends the life of machine components and optimizes machine availability.

#### **Readily Accessible Points of Maintenance**

All points of maintenance and servicing are readily accessible from the ground or from inside the machine. They enable maintenance procedures on the machine to be completed safely and quickly without the need for extended setup times.

#### **Walk-In Engine Compartment**

Reliable maintenance of the diesel engine is ensured by the walk-in engine compartment. Air, fuel and hydraulic fluid filters offer direct access.

#### **Quick Troubleshooting**

Central power supply and plain text displays on the control screen enable quick, effective troubleshooting to ensure high machine reliability in operation.



#### **Easy Cleaning of Cooling System**

The cooling system including fan is located at the rear of the machine and engine compartment. It offers ready access to ensure quick and easy cleaning.

#### **Removable Hydraulic Tank**

The hydraulic tank can be easily removed for cleaning purposes so that cleaning is completed within a short period of time.

# EFFICIENT MACHINE MANAGEMENT

Telematics systems offer customers online access to operating parameters of the 220 SM(i) 3.8 independent of the machine's current location.

## **Data Interface for Customer Systems**

The standardized data interface enables easy integration of the 220 SM(i) 3.8 into the customer's own telematics and dispatch system. The scope of data supplied by the interface is variable and based on the WIRTGEN GROUP FMS-standard.

Numbers such as productive times and operating hours can be precisely documented via the data interface, thus providing a reliable record of machine times and machine parameters.

## **Assure 24/7 Productivity**

State-of-the-art telematics











The design of the 3.8-m cutting drum unit installed in the 220 SM(i) 3.8 has been optimized for the mining of soft rock to ensure maximum productivity at minimum operating costs. The surface miner extracts natural resources at a cutting depth of up to 350 mm selectively. The compact 220 SM(i) 3.8 is the ideal candidate for use in small-scale to large-scale mining operations.



TECHNICAL SPECIFICATIONS	220 SM 3.8	220 SMi 3.8
<b>Cutting Drum</b>		
Max. cutting width	3,800 mm	
Cutting depth <sup>1)</sup>	0 - 350 mm	
Drum diameter with tools	1,300 mm	
<b>Engine</b>		
Manufacturer	Cummins	
Type	QST30	
Cooling	Water	
Number of cylinders	12	
Rated power at 2,100 rpm	708 kW / 950 HP / 963 PS	
Displacement	30.5 l	
Fuel consumption, full load	187 l/h	
Fuel consumption, 2/3 load	126 l/h	
Emission standards	no EU regulation / US Tier 2	EU Stage 4 / US Tier 4f
<b>Electrical System</b>		
Power supply	24 V	
<b>Tank Capacities</b>		
Fuel	2,300 l	
AdBlue® / DEF <sup>2)</sup>	—	300 l
Hydraulic fluid	290 l	
Water	4,000 l	
<b>Driving Properties</b>		
Operating and travel speed	0 to 84 m/min (0 to 5 km/h)	
<b>Crawler Units</b>		
Crawler units front and rear (L x W x H)	2,375 x 360 x 843 mm	
<b>Shipping Dimensions</b>		
Machine without cutting drum assembly (L x W x H)	10,000 x 3,000 x 3,000 mm	
Machine with cutting drum assembly (L x W x H)	10,000 x 4,530 x 3,570 mm	

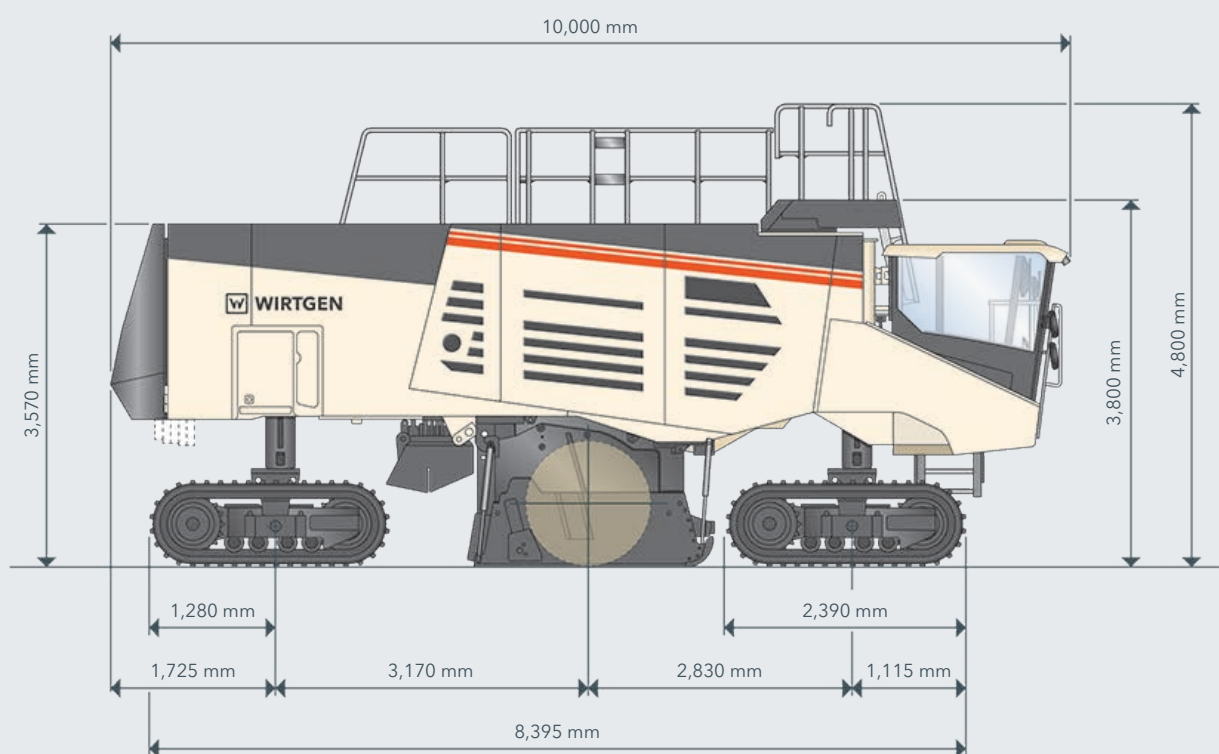
TECHNICAL SPECIFICATIONS	220 SM 3.8	220 SMi 3.8
<b>Weight of Base Machine</b>		
Empty weight of machine without fluids	55,000 kg	55,950 kg
Operating weight, CE3)	58,050 kg	59,000 kg
Operating weight, max. (full tanks)	64,700 kg	65,650 kg
<b>Transport Weights of Individual Components</b>		
Weight of cutting drum assembly	15,000 kg	
<b>Weights of Operating Agents</b>		
Water tank filling in kg	4,000 kg	
Diesel tank filling in kg (0.83 kg/l)	1,900 kg	
AdBlue® / DEF tank filling (1.1 kg/l)	-	330 kg

<sup>1)</sup> The maximum cutting depth may deviate from the value indicated, due to tolerances and wear.

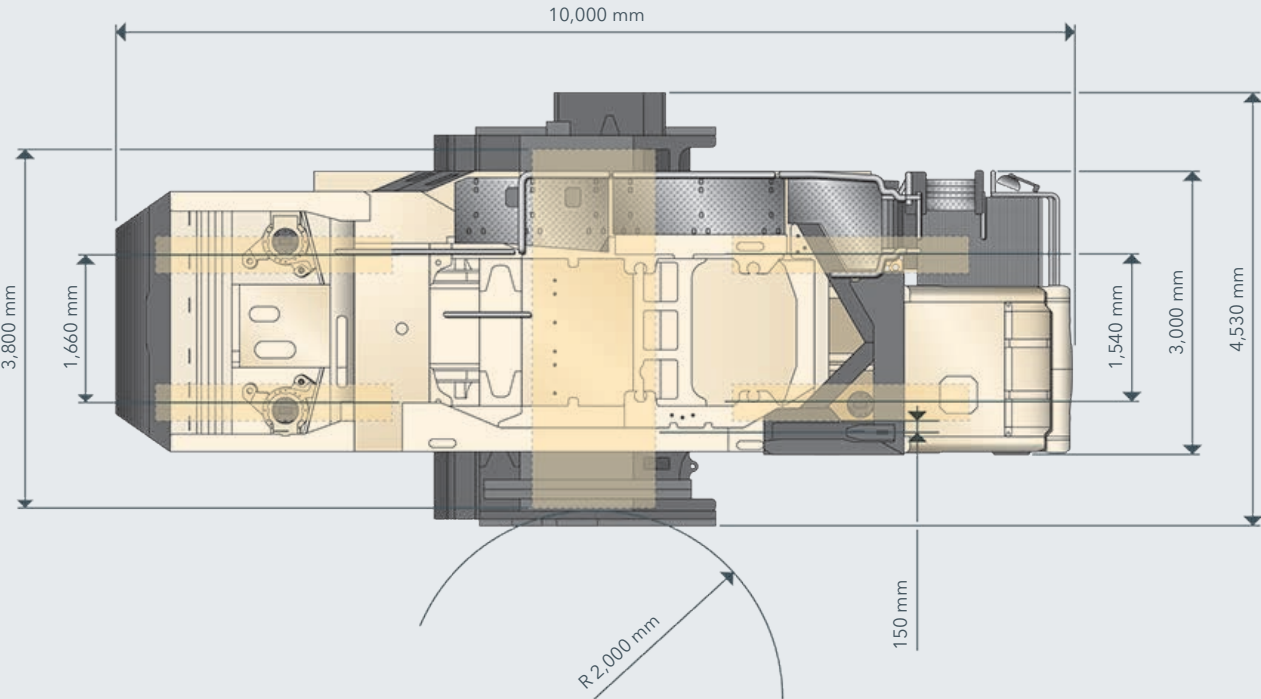
<sup>2)</sup> AdBlue® is a registered trademark of the German Association of the Automotive Industry (VDA).

<sup>3)</sup> Weight of machine with half-full water tank, half-full fuel tank, driver (75 kg) and on-board tools, excluding optional equipment.

SIDE VIEW 220 SM(i) 3.8



TOP VIEW 220 SM(i) 3.8



STANDARD EQUIPMENT	220 SM 3.8	220 SM(i) 3.8
<b>Basic machine</b>		
> Base machine with engine	■	■
> Engine-air-intake with highly efficient pre-separator	■	■
> Reduced diesel consumption and low noise emissions as a result of temperature-controlled fan speed	■	■
> Separate battery master switch for disconnecting the starter	■	■
> Automatic central lubrication system	■	■
> Consumables for use in moderate and warm weather conditions (up to -15°C / 5°F)	□	□
<b>Cutting drum unit</b>		
> Robust and efficient mechanical milling drum drive via power belts (total of 18 grooves) with automatic belt tensioner	■	■
> Variable cutting speed by a combination of 3 selectable engine speeds and adjustable drive belt pulley arrangements to achieve optimum working results	■	■
> Cutting drum housing FB3800	■	■
<b>Cutting drums</b>		
> Cutting drum FB3800 HT6 LA50 with 104 picks	□	□
<b>Machine control and leveling system</b>		
> Advance control across the entire speed range via an ergonomic joystick with proportional control characteristics	■	■
> Traction control system reduces wear on crawler components at maximum traction	■	■
> Automatic advance rate control to assist the operator in keeping the engine's ideal operating point	■	■
> Cutting depth regulation with an integrated levelling system using the side plates and the <b>LEVEL PRO PLUS</b> leveling system. The levelling system is fully integrated in the machine display.	■	■
> The standard transverse slope control maintains the machine's transverse tilt regardless of the terrain. This means exact surface levels, either horizontal or slanted, can be created.	■	■
<b>Operator's cabin</b>		
> Comfortable, high-quality, fully glazed, elastically mounted cabin with roof hatch	■	■
> Equipped with an air-cushioned seat and all the necessary control instruments integrated into the armrests	■	■
> Includes 12 V and 24 V sockets and a 5 V USB port	■	■
> Multifunctional color control display that shows important machine operating conditions	■	■
> Comprehensive machine diagnostics displayed on the control screen	■	■
> Reversing camera with graphical reversing assistant	■	■
> Powerful air conditioner for cooling and heating	■	■
> "Welcome-and-Go-Home-Light" with LED lighting in the ladder area	■	■
> Provides machine operator with roll-over protection system (ROPS) and falling-object protection system (FOPS)	■	■



STANDARD EQUIPMENT	220 SM 3.8	220 SM(i) 3.8
<b>Chassis and height adjustment</b>		
> Track units with exceptionally sturdy double-grouser track pads in heavy-duty design for mining applications	■	■
> Infinitely variable, hydraulic four-track drive	■	■
> Four-track steering system offering the following steering modes: crab, cornering or straight-ahead mode	■	■
<b>Miscellaneous</b>		
> Water spray bar on the cutting drum unit	■	■
> High-pressure water cleaner (40 bar and a large quantity of water) with washing lance for cleaning the machine	■	■
> LED working lights, 24 V, with magnetic base	■	■
> Rotary beacon LED 24 V	■	■
> Set of tools for maintenance and servicing	■	■
> Extensive safety package including easily accessible emergency stop switches, an integrated machine safety feature, protecting it from unintended transverse tilts, large non-slip walkways, a lockable main switch and starting switch and position lights	■	■
> European type certification, EuroTest mark and CE conformity	■	■
> Water filling from above using an external pump (The filling pump is not included in the delivery)	□	□
> Standard painting in RAL 9001 (cream)	□	□
> WITOS - professional telematics solution for machine operation and service optimisation	□	□
> Standard LED lighting system with 19,800 lumens	□	□

■ = Standard equipment

□ = Standard equipment, can be replaced with optional equipment if desired

□ = Optional equipment

OPTIONAL EQUIPMENT	220 SM 3.8	220 SM(i) 3.8
<b>Basic machine</b>		
> Consumables for use in cold weather conditions (from -15°C / 5°F)	<input type="checkbox"/>	<input type="checkbox"/>
<b>Cutting drums</b>		
> Cutting drum FB3800 HT6 LA75 with 76 picks	<input type="checkbox"/>	<input type="checkbox"/>
<b>Machine control and levelling system</b>		
> Level control 3D levelling pre-equipment	<input type="checkbox"/>	<input type="checkbox"/>
> Additional operating display <b>LEVEL PRO PLUS</b>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Miscellaneous</b>		
> Hydraulically operated filling pump for water refilling	<input type="checkbox"/>	<input type="checkbox"/>
> Painting in one special colour (RAL)	<input type="checkbox"/>	<input type="checkbox"/>
> Model without WITOS	<input type="checkbox"/>	<input type="checkbox"/>
> Powerful LED lighting system	<input type="checkbox"/>	<input type="checkbox"/>
> Additional weight 4,500 kg on the rear of the machine	<input type="checkbox"/>	<input type="checkbox"/>
> Radio system with two speakers and antenna	<input type="checkbox"/>	<input type="checkbox"/>
> Auxiliary heating for cabin	<input type="checkbox"/>	<input type="checkbox"/>
> Additional monitor brackets	<input type="checkbox"/>	<input type="checkbox"/>
> Mobile coolbox 24 V	<input type="checkbox"/>	<input type="checkbox"/>
> Cold-start aid, 400 V, without generator	<input type="checkbox"/>	<input type="checkbox"/>
> Cutting drum rotation device, electro-hydraulic	<input type="checkbox"/>	<input type="checkbox"/>
> Hydraulic pick ejector for <b>HT14</b> toolholder system	<input type="checkbox"/>	<input type="checkbox"/>
> Wiggins fast-fill system for diesel refuelling	<input type="checkbox"/>	<input type="checkbox"/>
> Wiggins fast-fill system for AdBlue® refilling	—	<input type="checkbox"/>

OPTIONAL EQUIPMENT	220 SM 3.8	220 SM(i) 3.8
<b>Miscellaneous</b>		
> Camera system with four cameras and additional monitor	<input type="checkbox"/>	<input type="checkbox"/>
> Heavy-duty rollers to help with the assembly of the drum housing	<input type="checkbox"/>	<input type="checkbox"/>
> LED working light 24 V with magnetic base	<input type="checkbox"/>	<input type="checkbox"/>
> Oil, filter and maintenance kit for first Service after 50 working hours	<input type="checkbox"/>	<input type="checkbox"/>
> Workshop container 20' including workshop equipment	<input type="checkbox"/>	<input type="checkbox"/>
> Workshop equipment - tools	<input type="checkbox"/>	<input type="checkbox"/>
> Workshop equipment - auxiliary equipment and consumables	<input type="checkbox"/>	<input type="checkbox"/>
> Workshop equipment - metric fastening elements	<input type="checkbox"/>	<input type="checkbox"/>
> Workshop equipment - electrical repairs	<input type="checkbox"/>	<input type="checkbox"/>
> Workshop equipment - hydraulic components	<input type="checkbox"/>	<input type="checkbox"/>
> Workshop equipment - hydraulic press	<input type="checkbox"/>	<input type="checkbox"/>
> Workshop equipment - hoses for emergency repairs	<input type="checkbox"/>	<input type="checkbox"/>

■ = Standard equipment

■ = Standard equipment, can be replaced with optional equipment if desired

□ = Optional equipment





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