

RoadNews

for new roads

The WIRTGEN GROUP User Magazine // № 06

 WIRTGEN

 VÖGELE

 HAMM

 KLEEMANN

 BENNINGHOVEN

New KLEEMANN MC 120 Z PRO jaw crusher:

High-performance powerhouse



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Dear Readers,

Even the best machine needs an occasional service. With this in mind, we continue to support our customers after their purchases, offering an extensive service. This includes, for instance, regular inspections, safety checks and software updates.

The telematics solution WITOS FleetView is an important tool for greatly increasing machine availability. WIRTGEN, VÖGELE and HAMM machines which are fitted with this system issue reminders of upcoming service and maintenance appointments practically autonomously. This gives contractors planning security along with the certainty that no machine will need to be withdrawn from a job site because an inspection is due or a service interval is lapsing. Indeed, there are plenty of good reasons for dedicating a top feature to our fleet and service management solution.

It goes without saying that we always think one step ahead when developing products. A diversity of examples confirms this – such as the HAMM HD+ 90i PH tandem roller with power hybrid drive, the intelligent DURAFORCE milling and mixing rotor for cold recycling and soil stabilization with WIRTGEN's WR series, the new KLEEMANN MOBICAT MC 120 Z PRO jaw crusher for professional quarry operations and the BENNINGHOVEN ECO and TBA asphalt mixing plants. We additionally set standards in innovative construction methods, for instance with VÖGELE's InLine Pave process.

We hope you enjoy reading this sixth edition of the WIRTGEN GROUP RoadNews.

Best wishes,




Frank Betzelt
Senior Vice President – Sales, Marketing, Customer Support
WIRTGEN GROUP

WITOS FleetView

And everything runs smoothly!

The telematics solution from the WIRTGEN GROUP - WITOS FleetView - puts users and operators ahead of the game thanks to predictive fleet management. The southern German contractor, GSI-Asphalt, are a prime example of how this works.



The background image shows a green Wirtgen GSI 1500 road construction machine, likely a tandem roller, working on a road. Two operators in red shirts and yellow safety gear are visible near the machine. The machine is positioned on a road that curves through a lush green landscape with rolling hills and trees under a clear blue sky. White curved lines are overlaid on the left side of the image, suggesting a signal or data flow. The text is centered in the lower half of the image.

WITOS FleetView gets the machines of WIRTGEN, VÖGELE and HAMM communicating: every unforeseen fault, along with every due inspection, is displayed on the WITOS FleetView web application. That allows the central contact at the relevant WIRTGEN GROUP subsidiary to arrange service appointments proactively. It also means that the customer always has an up-to-date overview of its machine fleet.

Germany // Eging am See

A penny saved is a penny earned. WITOS FleetView is a must-have for anyone who takes this old proverb to heart. That's because the telematics solution from the WIRTGEN GROUP offers users and machine operators a wide range of advantages that translate into hard cash. A real-life example confirms: GSI-Asphalt, a medium-sized enterprise, have been relying on WITOS FleetView in conjunction with the Smart Service agreement for many years now. Both services guarantee maximum machine availability – enhancing the cost-efficiency and value retention of the machinery.

Werner Aicher, Managing Director
GSI-Asphalt

WITOS FleetView has significantly increased the capacity utilization of our machine park.



A powerful medium-sized enterprise specializing in fibre-optic expansion

GSI-Asphalt is a successful SME that has been growing steadily for years. There are good reasons for this: efficient processes, a high quality standard and a business model that is geared to the local authority sector, particularly the construction of utility lines and the expansion of the fibre-optic network. The modern machine fleet of the WIRTGEN GROUP - and the WITOS FleetView and Smart Service packages - make a key contribution to the company's efficiency and quality. Indeed, these two strategic instruments enable GSI-Asphalt to get more out of their investment: "The due inspections and service intervals are scheduled by the WIRTGEN GROUP for all the machines," explains Werner Aicher, Managing Director of GSI-Asphalt, highlighting a key advantage of WITOS FleetView. The telematics solution enables the WIRTGEN GROUP to analyse service-related parameters such as operating hours and send notifications of upcoming inspection services. It goes without saying that the data are also available to the customer and the customer's staff too, where appropriate.

WITOS FleetView slashes downtimes

"The telematics solution is straightforward, and we don't have to keep thinking about our machines," says Aicher. "The system has significantly increased the capacity utilization of our machine park. What's more, we can always be confident that there will be no avoidable trips to the workshop during a construction project. As a result, our operations can be planned more effectively and are more cost-efficient, too, because we always have three weeks' notice ahead of service appointments, enabling us to reschedule machines if necessary or make use of substitute WIRTGEN GROUP machines. So there's no disruption to the work." And once a machine is due for servicing, the Smart Service helps contractor GSI-Asphalt keep costs down. Anyone using a variety of machines from WIRTGEN, VÖGELE and HAMM or - as in the case of GSI-Asphalt - with a fleet made up entirely of WIRTGEN GROUP products, enjoys further benefits: the central contact at the relevant WIRTGEN GROUP subsidiary can coordinate a single service or maintenance appointment for multiple WIRTGEN, VÖGELE and HAMM machines. This further increases machine availability. >>>

Perfect interplay between the customer GSI-Asphalt and the WIRTGEN GROUP: the machine fleet automatically transmits service-related data to the customer and the WIRTGEN GROUP sales and service company via the WITOS FleetView telematics solution. The subsidiary in Augsburg then schedules the service appointments in consultation with GSI-Asphalt.



One-stop service

With WITOS FleetView, servicing has become a more automatic process for GSI-Asphalt – but without losing the personal touch. Thomas Weber of the WIRTGEN GROUP subsidiary in Augsburg has for years been a dedicated point of contact for GSI-Asphalt, attending to all concerns – which of course extend beyond the service information provided by WITOS FleetView. “We genuinely profit from the rapid response times, even when we have questions or want to make use of the application-specific advice. This bolsters our view of the WIRTGEN GROUP as a true partner whose loyal support can be relied on,” says Werner Aicher. >>>



You can find out more about GSI-Asphalt and the use of WITOS FleetView in our job site video at www.voegele.info/witos_fleetview

WITOS FleetView

WITOS FleetView at a glance

WITOS stands for “WIRTGEN GROUP Telematics and On-site Solutions” and is the name given to the software product family of the WIRTGEN GROUP that supports customers, operators and users above and beyond the machine hardware.

WITOS FleetView makes fleet and service management for WIRTGEN, VÖGELE and HAMM machines even more efficient, because the system-based visualization and analysis of machine and position data give machine managers and users an overview of their machine fleet at all times. While the Smart Service agreement provides for regular inspections in accordance with the instruction manual, WITOS FleetView additionally supports proactive maintenance planning and a rapid response in the event of faults.





WIRTGEN GROUP DATA CENTRE



How WITOS FleetView works

The telematics control unit (TCU) installed in the machines collects, compresses and stores the machine data. The data are then sent in encrypted form via GSM to the WIRTGEN GROUP data centre, where they are analysed and made available to the customer online at www.witos.com.

WITOS FleetView - The functions in detail

WITOS FleetView supplies the data in a user-friendly web application with clear and well organized submenus. An overview of the most important functions:



Fleet

This menu provides a compact overview of the current operating status of a company's machine fleet. One or several machines can be selected for more detailed views and analyses.

Further information about WITOS FleetView can be found here:

www.wirtgen-group.com/fleetview



Map

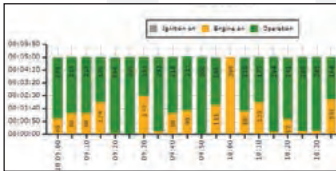
The map view shows the current location of one or several machines.

The machine path function enables you to track the route that the machine takes during operation and transport.

	Customer designation	ID	Email	Status	Monitoring Date/Time
1	Auß-Vorführmaschine	18100005	DB	50	OFF
2	Auß-Vorführmaschine	14201005	DB	50	OFF
3	Auß-Vorführmaschine	13000012	DB	50	OFF
4	Auß-Vorführmaschine	18100005	DB	50	OFF
5	Auß-Vorführmaschine	18020006	DB	50	Alarm
6	Auß-Vorführmaschine	18100009	DB	50	OFF
7	Auß-Vorführmaschine	19900004	DB	50	OFF
8	Auß-Vorführmaschine	18100013	DB	50	OFF
9	Auß-Vorführmaschine	18100009	DB	50	OFF
10	Auß-Vorführmaschine	18100013	DB	50	OFF

Monitoring

With these functions, it is possible to define times when and places where the machines of a fleet are permitted to operate. If monitoring protection is activated, operators are given immediate notification by e-mail in the event of unauthorized access to the machine. Notifications can be defined for alarms and faults as well as maintenance dates.



Operation data / History

The history view allows operational and position data to be displayed for the machines over a freely definable period, in a clear and easily readable layout. These data can also be exported.

Code	Description
1-123-12	Engine 2 fault (15:13 PM) / PM
1-123-65	Over engine 2
	Engine 2 engine cool down time failed

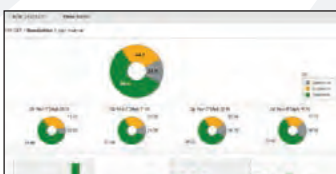
Messages / History

All current and past messages from the machines at a glance: the history view can be used to generate an individually defined summary. All messages are displayed and described just as they appear on the machines. The clear message categorization and the documentation provide information on the service status of the machines.

Machine designation	ID	Type	Status	Maintenance Date/Time
Auß-Vorführmaschine	18100005	DB	50	18.10.2017 14:00
Auß-Vorführmaschine	14201005	DB	50	18.10.2017 14:00
Auß-Vorführmaschine	13000012	DB	50	18.10.2017 14:00
Auß-Vorführmaschine	18100005	DB	50	18.10.2017 14:00
Auß-Vorführmaschine	18020006	DB	50	18.10.2017 14:00
Auß-Vorführmaschine	18100009	DB	50	18.10.2017 14:00
Auß-Vorführmaschine	19900004	DB	50	18.10.2017 14:00
Auß-Vorführmaschine	18100013	DB	50	18.10.2017 14:00
Auß-Vorführmaschine	18100009	DB	50	18.10.2017 14:00
Auß-Vorführmaschine	18100013	DB	50	18.10.2017 14:00

Maintenance / History

The history view of the maintenance section contains all the information required to ensure optimally maintained machinery. Be it information on the type and scheduling of upcoming maintenance work or maintenance reports on previous workshop visits, the maintenance functions reliably ensure that the entire machine fleet remains operational.



Reports

Eight predefined reports on the machine capacity utilizations and the fleet overview are available to the user. These can be displayed as daily, weekly, monthly or annual overviews and can also be exported. >>>



Werner Aicher, Managing Director of GSI-Asphalt:

"WITOS FleetView has helped us save 60% of our insurance premiums."

Mr Aicher, what in your view are the greatest benefits of WITOS FleetView?

First off, the telematics solution from the WIRTGEN GROUP gives us excellent planning security. Workshop visits always have a lead time of three weeks, which allows us to schedule our machine fleet precisely and coordinate it with the requirements on our job sites. In the office, the warehouse and the workshop alike, WITOS FleetView streamlines our processes and makes our costs more plannable and ultimately lower. Then there's the cost factor of insurance - which we've been able to push down by 60% thanks to WITOS FleetView. That's due to the fact that we can prove that all service intervals have been met and the ability to locate our machines by GPS, including and especially in the event of theft.



Jürgen Käspeitzer, Project Manager at GSI-Asphalt:

"We reduce downtimes to a minimum."

Mr Käspeitzer, as a project manager, what do you think of WITOS FleetView?

”

Generally, it has to be said that the plants and machinery of the WIRTGEN GROUP are very reliable. With our young fleet, downtimes are almost exclusively confined to customer service operations. WITOS FleetView enables us to reduce downtimes to a minimum and, in the event of bottlenecks, even access the substitute machines of our WIRTGEN GROUP subsidiary in Augsburg. That means our processes run absolutely smoothly.

Franz Hutter, Team Leader at GSI-Asphalt:

"Our fleet is always in top condition."

Mr Hutter, what does WITOS FleetView mean for your day-to-day work as a team leader?

Everything runs much more simply, much better and more smoothly. For me it's a genuine relief not having to always keep an eye on the operating-hours counter - instead I can rest assured that all the customer service operations have been carried out. WITOS FleetView means our fleet is always in top condition. ///

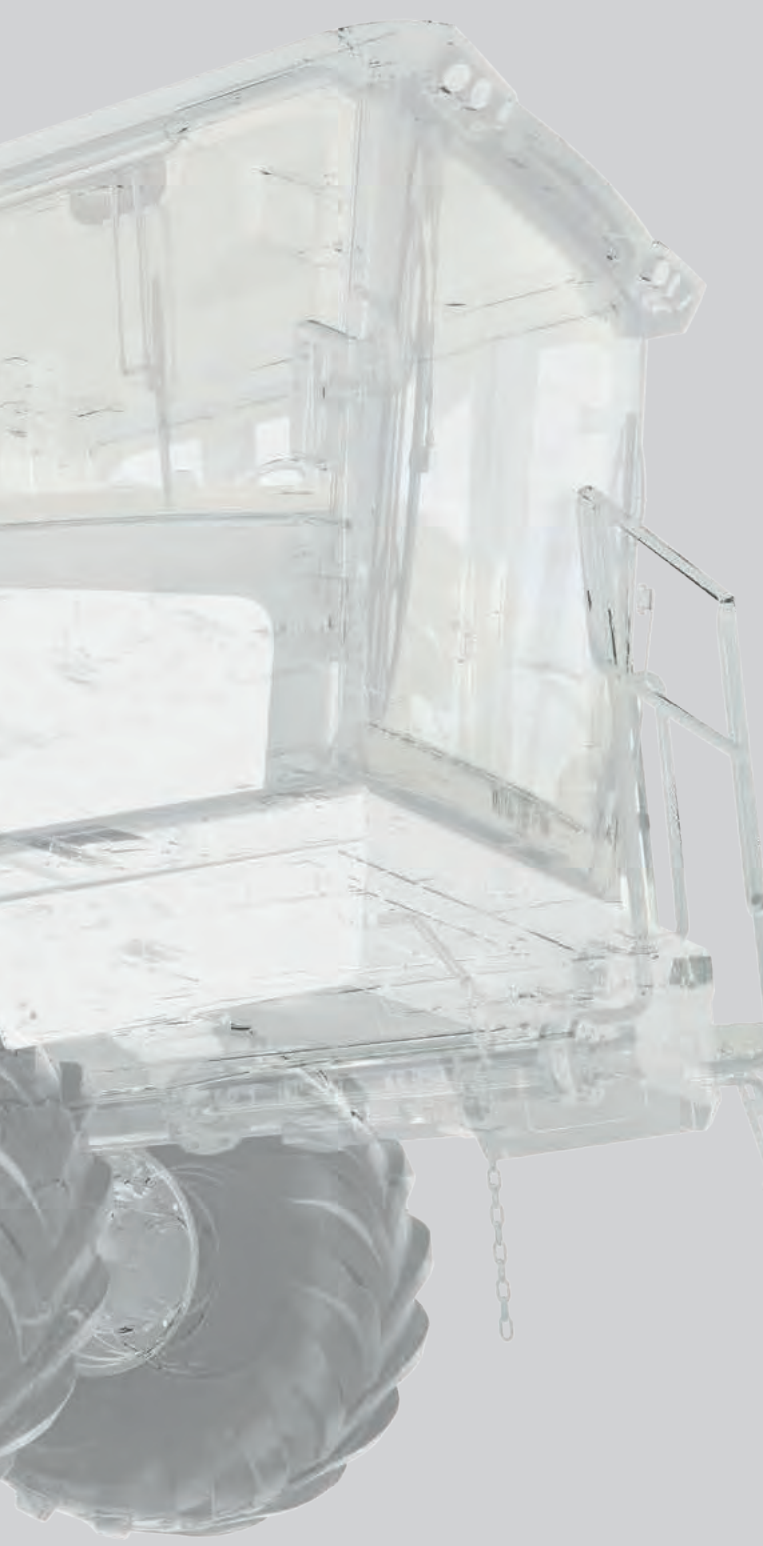


WIRTGEN DURAFORCE milling and mixing rotor: A rotor for every requirement

Demanding and varying field conditions constantly bring new challenges for cutting tools used in cold recycling and soil stabilization. For the WR series, WIRTGEN have developed a solution that is more than a match for even the most extreme requirements in both applications: the new DURAFORCE milling and mixing rotor. This development marks the end of unprofitable tool changing times, maximizing lucrative operating times instead.



With its centrepiece, the DURAFORCE milling and mixing rotor, the WR series guarantees success in cold recycling and soil stabilization.



Intelligent geometry

The optimal interplay of rotor, holder base, quick-change toolholder system and point-attack tools is essential if the milling and mixing capacity is to remain high in the long term. The use of high-grade materials and the intelligent geometry of the components ensure that the milling and mixing rotor has a long service life even in tough applications – such as stabilizing soil containing larger stones, stabilizing very abrasive material or granulating.

Optimum mixing results

The tool spacing and arrangement of the cutting tools on the milling and mixing rotor are tailored to the individual machine capacity, so that a high-quality mix is produced in a smooth, quiet milling and mixing process. The ingenious geometry of the holder base and the large diameter of the DURAFORCE rotor combine to produce a mixing chamber whose size varies according to the milling depth, ensuring that materials are mixed homogeneously. The high resistance to wear and durability of the holder base, combined with the streamlined geometry, minimizes resistance in the milling and mixing process. The optimal material flow ensures that the engine output is utilized highly efficiently while keeping wear to a minimum.

Long service life and maintenance intervals

All components of the cutting system are configured for a long life and low maintenance requirements. The point-attack tools of Generation Z have a high wear and impact resistance. The extremely long-lasting HT22 quick-change toolholder system minimizes interruptions to operation, while high-grade tool alloys give maximum strength to the holder base. The highly stressed quick-change toolholder systems on the corner ring segments of the DURAFORCE milling and mixing rotor are also easy to access, supporting rapid changes of the segments, should the need arise. >>>

DURAFORCE

Meeting a wide variety of requirements

Demands on the milling and mixing rotor in soil stabilization applications:

- › Effective splitting and crushing of the soil to optimize binding agent effectiveness
- › Uniform distribution and homogeneous mixing of binding agents and, where appropriate, water to produce a mixture of high strength
- › Maximum cutting performance even in tough, hard soil to ensure high productivity and low fuel consumption
- › High impact strength when operating in soils interspersed with coarse-grained rock to ensure extended uptimes
- › High wear resistance in abrasive, cohesive soils to ensure maximum economic efficiency

Demands on the milling and mixing rotor in cold recycling applications:

- › Steady milling process to prevent oversized particles and to ensure high-quality results
- › High milling performance and low wear even in hard, abrasive material to ensure high economic efficiency
- › Compliance with the specified grading curve to ensure the lasting stability of the new base layer
- › Homogeneous mixing of the binding agents to ensure high adhesion (bonding strength) between the individual particles and thus maximum bearing capacity ///

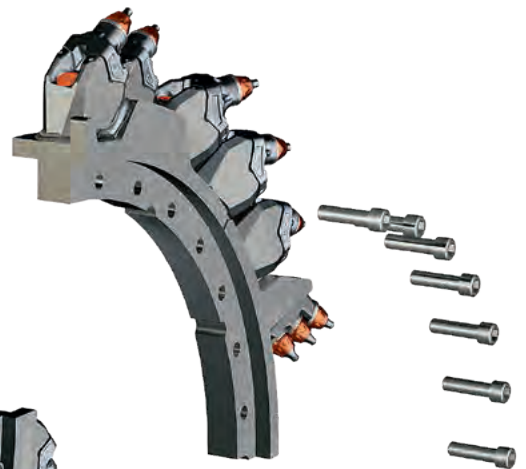
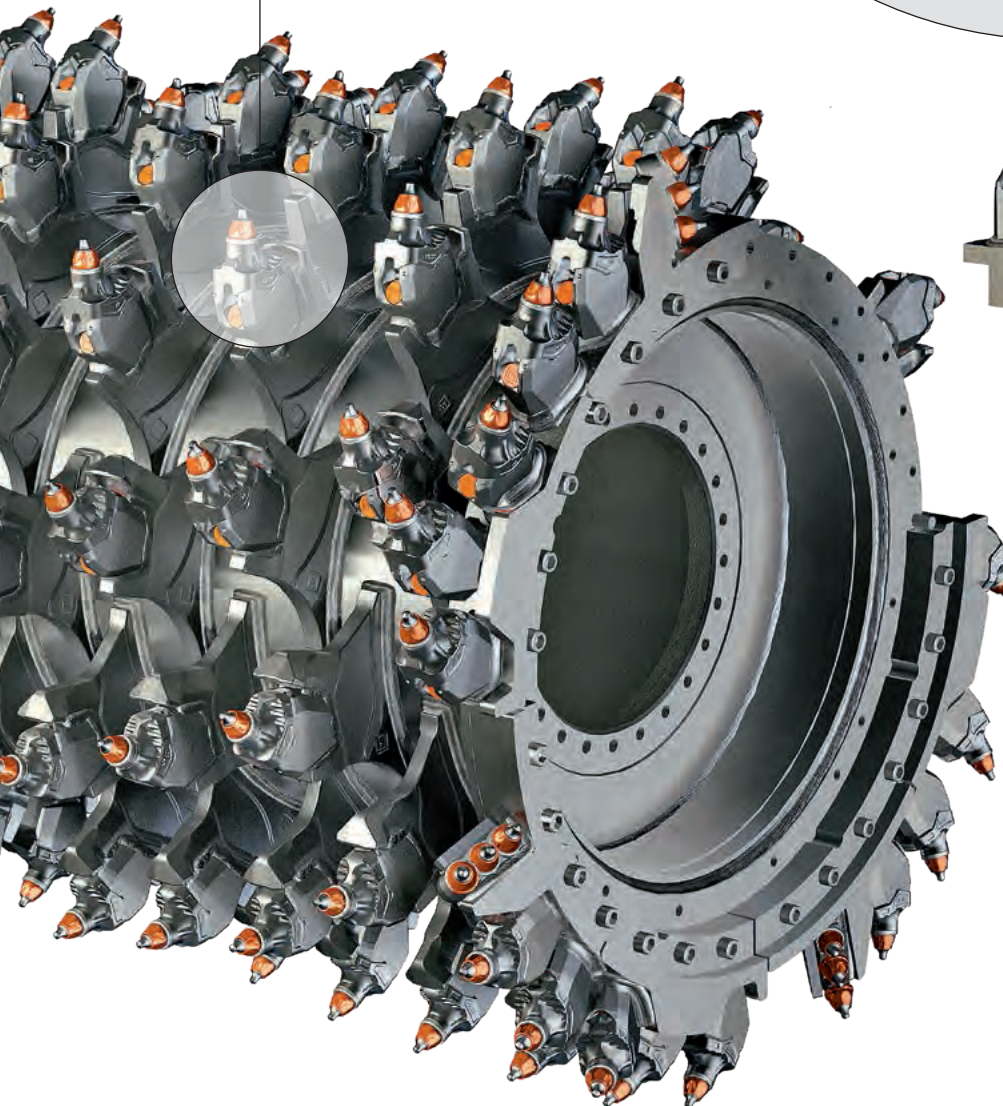
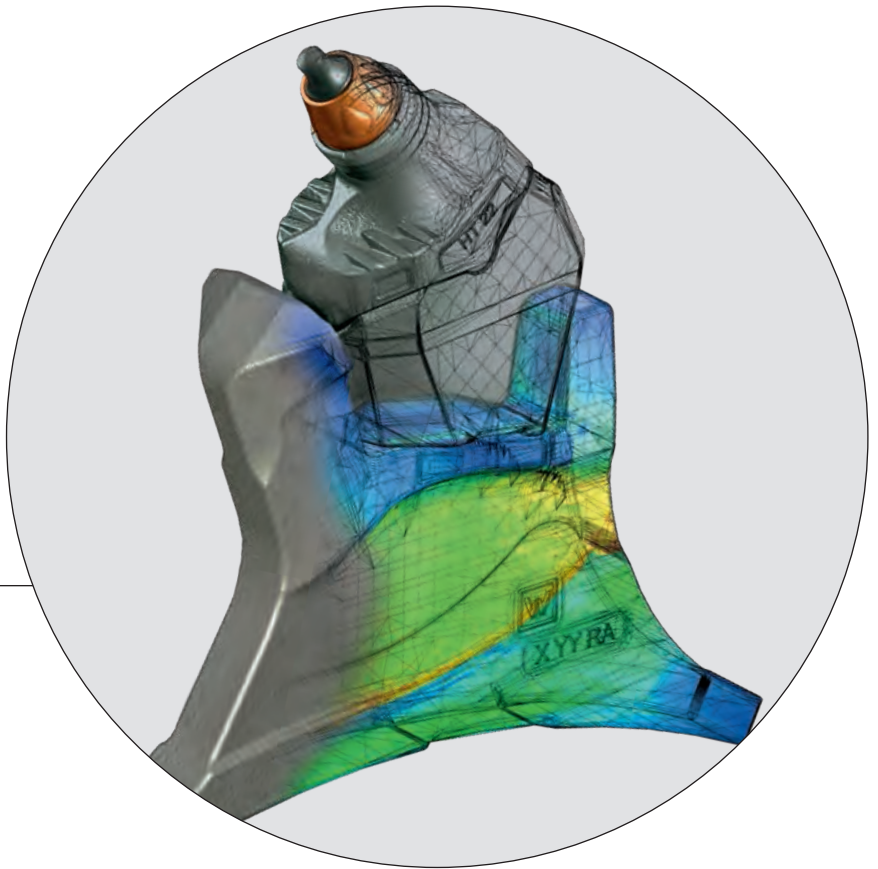


Tried-and-tested forging process

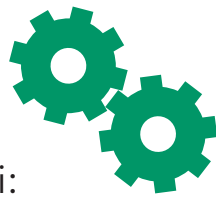
The holder bases of the DURAFORCE milling and mixing rotor are given an intelligently designed 3D geometry using the tried-and-tested forging process. In addition to even load distribution and thus maximum stability, this process results in an optimum flow of material and homogeneous mixing of construction material.



Combined with the intelligent material distribution, the streamlined geometry of the holder bases allows an optimal distribution of forces - especially of peak loads resulting from transverse forces.



The robust edge ring segments are highly accessible and can be replaced quickly and easily.



New VÖGELE Big MultiPlex Ski:

Perfect evenness - Speedy installation

Transporting and installing the Big MultiPlex Ski are now simpler tasks than ever before - and connecting the new sensors is an even faster process.





Users have already put VÖGELE's new Big MultiPlex Ski through its paces. For instance, when Faber Bau GmbH carried out a rehabilitation project on the B9 federal highway.

-1 -2 -3 -4 -5 -6 -7 -8 -9 -10 -11 -12 -13



Extensive range of sensors for maximum evenness

From narrow radii when constructing roundabouts to long straights on long-distance roads - the requirements on sensors for grade and slope control can vary enormously, depending on the particular job. VÖGELE are responding with a comprehensive range of sensors encompassing various mechanical and sonic sensors and the Big MultiPlex Ski sensor system. By these means, VÖGELE are ensuring maximum evenness and surface accuracy in operation. These two factors have a key impact on asphalt paving quality.

New version of the Big MultiPlex Ski: Easy installation in seven minutes

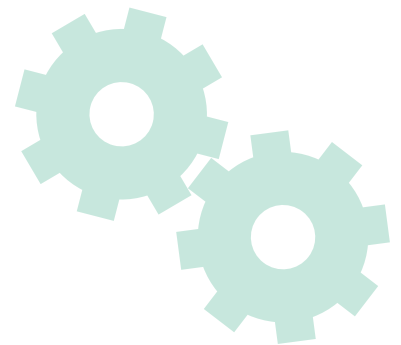
The Big MultiPlex Ski from VÖGELE is a sensor system that is used frequently around the world. It is intended for jobs where absolute evenness in the longitudinal direction is essential. Now VÖGELE's engineers have completely revamped the Big MultiPlex Ski. They focused on simplifying assembly, handling and transport, so that one person can now install it completely in just seven minutes. That's thanks especially to the newly developed clamping fasteners, which allow completely tool-less attachment. To ensure that all parts are to hand at all times and are transported safely, the new Big MultiPlex Ski comes with a convenient transport box. >>>



Technology in a neat package:
the practical new transport box ensures
that all parts of the Big MultiPlex Ski
make it to the job site unscathed.

Ideal for levelling extended irregularities: The Big MultiPlex Ski

The completely revised Big MultiPlex Ski sensor system operates as standard with three multi-cell sonic sensors fitted to a beam which is 5 to 13m long. Up to five sensors can be connected to it, depending on the application. VÖGELE's Niveltronic Plus System for Automated Grade and Slope Control calculates a mean from the values picked up across the entire measuring range, making up for any irregularities even over long distances.



Easy installation in seven minutes
plus a host of additional advantages:
watch the video on the quick installation
of the new Big MultiPlex Ski at
www.voegel.info/big-multiplex-ski

-1 -2 -3 -4 -5 -6 -7 -8 -9 -10 -11 -12 -13

”

The new Big MultiPlex Ski is easy to transport and quick to install - simply fantastic.

Michael Wenz, Paver Operator
Faber Bau GmbH

”

Ergonomic mount system accelerates start-up

It is not only the Big MultiPlex Ski that has the new clamping fasteners: the brackets for individual sensors also feature this system. This means that all sensors of the new generation - whether in the mechanical version as a ski or the non-contacting sonic sensors - can now be attached quickly and easily to the side plate of the SUPER pavers without the need for tools.

Sensors of the new generation incorporate practical innovations

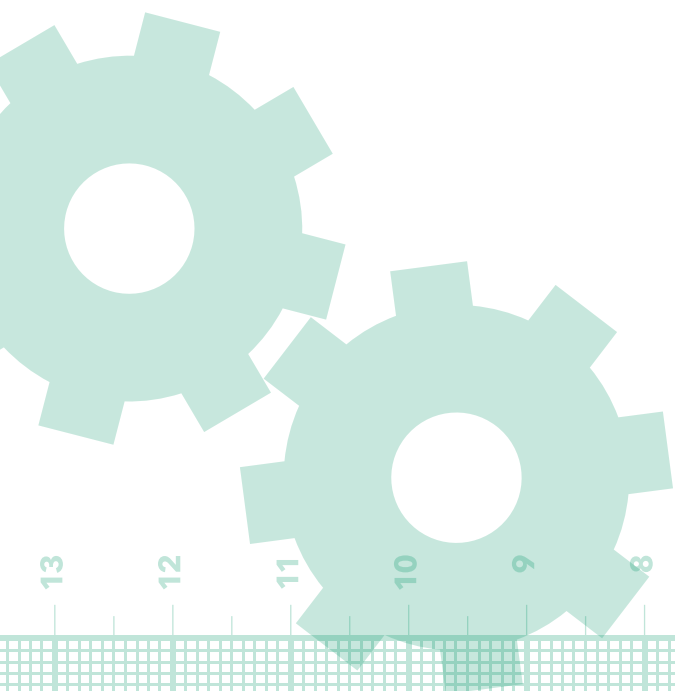
The new sensors also incorporate some improvements to make work easier for users. This begins when setting up the sensors. A positioning aid in the form of an LED strip on the sensor indicates the sensor's distance from the reference: if the two middle LEDs light up, the correct position has been reached. Connection to the VÖGELE Niveltronic Plus and Niveltronic Basic Systems for Automated Grade and Slope Control is easy and follows the "plug & play" principle on the screed operator's console. This is where all adjustments for grade and slope control are made - with just a few presses of a button. This highlights a key advantage: the sensor technology comes from the same source as the machine technology, so they are perfectly coordinated.

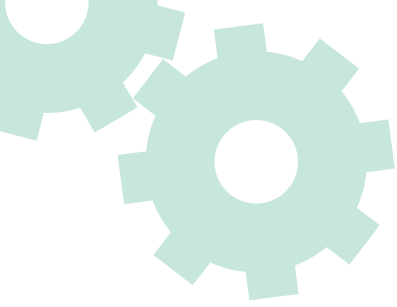
LED crosses ensure clarity

During paving, two further highlights of the new sensors ensure that the screed operators can fully focus on the paving job: the LED displays attached to the sensor, known as LED crosses, provide continual information on whether the specified and actual values match - and if the light conditions are poor, or during the night, a powerful LED also integrated in the sensor supports the screed operator by illuminating the reference to be scanned very brightly.

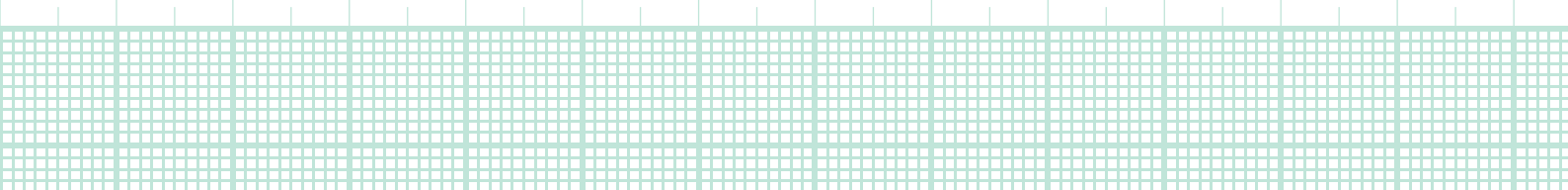
Improvements deliver with high practical relevance

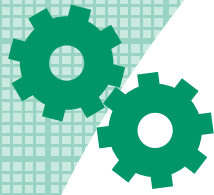
All in all, the new version of the Big MultiPlex Ski sensor system and the sensors of the new generation demonstrate once again that the global market leader consistently tailors its technology to the requirements of customers and especially of users: from transport and installation to paving, VÖGELE have integrated innovations that make all the difference in everyday job site operations. »»





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Just seven minutes for one person: Fast and simple installation

Use the new bracket system to attach and set up the new Big MultiPlex Ski even more quickly and conveniently. One person can complete the entire installation in just seven minutes by following seven simple steps – using no tools at all. What is more, VÖGELE supply the Big MultiPlex Ski in a rigid transport box so that all parts are accessible at any time and can be stowed and transported safely. ///

7 steps in 7 min

1



Fit the two brackets to the screed arm

2



Attach the swivelling arms

3



Fix the central beam in position

7



Route cables and connect sensors

6



Attach the sensors

5



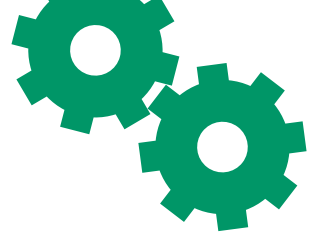
Fit the sensor bracket

4



Suspend the extension beam

utes



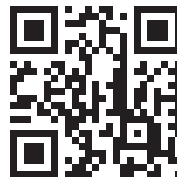
The new VÖGELE ErgoPlus 3 app:

Discovering **simple operation** - **The interactive way**

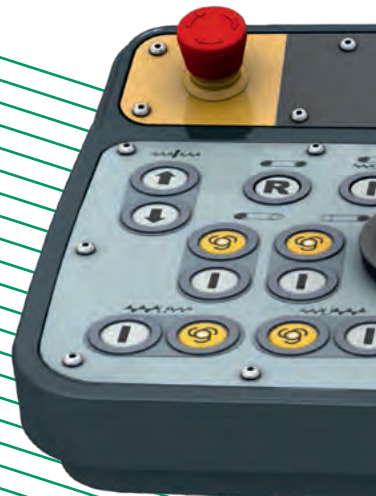


Check out the advantages of the ErgoPlus 3 operating concept - on your smartphone, tablet or PC. Use the VÖGELE ErgoPlus 3 app or the web special to discover the practical functions of the paver operator's and screed operator's consoles the interactive way - with informative animations. ///

Download the VÖGELE ErgoPlus 3 app from Google Play or the App Store. Or discover the application right now, online, with our web special.



For more details, go to:
www.voegel.info/ergoplus



Find out more about the ErgoPlus 3 operating concept with this app.



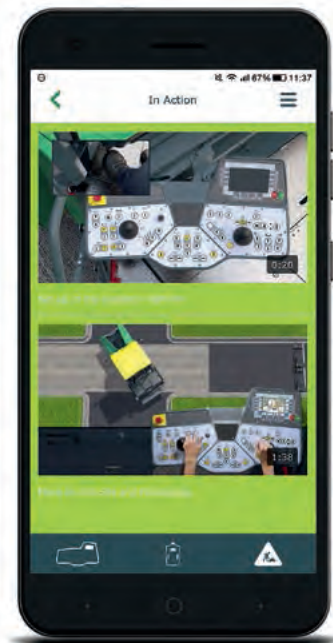
Paver operator's console:

everything you need to know, as a SUPER paver operator.



Screed operator's console:

everything you need to know, as a VÖGELE screed operator.



In action:

all points of relevance on the job site.



Quality in every detail:

The HAMM GRW 280i pneumatic-tyre roller

Flexible ballasting, convenient operation,
high-quality compaction and much more besides.



The GRW 280i is available
in seven different basic
weights ranging between
10t and 28t.

New ballasting concept

The many new features of the GRW 280i ensure the quality, safety and flexibility of compaction. The extremely flexible ballasting concept is just one example: prefabricated ballast bodies made from steel, magnetite or concrete can simply be inserted into the ballast chambers between the set of tyres. This provides a simple means of adjusting the machine weight. When ballasting, the load is always evenly distributed over both axles – creating the ideal conditions for top-quality compaction.

Operation with Easy Drive

The operating system is also new: the GRW 280i is the first machine in the pneumatic-tyre roller segment to be fitted with Easy Drive from HAMM. The prize-winning operating concept with its clearly structured, completely language-neutral design, supports intuitive operation.

Optimum driving characteristics

HAMM have equipped the GRW 280i with a responsive drive control. Meanwhile, preset driving profiles ensure gentle, even breaking and acceleration, effectively avoiding irregularities. The optional anti-slip control is a brand new feature. It delivers optimum traction when working on uneven terrain.

Revised additive sprinkling system

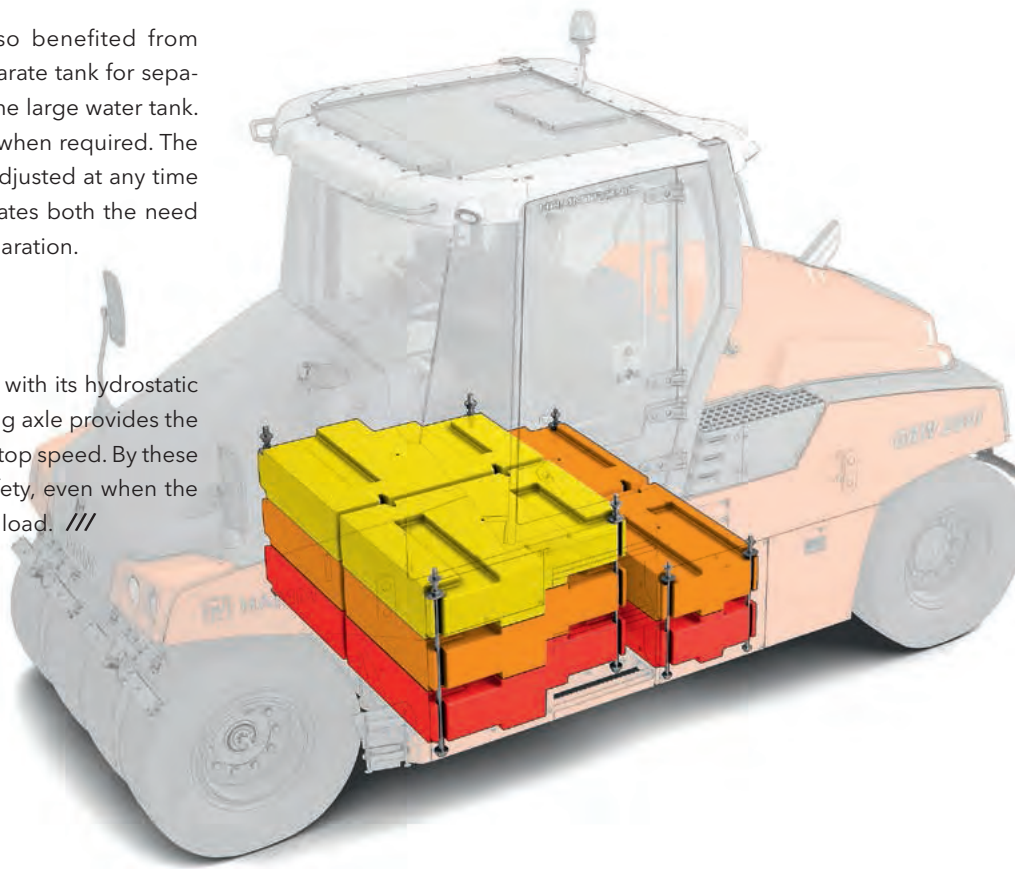
The additive sprinkling system has also benefited from quality-boosting innovations. Now, a separate tank for separating agent can be used in addition to the large water tank. The additive is only automatically mixed when required. The water/additive ratio and dosing can be adjusted at any time from the operator's platform. This eliminates both the need for manual pre-mixing and the risk of separation.

Speedy and safe

And finally, the GRW 280i is a fast mover with its hydrostatic rear-axle drive. A redesigned front steering axle provides the braking power needed to match the high top speed. By these means, HAMM ensure a high level of safety, even when the machine is carrying the maximum ballast load. ///

Highlights of the GRW 280i: A top-class pneumatic-tyre roller

- › Excellent visibility thanks to the asymmetrical frame
- › Large, comfortable panoramic cabin
- › Simple, self-explanatory operation with Easy Drive
- › Flexible ballasting from 10–28t
- › Even weight distribution
- › Quality thanks to optimized drive control
- › Highly flexible water and additive sprinkling system
- › Water tank with a large capacity enabling the machine to work for long periods
- › Extremely safe thanks to strong brakes





Designed for quarries.

Made for top performance.

The MOBICAT MC 120 Z PRO from KLEEMANN is a new mobile jaw crusher for demanding quarry operations. Designed for coarse crushing, it is the perfect addition to the MOBICONE MCO 11 PRO cone crushing plant. Both systems boast great robustness and a high capacity.



The new PRO line of
jaw crushers from KLEEMANN:
the MOBICAT MC 120 Z PRO
pre-crushes virtually all types of
natural stone.

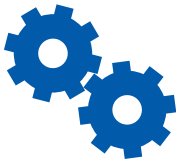


Technical data for MOBICAT MC 120 Z PRO

Feed capacity:	up to 650t/h (approx.)
Maximum feed size:	1,100 x 700mm
Hopper volume (with extension):	10m ³ (13m ³)
Drive concept:	diesel-electric
Drive power:	364kW (Tier 3/Stage IIIA and Tier 4f/Stage IV)

650 t/h

**is the maximum feed capacity
of the MC 120 Z PRO jaw crusher**



High performance in the first crushing stage

With a feed capacity of up to 650t/h, the MOBICAT MC 120 Z PRO is a specialist for natural stone applications. The powerful jaw crusher, with its 1,200 x 800mm crusher inlet, is equipped with an extra-long, movable crusher jaw. To achieve the best-possible material flow, the Continuous Feed System (CFS) adapts the feeding unit's conveying speed to the crusher's fill level. If the plant is linked with a mobile MOBICONE MCO 11 PRO cone crusher, CFS is active in both plants, enabling both to operate at optimum capacity. In the event of material blockages in the crushing chamber, the optional crusher unblocking system provides assistance, relieving the operator of the time-consuming task of emptying the crushing chamber. Should the jaw crusher become congested, the crusher can be shifted into reverse via the electric crusher drive to quickly clear the blockage. In addition, the crusher can be run at different speeds to optimally adapt crushing capacity to the respective material.

Double-deck prescreen increases productivity

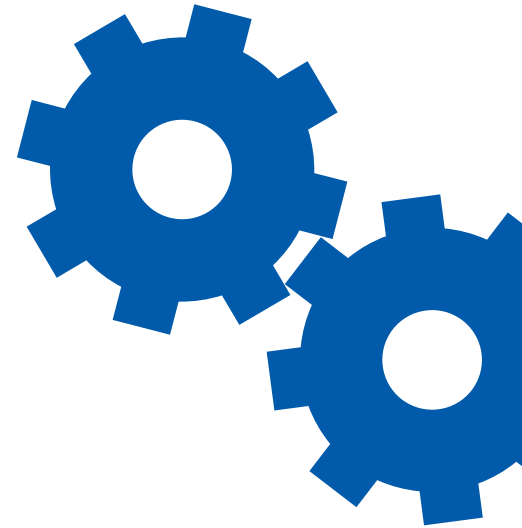
The MC 120 Z PRO is configured with an independent double-deck prescreen. The large screen surface, measuring 3.5m², is a unique feature in this class of machine that ensures particularly thorough screening, increases final product quality and reduces crusher wear. Medium grain material can be routed past the jaw crusher via the crusher bypass. The plant is operated on a 12-inch touch panel using the intuitive SPECTIVE control system. With this set-up, it takes only a few commands to adjust settings, such as the crushing gap for a new application. The operator is guided through the menu step-by-step, so as to avoid operating errors and increase productivity. The MC 120 Z PRO can also be moved and the feed unit can be controlled by wireless operation. Maintenance and refuelling likewise are easy tasks, because all machine components are accessible from the ground or from generously dimensioned work platforms.

Powerful diesel-electric drive or external power supply

The jaw crusher in the PRO line are equipped with an energy-saving but powerful diesel-electric drive which electrically powers the crusher and conveyors. An external power supply is available as an option to operate the plant even more economically. The power generator can also run downstream plants, such as a screening plant or stockpile conveyor. Despite its robust design, the MC 120 Z PRO is easy to transport. To reduce transport weight, the prescreen, chute and crusher can be dismantled. The jaw crusher can be brought into operating position in no time, because the hopper walls of the feed unit can be folded hydraulically and are self-locking. With numerous options, such as a rock hammer or crusher discharge chute, the MC 120 Z PRO can be configured to meet customer requirements. >>>

Technical data on the MOBICAT MC 120 Z PRO





SPECTIVE

Simple and intuitive
control concept

7

Wide, robust crusher discharge conveyor
with reliable magnets

8

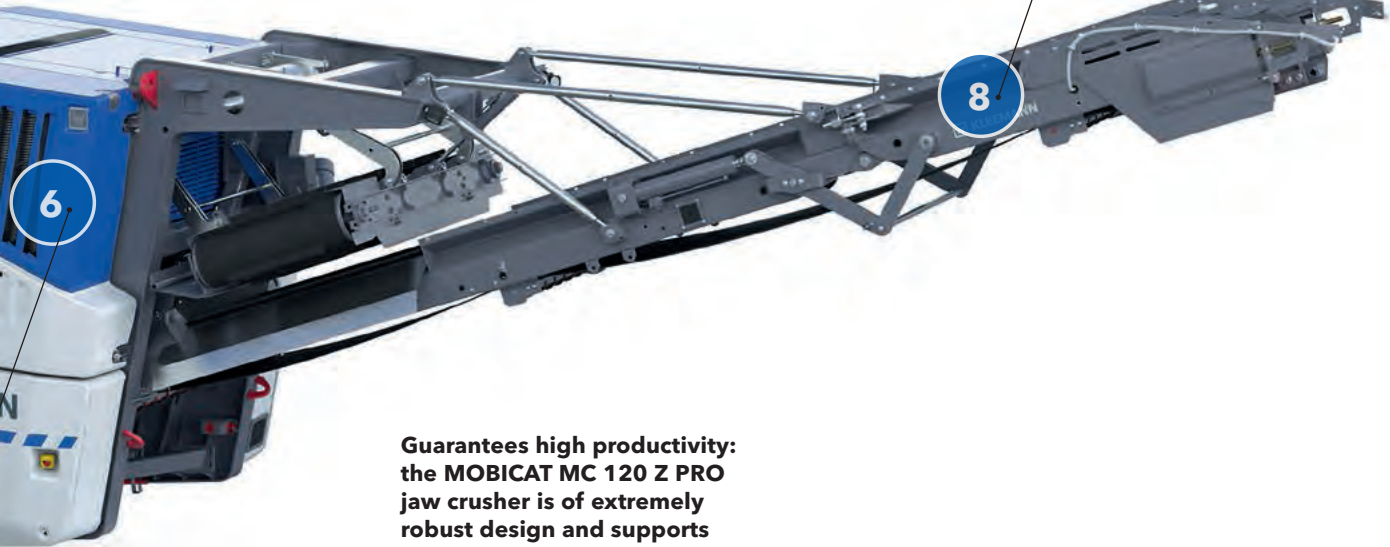
**Guarantees high productivity:
the MOBICAT MC 120 Z PRO
jaw crusher is of extremely
robust design and supports
low-maintenance operation.**

A

Accessibility and safety: ideal accessibility to all
components relevant to operation

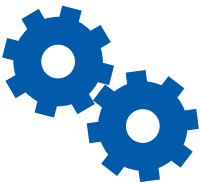
B

Transport: quickly and easily transportable



High capacity: The MC 120 Zi PRO is a master of granite processing

A job for the first jaw crusher in the new PRO line from KLEEMANN: the MOBICAT MC 120 Zi PRO has an impressively strong crusher and, when combined with the largest, independent prescreen in its class, it achieves high capacities, as demonstrated recently in a quarry in Norway. The Stangeland company processes granite at the Veidekke Hyllestad quarry, located on the peninsula on the Sognefjord, near Leirvik. Veidekke produce asphalt at this location, which is loaded directly onto ships and transported to various processing sites.



Job site details

Rock processing at a quarry on the peninsula on Sognefjord, Norway

Material

Type of stone:	Granite
Feed size:	0-700mm
End product:	0-150mm

Working parameters

Crushing capacity:	335t/h
Closed side setting (CSS):	100mm

Plant

KLEEMANN MOBICAT MC 120 Zi PRO jaw crusher



Ready for the Norwegian winter:
Stangeland's MOBICAT PRO plant is configured with a cold package that enables operation at temperatures down to -25°C. KLEEMANN also offer a heat package for work at temperatures up to +50°C.

Fines are kept out of the crushing process

In Sognefjord, an excavator transfers the blasted granite to the feeding unit of the MC 120 Zi PRO. Because the feed material contains a high percentage of fines, the double-deck prescreen is of critical importance: it prevents the fine material from getting into the crusher unit, helping to increase productivity and efficiency. Thanks to the plant's high feed rate, the crusher unit operates at full capacity under all conditions and extremely efficiently with its diesel-electric drive.

Should material ever become jammed, the reversible crusher drive springs into action. With this optional unit, the system can be run in both the normal forward direction and in reverse when the crusher is full. After the MOBICAT MC 120 Zi PRO does its job, the pre-crushed material is conveyed to a multi-stage stationary plant that crushes it to the required grain sizes. >>>





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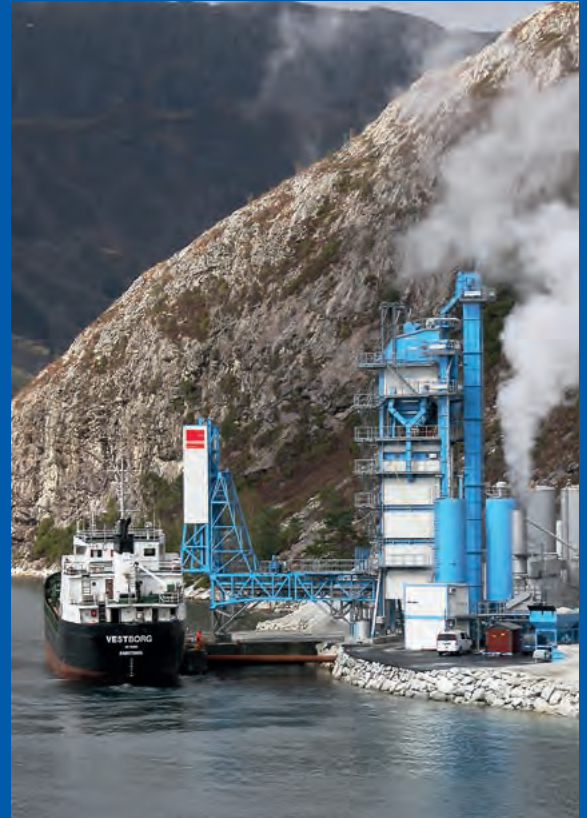
Even with the biggest boulders, the MC 120 Zi PRO hardly slows down at all. The material just flows right through.

**Arve Kenneth, Machine Operator
Stangeland Maskin AS**

”

Compact crusher with tremendous power development

Stangeland have been operating the plant for several months now and are extremely pleased with its high output. For years, they had been using a rival machine that was equipped with a crusher unit of identical size, and therefore did not expect any significant difference in overall performance. But it quickly became apparent in day-to-day operation: "Even with the biggest boulders, the crushing unit on the MC 120 Zi PRO barely loses speed or power at all. The material just flows right through. Our old plant would have long since ground to a halt. That's why the MOBICAT PRO was an instant hit with me," says Arve Kenneth, Stangeland Machine Operator. ///




On site at the fjord: BENNINGHOVEN TBA mixing plant with cargo loading facility

From the quarry to the road: some of the crushed granite is processed in a TBA asphalt mixing plant. The transportable asphalt mixing plant (TBA) offers a loading option for shipping cargo. The BENNINGHOVEN type TBA mixing plant covers a performance range of 160-320t/h and is suitable for both semi-mobile and stationary applications. The container-type design of the main components with plug-in wiring makes for ideal transport options and reduces the time needed to set up the modular system. Another key aspect is the high RAP feed rate of over 80%. Other significant features, such as the plant's considerable flexibility, available options and the constant possibility of retrofitting components, make the TBA an impressive all-rounder.

Germany // Stuttgart

Rehabilitating roads while minimizing disruptions to traffic and maximizing cost-efficiency – these are the primary challenges for traffic planners, particularly in conurbations. When rehabilitating the B14 federal highway before the gates of Stuttgart – Germany’s “congestion capital” – the response to this challenge was once again: InLine Pave. This process for building asphalt pavements “hot on hot” is the ideal choice when rehabilitating roads by means of a moving job site so that they can be reopened to traffic quickly. What is more, construction projects with InLine Pave are highly economical. Particularly since the most cost-intensive layer of the asphalt pavement, the surface course, can be built much thinner. It was thanks to this method that the rehabilitation work for the project on the B14 was completed in just two weekends. Had a conventional method been used, the project would have caused miles of congestion at rush hour. >>>



A total of 2 InLine Pave trains hard at work for Germany’s “congestion capital” Stuttgart: each comprising 1 MT 3000-2i Offset PowerFeeder, 1 SUPER 2100-3i IP and 1 SUPER 1800-3i, the paving trains rehabilitated the major arterial road quickly and in top quality.



Rehabilitation at top speed

Before the gates of Stuttgart, 2 VÖGELE InLine Pave trains rehabilitated a 2.2km stretch of road in both directions, breezing through the job in just two weekends.





34%

is the average amount of additional time Stuttgart's motorists need to allow for their journeys when travelling through the region. In other words, they need to allow 40 minutes for what should normally be a 30-minute journey. According to the 2016 TomTom traffic analysis, this is the highest congestion level in Germany.



Job site details

Rehabilitation of the B14 federal highway with the InLine Pave train near Stuttgart, Germany

Length of section:	2.2km
Width of section:	2 x 10.8m

Working parameters

Pave width:	2 x 5.4m "hot to hot"
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Layer thickness	
Binder course:	10cm
Surface course:	3cm

Paved material quantity	
Binder course:	12,000t
Surface course:	3,000t
Pave speed:	3.5m/min

Material

Binder course:	0/22 SMA
Surface course:	0/8 SMA

Equipment

- 2 VÖGELE MT 3000-2i Offset PowerFeeders
- 2 VÖGELE SUPER 2100-3i IP pavers for binder course with AB 600 TP2 Plus Extending Screed
- 2 VÖGELE SUPER 1800-3i pavers for surface course with AB 500 TP1 Extending Screed

Two carriageways, 2.2km, two weekends

Collaborating with Strabag AG in a joint venture, the contractor Eurovia GmbH used 2 InLine Pave trains of the latest generation to sail through the rehabilitation work at top speed. Each paving train comprised a VÖGELE MT 3000-2i Offset PowerFeeder, a VÖGELE SUPER 2100-3i IP (InLine Pave) paver for binder course fitted with the AB 600 TP2 Plus High Compaction Screed and a SUPER 1800-3i paver for surface course. By these means, the two carriageways were paved along with their respective hard shoulders both "hot on hot" and "hot to hot" across a total width of 10.8m. Each of the 4 machines paved across a width of 5.4m. A total of four paving teams worked in two-shift operation so that the stretches could be handed back to the region's commuters punctually at 5 am on the following Monday mornings. Needless to say, the logistics planning was highly complex: to ensure that the InLine Pave trains could work without interruption, the binder and surface course mixes needed to be supplied in alternation - a total of 7,500t or 300 lorry loads per weekend. Sufficient material was constantly available thanks to well-planned logistics and the use of an asphalt mixing plant. As a result, the planned pave speed of 3.5m/min was consistently maintained. >>>



Perfect conditions for high quality: the 2 VÖGELE InLine Pave trains built the new asphalt pavement working one behind the other - i.e. "hot on hot" - and without a central joint - in other words "hot to hot", too.

Innovations of the new VÖGELE InLine Pave train:

› **SUPER 2100-3i IP:** The most important innovation in the paver for binder course is the new transfer module for conveying the surface course mix to the downstream paver. The module has been extended by one metre. As with the MT 3000-2i Offset PowerFeeder, a diesel heating system now keeps the mix at a constant temperature, preventing it from sticking to the conveyor.

Also new is a second paver operator's platform with height-adjustable seats that can be swung through 90° beyond the width of the paver. Functions of the paver and the transfer module can be controlled from here using the paver operator's ErgoPlus 3 console. Two freely positionable cameras that ensure optimum all-round visibility help to enhance safety and quality. The process for demounting the module for conventional use of the paver has been simplified.

› **SUPER 1800-3i:** In the surface course paver, a new camera system improves the view into the extra material hopper, helping to avoid bottlenecks in the supply of mix. Like its predecessor model, the SUPER 1800-3i is fitted with a water spray system that prevents material sticking to the 40cm-wide crawler tracks. The machine can now be fuelled conveniently from the ground.



At first, I was somewhat daunted by this powerhouse. But once you've sat on one of the InLine Pave machines, you notice that everything is just as always - paving is uncomplicated and easy to manage.

**Ronny Schlote, Paver Operator
Eurovia GmbH**



**Faster, more cost-effective, more durable:
The advantages of VÖGELE's InLine Pave process**

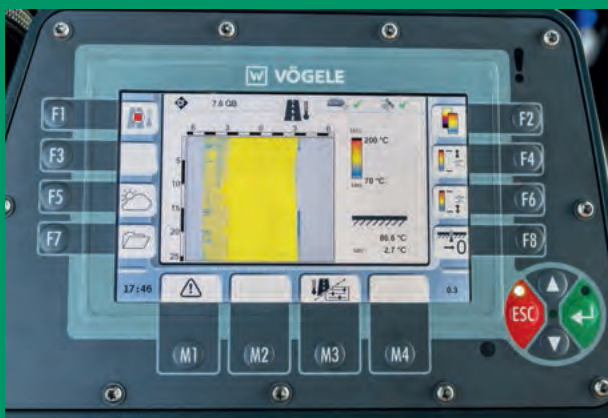
When paving with InLine Pave, the binder and surface courses interlock particularly intensively, creating a high-quality bond. After all, a perfect bond between layers is a fundamental requirement for the longevity of roads. With InLine Pave, the binder course is thicker while the surface course is thinner at 2-3cm. The resultant pavement has higher degrees of density and fewer air voids following its subsequent final compaction by rollers. The surface course is consequently impervious to water and protects the binder course from harmful effects. The resistance to deformation under the influence of heat rises at the same time and this, in turn, helps to counteract rutting in the summer months. »»



Documentation with practical benefits: RoadScan provides contractors with proof of paving quality and offers their paver operators a way to keep track of the temperature of the supplied mix - on the display of the paver operator's ErgoPlus 3 console.

RoadScan from VÖGELE: High-precision infrared camera with 100% measurement coverage

With RoadScan, VÖGELE's temperature-measurement system, contractors can make paving quality measurable and verifiable. The heart of the RoadScan system is an infrared camera that scans the entire asphalt pavement. What sets the system apart is its unrivalled measuring accuracy. The VÖGELE system captures grid squares 25x25cm in size across a measuring width of 10m. Each of these squares contains up to 16 single measuring points which are then used to calculate a mean value. That allows the system to capture the newly paved surface with no gaps, and so no theoretical or computed values need to be added. The measurable temperature range of RoadScan lies between 0°C and 250°C with a tolerance of $\pm 2^\circ\text{C}$.



Unique precision: VÖGELE's temperature-measurement system sets standards.

InLine Pave: Paving "hot on hot"

The InLine Pave process delivers high quality, despite the fact that bitumen emulsion is not pre-sprayed between the binder and surface courses. This step can be omitted, because the two pavers place the binder and surface courses "hot on hot", operating "in line", i.e. one behind the other just a few metres apart. The process hence increases eco-friendliness and efficiency as well as cost-effectiveness, to the benefit of contractor and client alike. Adding to this effect, single-lane rehabilitations - a much more frequent approach in practice - avoid time-consuming road blocks.

Making paving quality measurable

Nothing was to be left to chance in this construction project, which is why the contractor opted for RoadScan. VÖGELE's non-contacting temperature-measurement system was mounted on both of the SUPER 1800-3i surface course pavers. RoadScan makes paving quality measurable and verifiable by measuring and documenting the temperature across the entire pavement directly after paving. Temperature is known to have a decisive impact on paving quality: only within the correct temperature range is the mix homogeneous, does it have the correct viscosity and can it be compacted to the required degree. "The RoadScan system is truly sophisticated and does not obstruct operations in any way. It is quick to install and operates very reliably. It hence provides genuine support. Firstly, we can monitor ourselves whether the mix temperature is correct. And secondly, we always have documentation to hand," says Dieter Keck, Senior Asphalt Foreman at Eurovia GmbH. ///

Stockholm

Sweden

Kalmar

Eco-friendly compaction using hybrid technology

HAMM are the pacesetters when it comes to saving energy -
thanks to their innovative drive technology.





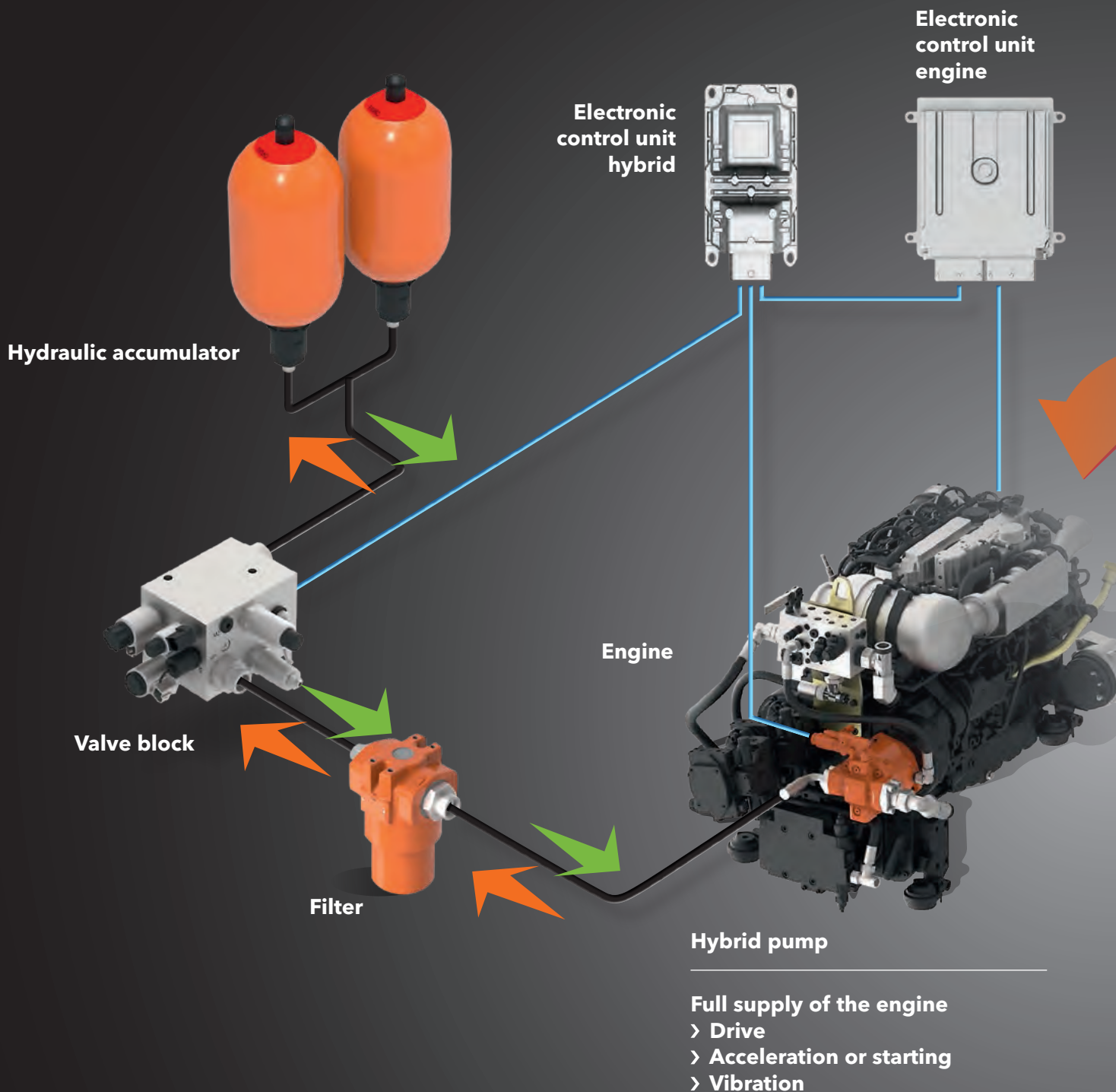
Sweden // Kalmar



Sweden is a forerunner in environmental matters. So little wonder that the Swedish contractor NCC was one of the first companies to use the HD+ 90i PH tandem roller. HAMM's eco-friendly power hybrid drive (PH for short) is part of NCC's strategy to further reduce CO₂ emissions. In a number of jobs carried out over several months, the roller has already proven that NCC made the right choice, for the power hybrid drive has saved a considerable quantity of fuel while delivering the accustomed high compacting performance. This feat is achieved by an innovative combination of an internal combustion engine and a hydraulic accumulator. >>>

Power hybrid drive from HAMM: A top performance at all times

A brief description of the power hybrid principle: the internal combustion engine covers the base load while the hydraulic system supplies the additional energy required for peak loads. This is possible because, although compaction regularly requires high loads, they are only ever needed in short bursts – for instance when starting up or when activating vibration or oscillation. Most tasks – such as travel or continuous compaction by oscillation or vibration – require relatively little power compared to the maximum load. The much smaller diesel engine installed in the HD+ 90i PH can handle these tasks with ease.



Power Hybrid: Ideal for energy savers

For decades, Sweden has been successfully lowering its CO₂ emissions and is now one of the EU countries with the lowest emissions per head. Indeed, the country's emissions are now even below the global average, a result achieved through a collective focus by the state, citizens and companies on resource-conserving technology in all areas of life. HAMM's power hybrid drive is one such technology, since it requires a significantly smaller engine than other rollers in the same weight class.

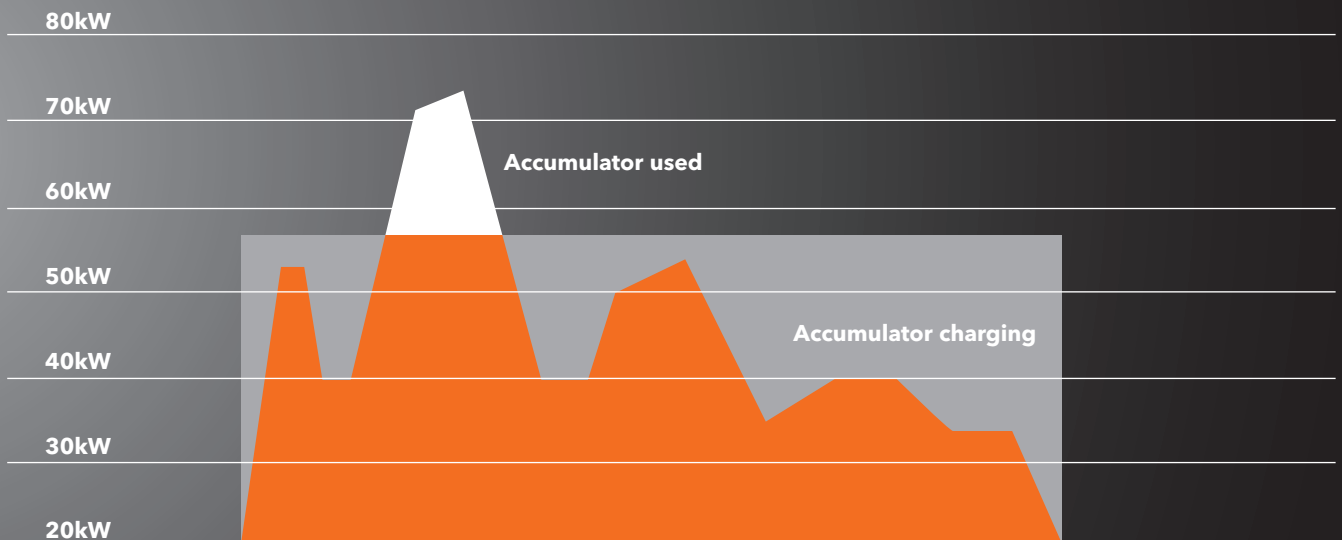
Intelligent overall concept

The efficiency-optimized electric fan of the HD+ 90i PH saves additional energy. As a result, the 9t HD+ 90i PH tandem roller can carry out all tasks using a diesel engine with a 55.4kW output - that's an almost 30kW or 35% lower output than its conventionally driven counterpart. >>>



A few components with a big impact: the hydraulic accumulator on HAMM's power hybrid roller repeatedly supplies a short-term load of 20kW.

Output of the 55.4kW diesel engine and hydraulic accumulator



The distribution of labour in a power hybrid drive: the diesel engine delivers all the power required for most working situations. But sufficient power reserves (orange) remain, enabling the hydraulic accumulator to be filled for use when next required. Whenever the maximum load (white) is called for, the hydraulic system supplies additional power.

20kW of extra power: Hydraulic system covers peak loads



HAMM have integrated a hydraulic system to cover peak loads. It operates rather like a pumped-storage power plant: as soon as the power demand falls below the maximum load of the internal combustion engine, a pump starts filling up the hydraulic accumulator. If the roller requires more power than the diesel engine can deliver, the hydraulic system acts as an auxiliary drive, supplying a short-term load of some 20kW. The cycle then begins again with the refilling of the accumulator. Since maximum power is normally only ever required for a few seconds, there is always enough time for recharging.

Power hybrid drive lives up to its potential in over 650 operating hours

The Swedish contractor NCC operated the 9t roller for over 650 operating hours in the 2017 construction season. Björn Jakobsén, Strategic Purchaser Nordic at NCC, says: "We are always interested in trying out new solutions and concepts early in the game. This enables us to fully assess any innovations and use the systems which are best for us. The power hybrid concept had us hooked from the start. We quickly decided to try it out on our job sites."

Small engine, full compacting performance

In the spring of 2017, HAMM handed the new roller over to NCC, ready for the start of the 2017 construction season. Per Nylen, a roller operator with a 10-year track record, was in the cabin. He immediately felt at home in the power hybrid machine and was thrilled with the power hybrid drive from the word go: "The roller compacts exactly the way it should. While you're compacting, you don't notice a thing when the hydraulic accumulator is connected." The HD+ 90i PH has also proven easy to maintain: "Daily maintenance of the power hybrid technology does not involve any additional effort or checks. I like that." What's more, the roller requires no AdBlue. This simplifies handling and saves both time and costs compared with other rollers. Compaction measurements by NCC confirmed Per Nylen's impression: the power hybrid roller delivered the required compacting performance on all job sites without a hitch.

Less fuel, lower CO₂ emissions

Meanwhile, fuel consumption is also lower; by as much as 15%, in NCC's case. For Björn Jakobsén, this is the key to another, at least equally important, added value: "In Scandinavia, environmental friendliness is a major criterion in the selection of machines. We want to build roads as sustainably as possible." Since NCC's fleet includes well over 200 rollers in the 9t class, the contractor stands to make a huge difference in the long term if it cuts fuel consumption and CO₂ emissions by 15%. This is just one more reason why the power hybrid roller is such a sensation in eco-conscious Sweden. ///





Per Nysten, NCC, a roller operator with over 10 years' experience: "I have been driving the power hybrid roller for several months now and I'm thrilled with the machine."

Advantages of the power hybrid drive from HAMM:

... for the environment:

- › CO₂ reduction
- › Lower noise level

... for the contractor:

- › Simpler exhaust gas after-treatment without AdBlue
- › Up to 20% reduction in fuel consumption
- › Cost-efficient overall solution

... for the roller operator:

- › Functionalities and operation identical to a standard machine
- › No additional maintenance effort
- › More pleasant to work with thanks to lower noise levels

BENNINGHOVEN ECO plant: The ultimate key to versatility and quality

An investment with a future: the new BENNINGHOVEN ECO 3000 plant raises the quality and quantity of asphalt production for Hungarian contractor Depona Plusz.

Budapest

Hajdúsámson

Hungary





Hungary // Hajdúsámson

A debut in Hajdúsámson, Hungary: Depona Plusz invested in a BENNINGHOVEN asphalt mixing plant for this location. The ECO 3000 is the first plant of its kind in Hungary and it is taking the company's economic efficiency into a whole new dimension. With its new ECO 3000, the quarry operator and supplier of asphalt mixes is improving its energy balance while simultaneously boosting the mixing output. Both aspects were key criteria: a wide array of different road construction projects are currently being planned and implemented in the region. To bid successfully, Depona Plusz need a flexible and above all cost-effective plant. This was the main motive behind the decision to invest in leading BENNINGHOVEN technology. »»



Container design makes for flexibility

The modular structure of the ECO series permits the integration and retrofitting of a wide variety of high-tech components. As a result, Depona Plusz can continue to respond to the needs of customers and the market in future, particularly when it comes to asphalt recycling solutions. For the flexibility of plants in the ECO series is systematic: they are transportable asphalt mixing plants in a container design. For easy transport, all the main components are designed in standard container dimensions with lengths of 20 or 40 feet. The ECO 3000 plant belonging to Depona Plusz can produce up to 240t/h of asphalt, a sufficient quantity even for the continuous supply of material to road pavers working on larger construction projects, for instance when constructing motorways. A 109t mixed material storage silo was additionally integrated in the plant to ensure ample reserves.



EVO JET burners boost efficiency

In the dryer drum, a high-efficiency BENNINGHOVEN EVO JET 3 burner with a rated thermal input of 19MW heats the aggregate to the correct temperature, preparing it for the mixing process. The Hungarian construction materials supplier opted for a burner designed for use with oil and liquid gas. The company can thus choose between two different fuels, reducing dependency on the raw materials market. One major advantage of BENNINGHOVEN EVO JET burners is that the multi-fuel version can operate with up to four different types of fuel, either individually or in combination. EVO JET burners, which have gained legendary status on the market, are already being used in the company's old plant. Depona Plusz's move to invest in an entire new plant was something of a no-brainer, considering the advantages of BENNINGHOVEN's integration in the WIRTGEN GROUP and the trusting relationship between the companies. And indeed, the ECO 3000 is a genuine improvement – the plant is highly productive and operates extremely economically. ///

An important reason behind the decision to invest in BENNINGHOVEN technology was the closeness of the WIRTGEN GROUP to its customers – which naturally includes an on-site service in eastern Hungary, too.

Ingeniously designed: How BENNINGHOVEN is driving user-friendliness

The ECO plants incorporate BENNINGHOVEN's new weighing and mixing section. When developing it, the engineers involved focussed strongly on user-friendliness, with

- › Pre-installed interfaces for cold and hot recycling feed, bag feed, foam bitumen, granulate feed, fibrous material feed and adhesive feed
- › Excellent accessibility in all areas thanks to the all-round 800mm width of walkways and work platforms
- › Plug & play cabling for fast set-up
- › Optimum illumination of the working and maintenance areas with LED technology
- › Large service openings offering ergonomic access to the mixer for servicing or maintenance
- › Central compressed air service unit for oiler and separator as well as filter
- › Intuitive colour-coded lubrication schedule (colours indicate the maintenance interval, e.g. daily, weekly or monthly)
- › Electrical and compressed air supply available for tools and maintenance work
- › Modular expansion of functions by means of BUS system
- › Key transfer system for increased occupational safety



BENNINGHOVEN power for Hungary's motorway network

State-of-the-art technology for the Hungarian infrastructure: the road construction company Hódút Freeway Kft. is investing in a BENNINGHOVEN TBA 4000 plant with a mixing output of 320t/h.

Hungary // Sáránd

A key investment in the Hungarian construction industry: Hódút Freeway Kft. have commissioned a TBA 4000 from BENNINGHOVEN at the Sáránd location. The road construction company is one of the largest of its kind in Hungary and was recently awarded the tenders for two motorway sections. The specifications of the transportable BENNINGHOVEN asphalt mixing plant – which is what the name TBA stands for – make it the ideal choice for these job sites: the TBA 4000 can produce up to 320t of asphalt per hour. It is hence making a key contribution to the expansion of the motorway network in eastern Hungary. »»



TBA

Thanks to the container-type design of the main components with plug-in wiring, TBA plants are ideal to transport and fast to set up.



Opting for modern technology and high economic efficiency

Hódút can look back on a long corporate tradition and have a vast amount of experience in asphalt production and paving. Their contact with the WIRTGEN GROUP dates back over 20 years. Along with VÖGELE pavers, Hódút are already using BENNINGHOVEN components in the form of retrofit solutions in asphalt mixing plants at other locations. Hódút Freeway Kft. have had excellent experiences with this equipment – making it an obvious choice for the company to invite BENNINGHOVEN to submit a bid. The TBA 4000 turned out to be perfectly meet the defined specifications. Apart from the quality of the technology – which Hódút Freeway Kft. were already able to judge – the main clincher for the company was the economic efficiency of the plant. This aspect enabled the operator to keep an eye not only on the acquisition costs but also on the total cost of ownership and the overall energy balance.

Acting in a spirit of partnership: The WIRTGEN GROUP in Hungary

Technology and economic efficiency were not the only crucial factors behind the decision to invest in this technology: the trusting relationship between Hódút, the WIRTGEN GROUP in Hungary and BENNINGHOVEN also played a key role. For over 10 years now, Sales Manager Áron Visnyovszky has been supporting the customer Hódút in the field of BENNINGHOVEN asphalt mixing

plants. “When you work with a customer for such a long time, you can’t sugarcoat anything any more. This makes it all the more important for us in the WIRTGEN GROUP to gain an edge with honest work and reliability,” says the business manager, summing up one of the WIRTGEN GROUP’s main objectives: customers should always be able to rely on the Group keeping its promises. This is particularly true when it comes to service: operators and customers can turn to their local subsidiary for help with absolutely any concern. After all, the WIRTGEN GROUP does not focus solely on sales, but on ensuring that its technology really works and that its customers are successful – a core added value. Hódút Freeway Kft. have since placed follow-up orders: plants at other locations are to be fitted with an EVO JET burner and a BLS 3000 control system from BENNINGHOVEN. ///



Ready for asphalt recycling: Leading BENNINGHOVEN recycling technologies

RAP processing is mandatory in order to conserve natural resources. This important reason for recycling is just one of many partly country-specific requirements. Meanwhile, reduced emissions and increased cost-effectiveness make a strong case for using green technology from BENNINGHOVEN. These technologies can be integrated in TBA plants:

Cold recycling feed systems:

- › Dosing system into the mixer – for RAP material rates of up to 30%
- › Multivariable dosing system – for RAP material rates of up to 40%

Hot recycling feed systems:

- › Parallel drum – for RAP material rates of up to 70%
- › New: parallel drum in counterflow with hot gas generator – for RAP material rates of up to 80%



The largest dryer drum ever installed in Hungary: the TT 11.26 from BENNINGHOVEN with a length of 11m and a diameter of 2.6m.





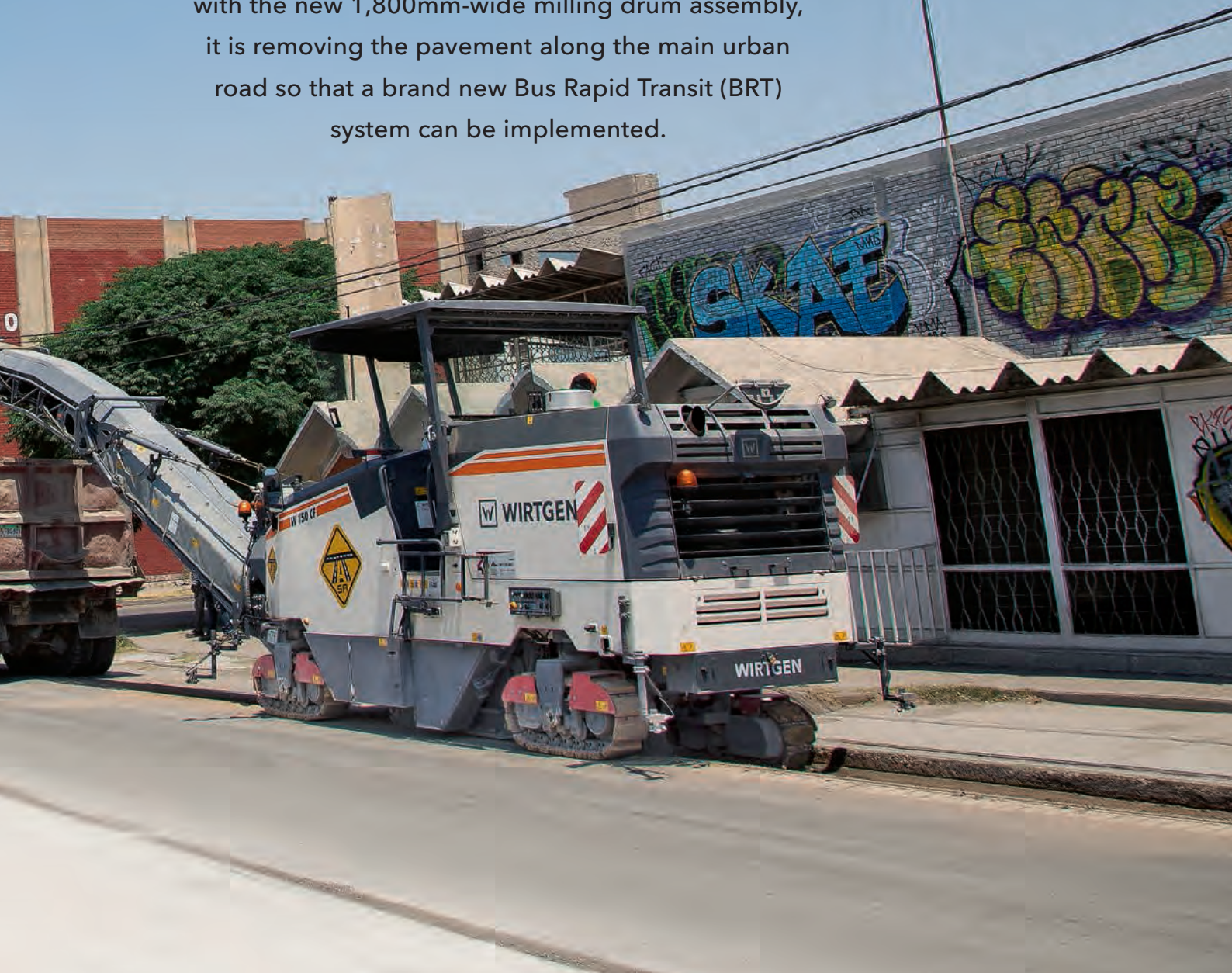
Torreón, Coahuila

Mexico

Mexico City

Greater productivity and area output

In Torreón, Mexico, the WIRTGEN W 150 CF compact milling machine is proving its prowess: equipped with the new 1,800mm-wide milling drum assembly, it is removing the pavement along the main urban road so that a brand new Bus Rapid Transit (BRT) system can be implemented.





**We rely on WIRTGEN
cold milling machines.**

Engineer Ruben Tinoco, proprietor (centre)

Triturados Asfálticos de Torreón S.A de C.V.

Precise milling result prepares the ground for increased mobility

The project in one of Mexico's most important economic and industrial centres includes a new, exclusive hydraulic concrete BRT lane plus the rehabilitation of two adjacent asphalt lanes. The project will result in better mobility, increasing traffic safety for city residents. However, before it could build the new lanes, milling contractor TATSA (Triturados Asfálticos de Torreón S.A de C.V.) faced the challenge of milling off the entire pavement at a maximum depth of 25 to 30cm. The W 150 CF was capable of performing the milling work in one single pass, though TATSA sometimes milled off the pavement in two or three passes depending on the requirements of the respective stretch. "These roads are old and in the course of several years, they have been paved over many times without any milling work. In some areas, the pavement is even above the level of the footpath," explained engineer Gisela Gutiérrez, Production Coordinator at TATSA.





Flexibility pays off: with its high productivity, the WIRTGEN W 150 CF compact milling machine excels on large job sites - while its compact dimensions make it ideal for small construction projects with restricted space conditions.



Job site details

Milling off an entire road pavement along the main road in Torreón, Coahuila, Mexico

Total length:	24.3km
Length of inner-city section:	9.3km
Width of section:	12m
Area of section:	111,600m ²

Working parameters

Milling depth:	25-30cm
Milling width:	1.8m

Equipment

WIRTGEN W 150 CF compact milling machine with 1,800mm milling drum assembly

W 150 CF meets project requirements

The entire project covers a length of 24.3km and includes 9.3km of inner-city lanes in Torreón and 15km of highway between Torreón and Matamoros. The tender stipulated a single milling machine that could work at various different locations in the city within the same day. To fulfil this specification and best meet the demands of a large-scale project in confined spaces, the contractor chose WIRTGEN's W 150 CF with an 1,800mm milling drum assembly. With the extended drum, the most powerful cold milling machine in the compact class can now be used even more flexibly and is ideal for surface course rehabilitation on medium to large job sites. Furthermore, the W 150 CF's optimized machine transport weight - despite its tremendous engine

power - was a clear advantage. To maximize the cost-effectiveness of milling operations, cold milling machines need to be transported quickly from one job site to the next. The W 150 CF can be swiftly relocated on the job site or between contract work sections and has a travel speed of up to 7.5km/h. "Before participating in this tender, we talked to the applications experts from the WIRTGEN GROUP dealer Construmac and soon agreed that the W 150 CF would be the best solution for this job. The contracting authority agreed. After its arrival the machine immediately convinced us. In the meantime, we have ordered a new model for further projects in Mexico," says engineer Ruben Tinoco, proprietor of TATSA. »»



WIRTGEN

Milling width 1,800mm
(+ 300mm)

Milling depth
0-330mm

Tool spacing 18mm

Total width 2,500mm

Cost-efficient rehabilitation

Today, work on urban job sites must be completed much faster and more dynamically to minimize the impact on traffic, residents, workers and pedestrians. In Torreón, minimizing the disruption to traffic was therefore an essential goal. According to Tinoco, the plan is similar to those he has seen applied on job sites in Europe. "I spent a holiday in Finland. At 6 pm, a paving train composed of WIRTGEN GROUP machines arrived in front of my hotel in Helsinki. The next morning when I got up, all the equipment was gone and the road was perfectly paved. We want our jobs in Mexico to be carried out just as quickly and efficiently, with minimal impact on traffic and to a high quality."

Cutting-edge levelling system LEVEL PRO PLUS

To achieve optimum milling results, the W 150 CF offers state-of-the-art features. These include one of WIRTGEN's core technologies – levelling. When the surface course is removed, the LEVEL PRO PLUS levelling system continually compares the actual

milling depth with the target milling depth. LEVEL PRO PLUS can work with a wide variety of sensors – cable, hydraulic cylinder, sonic and slope sensors or laser and sonic ski sensors as well as multiplex systems – and can be extended as required. 3D levelling is also possible thanks to integrated interfaces which are compatible with 3D systems from common manufacturers. In Torreón, TATSA used the multiplex system. With this system, three sensors on each side of the machine scan the height. The automatic levelling system factors all three measurements into its analysis so that the pre-set target milling depth is met exactly, while ensuring that any unevenness in the road surface is not copied. "Working with the WIRTGEN LEVEL PRO PLUS levelling system is intuitive and convenient; the result is an evenly milled, level surface. This is a crucial factor when it comes to paving the new surface courses and avoiding costly correction measures in the form of asphalt levelling courses," says engineer Liborio Frias Estrada, Coordinator for the BRT project in Torreón. And Ruben Tinoco adds: "Cold milling has a key impact on the quality of road rehabilitation. That's the reason why we rely on WIRTGEN cold milling machines." ///

The advantages at a glance:

Extended range of applications for the WIRTGEN W 150 CF/W 150 CFi

- › To increase productivity and area output, the W 150 CF/W 150 CFi can be equipped with 1,800mm-wide milling drums by means of a housing extension
- › Extension kits can be retrofitted on any W 150 CF/W 150 CFi
- › The W 150 CF/W 150 CFi with a 1,800mm milling drum assembly is ideal for surface course rehabilitation work on medium to large job sites
- › Easy loading of milled material even in difficult job-site situations thanks to extremely large conveyor slewing angles of 60° both to the left and to the right
- › Quick job-site changes thanks to application-optimized machine transport weight and easy transportation
- › Extremely high rated engine output





With working widths up to 18m, the TCM 180i is the ideal team mate for the 2 SP 1500 machines. It ensures optimum curing of the new concrete pavement.



TCM 180i: The technical player

When placing dual-layer concrete on the A7, the WIRTGEN paving train – comprising 2 SP 1500 slipform pavers and the TCM 180i texture curing machine – is the key player.



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**For us, the reliability, cost-efficiency
and precision of WIRTGEN
are the decisive factors.**

**Mirko Pokrajcic, Managing Director
BT Beton-Technik GmbH**

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Germany // Kaltenkirchen

The A7 is being widened between Hamburg and Bordesholm from four lanes to six, and in some places to eight, to ensure that the motorway remains an efficient traffic artery. Aiming to create a pavement which would offer a high degree of driving comfort while withstanding the loads of heavy-goods traffic, the motorway consortium Via Solutions Nord and the joint venture ARGE A7 Hamburg-Bordesholm opted for steel reinforced concrete paving with an exposed aggregate concrete surface when widening the 60km stretch located in the Schleswig-Holstein region. BT Beton-Technik GmbH, who were commissioned with the work, have been specialized in concrete pavement construction for many years. Managing Director Mirko Pokrajcic has been relying on technologies and machines from WIRTGEN for just as long: “I insist on 100% quality - and this is precisely what WIRTGEN have been delivering for over 25 years.”

Kick-off: Well-rehearsed moves

The concrete paving work was carried out by 2 WIRTGEN SP 1500 slipform pavers. As the first paver advanced, its inset mould laid the concrete slab as specified, 14.5m wide and 23cm thick. A total of 41 curved electric internal vibrators ensured optimum material compaction by means of high-frequency vibrations. Dowel bars were inserted into the fresh, precompacted bottom-layer concrete at 25cm intervals parallel to the direction of travel and tie bars were inserted transverse to the pavement. The top-layer concrete was simultaneously loaded by excavator into the receiving hopper of the belt conveyor, transported over the top of the first SP 1500 and deposited directly on the bottom-layer concrete in front of the second SP 1500. The second machine compacted the material by means of 29 electric T-vibrators, as they are known, while paving it in a 5cm-thick layer. The duo from WIRTGEN paved some 4,000m³ of concrete each day in this way.



Dual-layer wet-in-wet concrete paving: BT Beton-Technik used cutting-edge paving technology to build 14.5m-wide dual-layer concrete pavements precisely, economically and quickly - while reliably meeting the client's tight schedule.

"Man of the Match"

Player No. 3, the TCM 180i self-propelled texture curing machine, followed hot on the heels of the pavers. With working widths up to 18m, it is an ideal team mate for the 2 SP 1500s and is the team's technical player. Its task is to spray a special combination of anti-evaporation agent and surface retarder onto the new concrete pavement. The anti-evaporation agent protects the fresh concrete from premature drying during its hardening phase. The retarder enables the surface mortar to be swept off, exposing the high-grade broken aggregate in the top-layer concrete. Depending on weather conditions, this can be done some four hours or more after paving. This gives the concrete pavement the required peak-to-valley depth and lasting grip. A curing agent is once again sprayed over the exposed aggregate. >>>



Hot-water system for easy cleaning

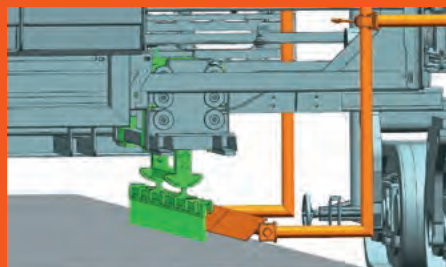
Cleaning the spray systems of curing machines economically is something of a challenge. With this in mind, WIRTGEN have integrated a hot-water system with a 90-litre tank in the TCM 180i. With this system, curing agent adhering to the inside of the pipes can be completely removed with water up to 60°C hot and the entire spray system quickly and reliably cleaned – all at the push of a button and by shifting two ball cocks.



A dazzling performance: this well-versed team was able to achieve paving rates of 400 to 500m in 12-hour shift operation.

Brush-cleaning unit ensures the quality of the surface texture

The lateral brush-cleaning unit of the TCM 180i removes slurry build-ups which adhere to the brush during changes of direction when applying a transverse brush finish. Before the brush is lowered back down to the concrete surfacing, it is set to the optimum angle of incline via the adjustable system to meet customer requirements. This prevents deep impressions which might damage the edge of the concrete pavement.



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WIRTGEN have struck gold with the new hot-water system of the TCM 180i. This added practical benefit will be a great asset to us in the future, too.

**Deni Pokrajcic, Site Manager
BT Beton-Technik GmbH**

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TCM 180i is the key player in concrete paving

Unlike in the process selected for the A7, in other countries the TCM 180i is also used to create the desired texture. In this process, the machine moves a brush across the entire concrete surface. When used in this way, the WIRTGEN texture curing machine can create a range of different surface textures to meet requirements. In addition to the well-established functions of transverse brushing and spraying, longitudinal brushing and spraying – and even the application of a diagonal finish – are possible. Meander spraying is a special option: this method permits transverse spraying during uninterrupted travel. What is more, WIRTGEN are continually advancing the associated components to ensure an optimum surface texture. The brush-cleaning unit of the TCM 180i is one prime example. ///





Freedom as far as the eye can see:
coastal road near Glenorchy-Queenstown on New Zealand's South Island.