

The WIRTGEN GROUP User Magazine for North America | N° 05

# RoadNews

The WIRTGEN GROUP presents  
new technologies at Conexpo 2020:

**The smarter way to work**











WIRTGEN / VÖGELE / HAMM / KLEEMANN / BENNINGHOVEN






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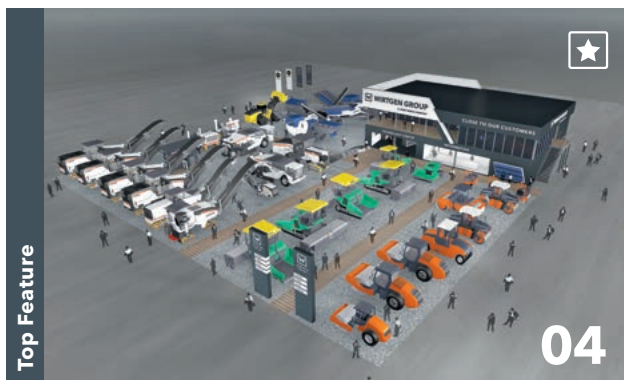


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# Editorial

## Invisible innovations, measurable improvements

At Conexpo-Con / Agg 2020 in Las Vegas, we're looking forward to meeting you at our exhibition area. Even if you cannot attend North America's largest construction trade show, you will soon realize that there's no getting around the innovations from the WIRTGEN GROUP.

Two of our most important trade show highlights are pretty impressive just to look at: the powerful, new WIRTGEN W 220 Fi and W 250 Fi large milling machines. But if you take a closer look at them, you'll notice that many of our technologies are increasingly going digital. For example, our Mill Assist function makes sure these flagship machines run at their optimum operating point at all times – automatically and at the push of a button.

And we have a lot of other examples of solutions that also help customers optimize their processes: Take WITOS Paving for example, a networked system solution from VÖGELE that makes a tremendous contribution to process optimization in road

construction and rehabilitation. Its counterpart from HAMM, WITOS HCO, takes care of continuous dynamic compaction control while optimizing the compaction process. The new PRO line crushing plants from KLEEMANN achieve a new and impressive level of performance in linked operation.

We hope you enjoy this fifth issue of RoadNews North America!

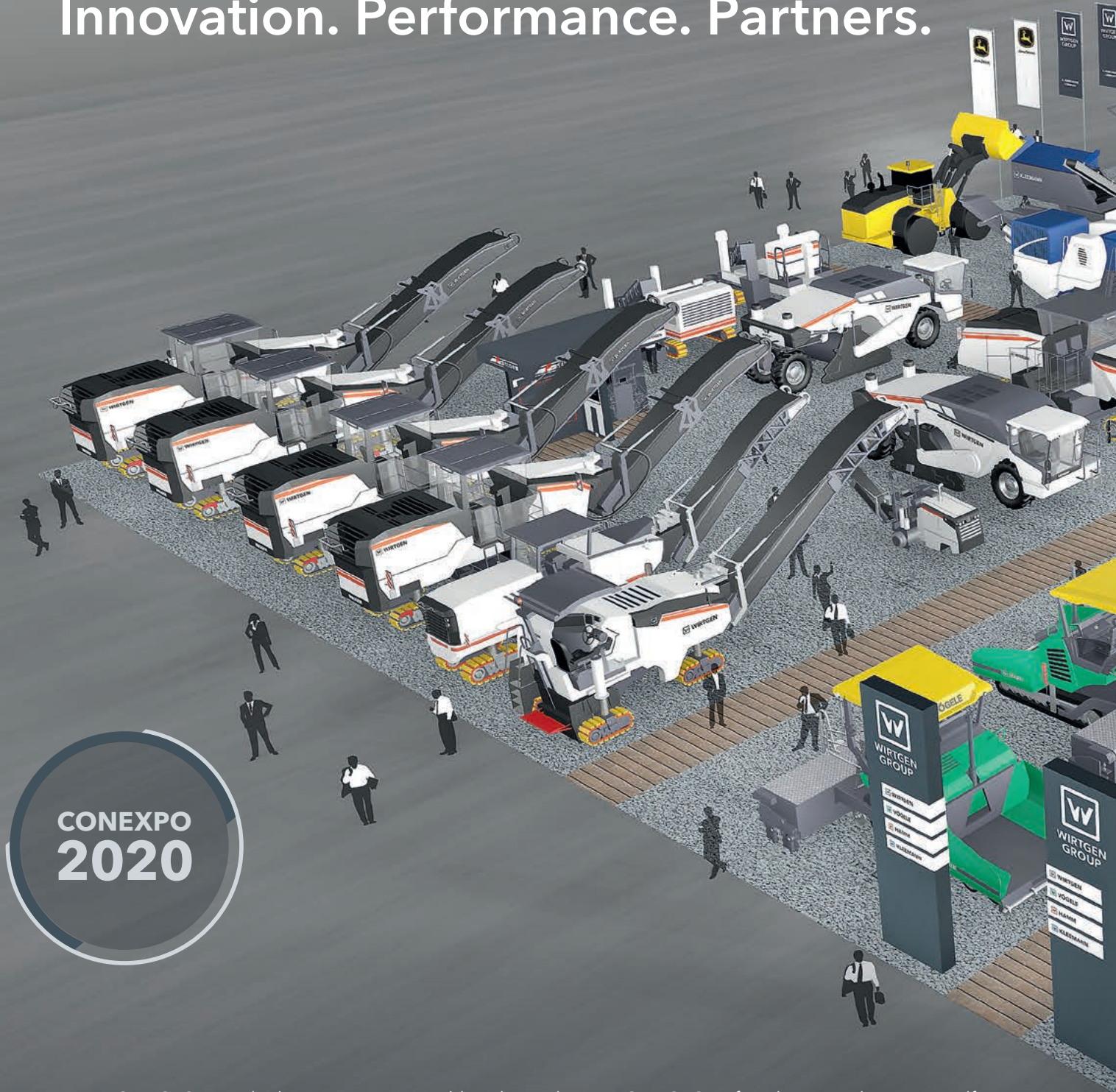
Best wishes,



**Jim McEvoy**  
President & CEO  
WIRTGEN AMERICA, Inc.



# The WIRTGEN GROUP at Conexpo 2020: Innovation. Performance. Partners.



A WIRTGEN GROUP trade show appearance would not be complete without innovations, new products and world premieres, and that goes for Conexpo-Con/Agg 2020, too. But there is another advantage enjoyed by the technology leader's customers that is increasingly taking center stage: synergies.

The WIRTGEN GROUP for a long time has seen itself not only as a supplier of machines and plants, but also as a partner helping customers to optimize their processes. Since the merger with John Deere, the potential now available to customers and users from such synergies is greater than ever.




In the limelight: The WIRTGEN GROUP is presenting over 30 products in Las Vegas, including ten world and North American premieres.

World premiere of two new F-series large milling machines:


# High-powered flagship machines



This new, intelligent generation of machines from WIRTGEN always strikes the right balance between performance and cost.



Following the successful market launch of its new-generation large milling machines, cold milling specialist WIRTGEN is now rounding out its high-performing F series. At Conexpo 2020, the W 220 Fi and W 250 Fi large milling machines are celebrating their world premiere.



Simply more efficient: The machine even suggests possible optimizations to the operator, for example when milling in two passes is more economical than in one.



**Mill Assist  
is a big help to me.**

Massimo Valerio, Milling Machine Operator  
Girardini



# > 60

signals are processed continuously  
to determine optimum settings  
for machine parameters.



## Assistant is a standard feature

The large milling machines from WIRTGEN think independently and always strike a perfect balance between performance, quality and cost. They also cover a wide range of applications, from surface course rehabilitation to complete pavement removal and fine milling jobs.

With a maximum milling depth of 14 in, the W 220 Fi (801 HP) and the W 250 Fi (1,010 HP) are the most powerful of all WIRTGEN's milling machines. Like the successful W 200 Fi, W 207 Fi and W 210 Fi models, the two new flagships are fitted with the innovative Mill Assist function as a standard feature.

## Quality, performance and cost-effectiveness - Fully automatic

In the past, the diesel engine and drum speeds, the milling speeds and the water volume for cooling the cutting tools all had to be reset manually to respond to changing job site conditions and ensure that the machine was running at its optimum operating point. The new assistant function is now available to help with this.

In automatic mode, Mill Assist strikes the optimum balance between milling output and operating costs. This not only increases machine performance, but also reduces diesel, water and cutting tool consumption as well as CO<sub>2</sub> emissions.

## Optimum machine parameters for all working strategies

The machine operator can also preselect one of three working strategies: "cost-optimized," performance-optimized" or "milling pattern quality."

### > "Performance-optimized" working strategy:

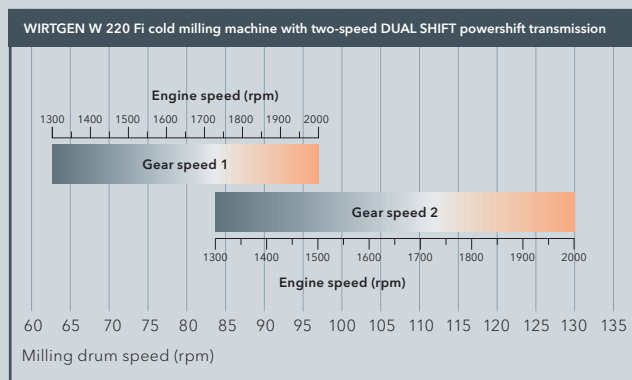
This is the mode of choice whenever the asphalt layer needs to be removed at high speed to meet a tight deadline.

### > "Cost-optimized" working strategy:

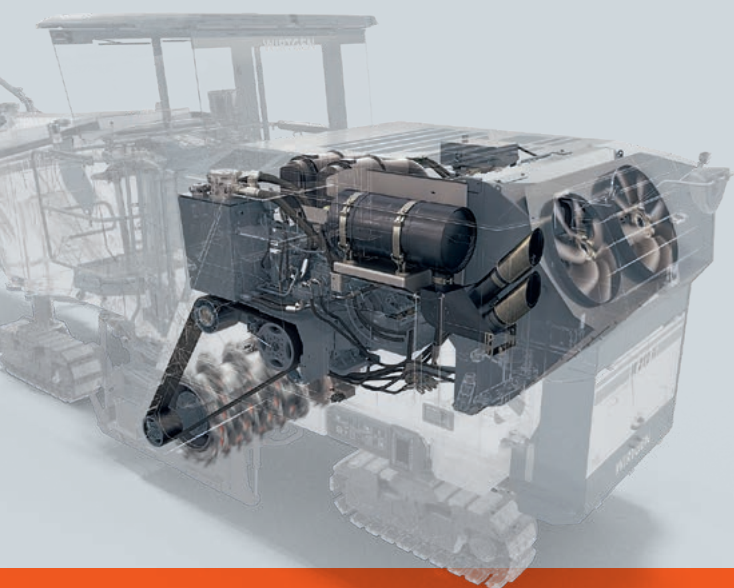
On concrete job sites, on the other hand, the hardness of the material is the main challenge. Here the degree of wear must be closely monitored to minimize costs. The "cost-optimized" working strategy would be an option in this case.

### > "Milling pattern quality" working strategy:

To produce a particularly fine surface, the operator selects the "milling pattern quality" mode.



Automatic fuel-efficient operation:  
With the new two-speed DUAL SHIFT powershift transmission, the engine can operate at an efficient rpm while maintaining powerful milling drum speeds.





# I was blown away by the technology.

Kim Butler, President  
Mill It Up LLC.



## W 220 Fi: DUAL SHIFT, as installed on the W 210 Fi

Thanks to the new two-speed powershift transmission, which is automatically controlled by Mill Assist, a much larger range of milling drum speeds is now also available. The diesel engine also features a modern engine rating with a high torque starting at 1,300 rpm. This lowers diesel consumption and noise emissions.

The intelligent control of the two-speed powershift transmission, combined with the diesel engine, extends the range of milling drum speeds, both upwards and downwards, resulting in a huge range of applications. This supports significant reductions in fuel consumption and cutting tool wear in the low milling drum speed range. A high-quality milling pattern can be achieved in the upper milling drum speed range, even when working with a high area output.

# W 250 Fi: Lower diesel consumption

With the new ACTIVE DUAL POWER dual engine drive, either one or both engines are activated automatically to suit the job site situation and the selected working strategy. The two economical engines also operate efficiently, each running at an optimally adapted engine speed. This slashes the costs of diesel fuel and cutting tools.

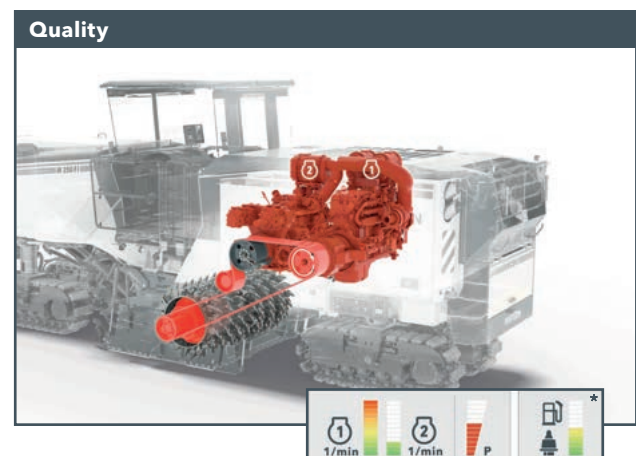
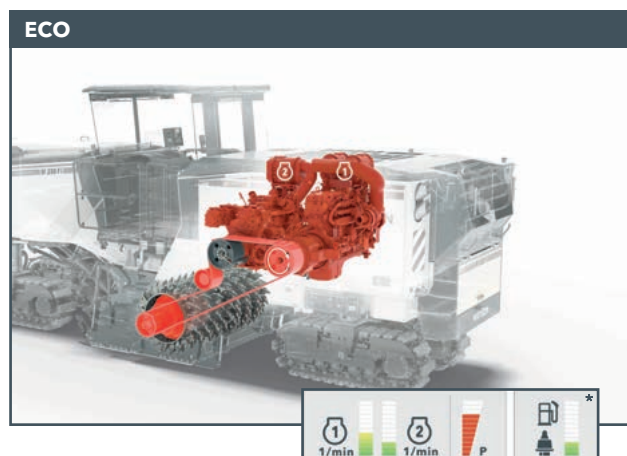
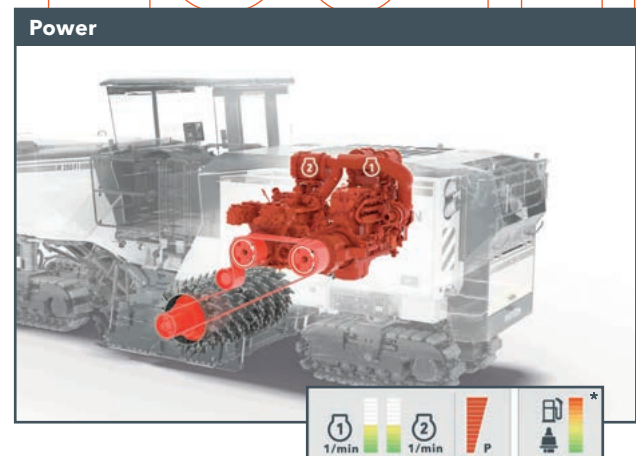
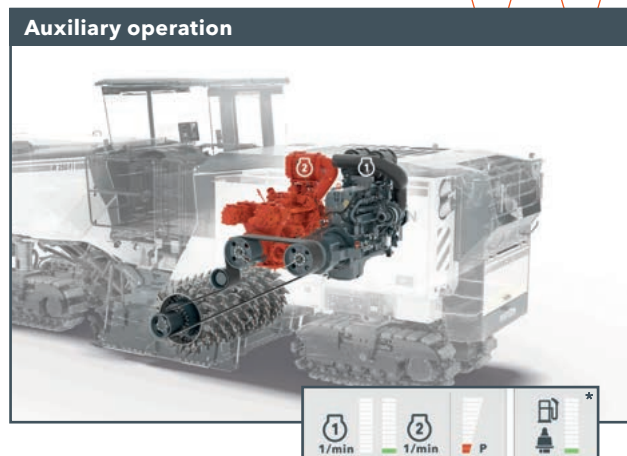
In idling mode, the dual engines are automatically switched off after an appropriate cooling time. The engine run-on time is indicated on the display panel during the cooling phase.

## High output at low speeds

The integrated machine control system MILL ASSIST ensures that both diesel engines of the W 250 Fi are operated primarily in the lower speed range while still achieving a high output combined with a low diesel consumption.

### Examples of operating statuses of the W 250 Fi

# W 250 Fi



\* = diesel and cutting tool consumption per m<sup>3</sup>

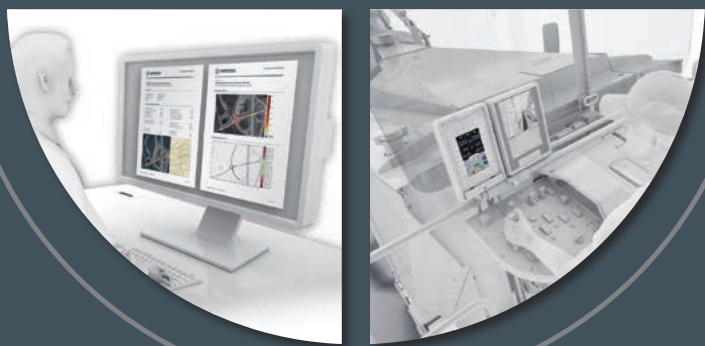
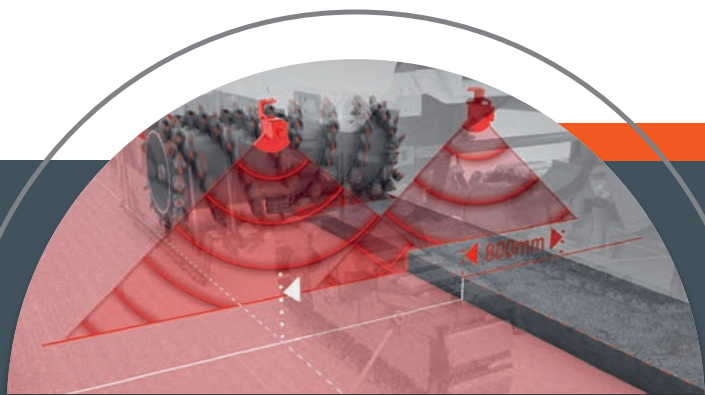


### Documenting performance and consumption data

The new WIRTGEN PERFORMANCE TRACKER (WPT), a solution developed by the market leader's applications experts, uses a laser scanner to measure the cross-sectional profile to be milled. The precise area output and milling volume are determined by means of GPS positioning and various sensors. The machine operator can continuously track the most important information in real time on the display of his control panel.

### Job site report for analysis and process optimization

After completion of the milling work, a report containing all the main performance and consumption data is automatically generated in Excel and in PDF format and e-mailed to the machine operator. In addition to the documentation feature, the WPT can be used to precisely determine job-site costs. For example, the accurately calculated performance and consumption data not only make it easier to evaluate the efficiency of a current job site; the WPT also plays an invaluable role in helping the operator use the machine even more efficiently, for instance, by further reducing the diesel consumption and cutting tool wear on the next job.



### Informative WPT – WIRTGEN PERFORMANCE TRACKER

- > Tried-and-tested WITOS FleetView telematics system with optional WPT feature
- > Measurable machine efficiency
- > Precisely calculated job site costs
- > Invaluable documentation
- > Informative project progress information

# WPT



Measurement report  
milled surface

Consumption data

GPS coordinates

Performance





7 ft 3 in

8 ft 2 in

11 ft 6 in

12 ft 6 in  
Milling width

An advantage of the Multiple Cutting System:  
a larger range of applications.



# Fast and easy milling drum and milling drum assembly changes

It's simple mathematics: The easier and faster a milling drum can be changed, the faster a milling machine can be back on the job and earning money. With the new large milling machines and the new generation of innovative Multiple Cutting System (MCS) milling drums from WIRTGEN, milling drums with the same milling width but different tool spacing can now be changed in just a few minutes without using any additional tools – no one else in the industry can do that.

The side door first opens hydraulically. The milling drum is connected by a main bolt. A loosening tool provided by WIRTGEN is positioned on the bolt and the bolt loosened at the push of a button by the milling drum rotation device. All the operator has to do after that is remove the bolt and pull out the milling drum.

## More options on the job

Thanks to the quick-change milling drum assembly, another new feature, milling drum assemblies with different working widths can also be used. The fully pre-assembled milling drum assembly can now be changed in just one hour. The system for machine height adjustment has a much greater stroke, which makes the task much easier. This means that the W 220 Fi and W 250 Fi can quickly switch to another application – for instance from complete pavement removal with a 7-ft-3-in milling drum assembly to surface course milling with a 12-ft-6-in milling drum assembly.

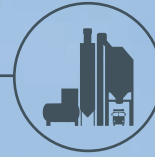


**It's awesome.  
We can change drums  
in eight minutes,  
and that amazes me.**

**Kim Butler, President**  
Mill It Up LLC.

Mill It Up team: Cody Butler, CFO;  
Kim Butler, President and Owner,  
Gary Wise, Vice President





# Striding ahead

**Intelligent paver management: VÖGELE is presenting two versions of its WITOS process management solution at Conexpo 2020.**

Optimizing processes, digitized job sites, documenting results - great changes are afoot in the road construction industry, with both internal and external factors driving the development: Companies want to increase their efficiency; highway authorities want to achieve high quality and have it documented.

The tool that can increase efficiency while ensuring and verifying quality is WITOS Paving from VÖGELE. The world market leader offers two versions of this networked system solution: the basic WITOS Paving Docu version and the high-end WITOS Paving Plus.

Both versions - WITOS Paving Docu and WITOS Paving Plus - have a unique advantage over third-party solutions: They directly access machine data, guaranteeing that calculated results are highly precise and informative. In other words, they already meet the demands of transportation departments and highway authorities, which in an increasing number of markets worldwide, including some regions of North America, are requiring construction companies to provide documentation and proof of quality.





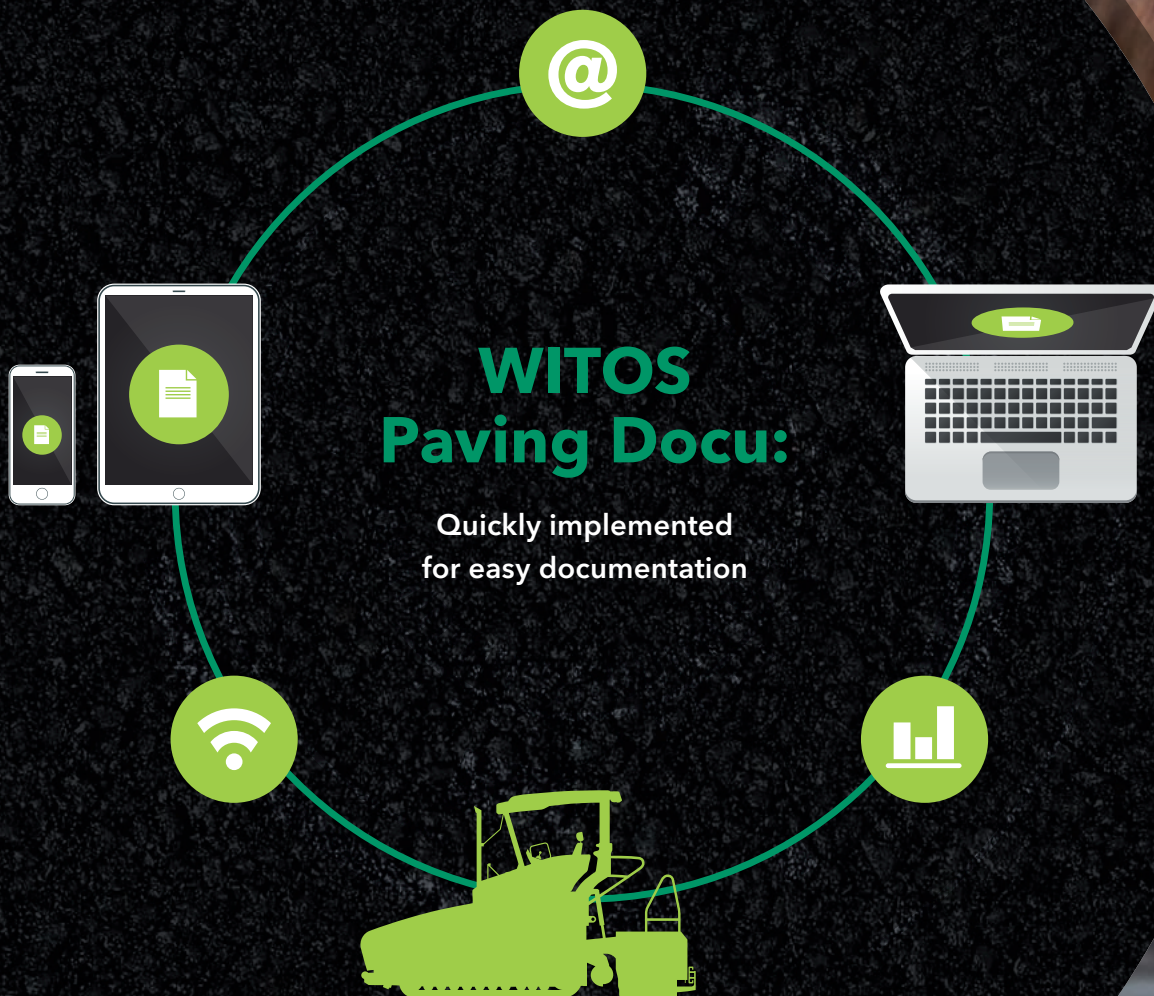
### The highlights of WITOS Paving

- > Rapidly detects any deviations in the progress of construction from specified values by directly accessing machine data, such as paving width and speed
- > Analysis and statistics tool to optimize process flows
- > Common database for all parties involved in the process
- > Simple compilation of documentation for contractors and customers
- > Integrates VÖGELE RoadScan, the non-contacting temperature-measurement system

### Additionally and exclusively with WITOS Paving Plus

- > Process planning, control and analysis - from the mixing plant to paving and compaction
- > Dynamically cycled supply of material according to the just-in-time principle
- > Delivery notes can also be entered in the system online with an appropriate interface





A data loop for all parties involved in the process: With WITOS Paving Plus, the paver establishes a local WLAN. It functions as a server, transmitting data to the tablets and smartphones of all parties. This way, everyone at a job site has access to the same information. At the end of the day's paving operations, the recorded data are sent to defined recipients. Compiled in tables and charts, these data make up the job site documentation, e.g. for clients.



Job site documentation:  
With WITOS Paving Docu, the new solution from VÖGELE, paving data and delivery notes can be entered in the paver's own job-site network and the process of sending out job site reports automated.

An easily implemented solution, WITOS Paving Docu is aimed squarely at contractors who want to record and analyze other data in addition to paving temperature, but who do not need the full range of WITOS Paving Plus functions including process optimization.

With WITOS Paving Docu, site managers and foremen can start projects on a job site right away without prior planning and record various paver and paving data, such as paving widths, paving speeds, interruptions to the paving work and effective paving time.

### Convenient digital functions

Delivery notes can also be scanned in using a QR code or entered manually, allowing paved areas, paved material quantities and areal densities to be calculated continuously. At the end of a day's paving, job site reports are sent automatically by e-mail to selected recipients. The app and the paver are networked via WLAN, so information can be exchanged between the machine and the foreman's smartphone even at times when no mobile connection is available.

For more on  
WITOS Paving Docu visit  
[www.voegel.info](http://www.voegel.info)



WITOS Paving Plus is VÖGELE's system solution for networking everyone involved in the process, from the mixing plant supervisor to the paver operator. It consists of a total of five modules. With this comprehensive solution, each participant in the process can use the right software for his or her purposes on the appropriate hardware: a PC in the office or mixing plant, a smartphone in a truck or a tablet at the job site.

#### WITOS Paving Plus consists of five modules

Job site planning (Control module), provision of mix (Materials module), mix transport (Transport module), asphalt paving (JobSite module) and subsequent process analysis (Analysis module) can all be managed by a single system in real time. This enables site managers and paving teams to respond quickly and appropriately to possible faults and to make processes much more efficient.

The dynamic logistics and machine control system with corresponding controlling also increases quality. With it, paving teams and construction companies can learn from every job and get a little more efficient every day.

## WITOS Paving Plus: Comprehensive process management system for greater quality and efficiency in road construction



The VÖGELE system for process optimization and documentation comprises five modules tailored to the individual parties involved in the process.



#### WITOS Paving Control

The planning and control module



#### WITOS Paving Materials

The mixing plant module



#### WITOS Paving Transport

The transport module for truck drivers



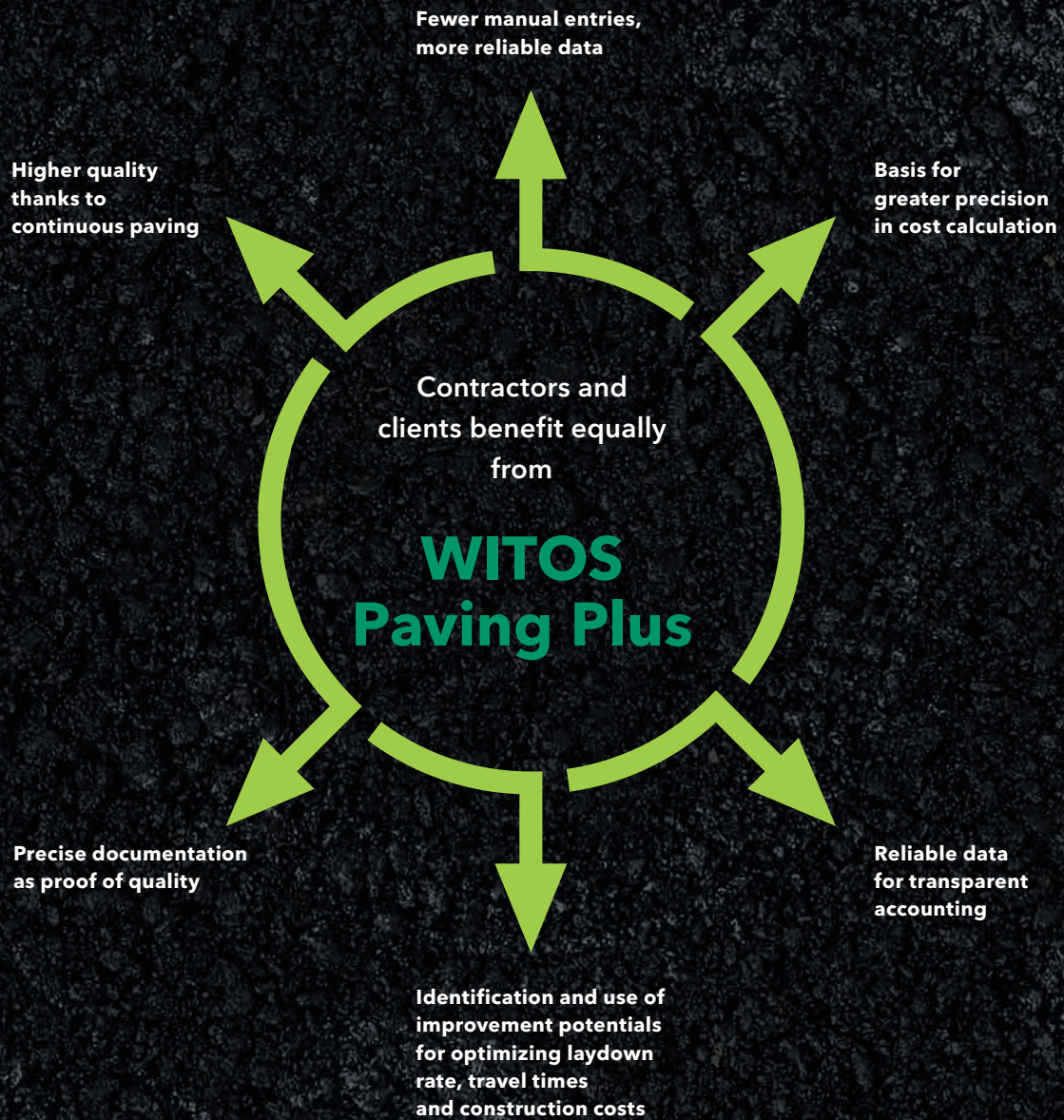
#### WITOS Paving JobSite

The job site module for paving teams



#### WITOS Paving Analysis

The analysis and documentation module



For more on WITOS Paving Plus  
see our web special at  
[www.voegel.info](http://www.voegel.info)



Split oscillation drums to meet  
the highest demands:

# Improving compaction quality



## The next level of compaction

More than 35 years ago, HAMM introduced the first tandem roller with oscillation. Since then, the company has continuously improved this efficient and intelligent compaction technology. The current innovation in this product segment is a split oscillation drum. It combines the advantages of oscillation with the added value of a split drum. To master this complex challenge, HAMM developed a patented premium solution that is unique in the market.

## Patented technology

There is one independent, mechanically separate oscillation unit in each half of HAMM's split oscillation drum. An integrated control system quickly and precisely adjusts the position of the unbalances relative to the position of the drum halves. As a result, the two drum halves are synchronized electrohydraulically to oscillate in phase at all times, despite their different rotational speeds when cornering. With this feature, oscillation technology from HAMM offers another real quality advantage.



The rollers of the DV+ series are equipped as standard with a split drum at the front and rear. On the "OS" models DV+ 70i VS-OS and DV+ 90i VS-OS, the rear drum is designed as a split oscillation drum. These drums are ideal for compacting in curves or for the compaction of displacement-prone asphalt types.

# DV+ SERIES

## Two in one: The advantages of oscillation combined with a split drum

Basically, any strong steering movement, such as when changing the compaction lane, can cause cracks in the asphalt. With a split drum, this effect can be greatly reduced, because the two halves of the drum move at different speeds during cornering.

Split drums also show off their advantages in the compaction of asphalts that are more susceptible to displacement, such as stone mastic asphalt or polymer-modified mixes. The split oscillation drum combines these effects with the other advantages of oscillation such as

- faster compaction,
- smooth and level surfaces,
- reduced vibrations → perfect for vibration-sensitive areas,
- ability to compact quickly cooling asphalt (e.g. on thin layers, in windy or cold environments),
- good compaction of longitudinal joints between hot and cold asphalt without damaging the adjoining cold section.



# WITOS HCQ: Even greater transparency, even higher quality

## 1 | WLAN on the job site

With the HCQ Navigator, data are exchanged between the rollers via WLAN. The rollers are equipped with a GNSS receiver which communicates with satellites to detect their position.

The route of the  
process data

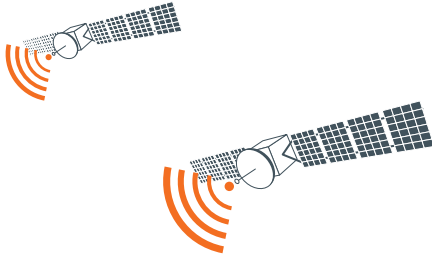


## 2 | Communication with the WITOS server

Each roller is equipped with a SIM card and transfers the data to the WITOS server wirelessly.

Random sampling and compaction measurements at selected points will soon be a thing of the past. Quality control is simpler and more effective with the HCQ Navigator from HAMM (HCQ stands for HAMM Compaction Quality). It is the ideal tool for advanced continuous compaction control and comprehensive analyses of the compaction process. HAMM's WITOS HCQ represents the logical next step towards a digital job site: The module permits live tracking of the compaction process, also remotely. It also fulfills all requirements of a cutting-edge roller - including a VETA interface.





### 3 | The WIRTGEN GROUP's WITOS portal

Authorized users can monitor the process live and comment on it via the WITOS portal. The data can be exported once the project is complete.



### WITOS HCQ: Live view and data analysis

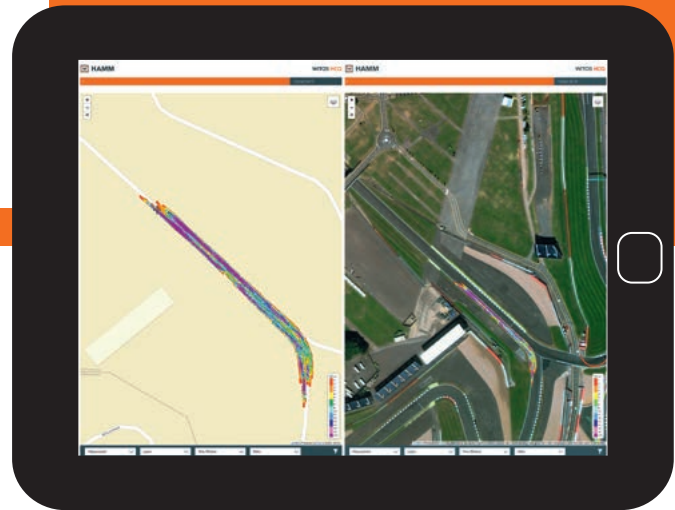
The main functions of WITOS HCQ at a glance:

- > Live monitor with a selection of map views and zoom options
- > Filter for visualizing the HMV (HAMM Measurement Value), temperature window or compaction mode (static, vibration, oscillation, pneumatic tires)
- > VETA export for continuous dynamic compaction control
- > Project list with numerous search and management options
- > Fast access with view of individual sections

### An eye on quality

The HCQ Navigator from HAMM is the key component of the WITOS HCQ. It shows roller operators which points have already been sufficiently compacted and which still require further compaction, displaying the information live on a panel PC in the cabin. This avoids both under-compaction and over-compaction and optimizes the number of passes.

The system continually determines the key process parameters of the roller and its surroundings to this end. The HCQ Navigator can record, analyze and archive all these data on the compaction process.



Live mode not only indicates the geographical position in various map views, it also displays process data, for instance the number of passes, asphalt temperature, HMV (earthworks). These data can be called up for each point, machine and even drum individually.

### Live monitoring, worldwide

HAMM has now gone one step further: "Our WITOS HCQ web application makes the HCQ Navigator even more flexible: It is now also possible to follow the entire compaction process live from any location," explains Dr. Axel Römer, head of Research & Development at HAMM. During the compaction process, the data are transmitted wirelessly directly from the roller to the WIRTGEN GROUP's WITOS portal for this purpose. WITOS HCQ users can access it in real time from there. They can also give regulatory bodies or advisors access to this data while ensuring confidentiality and data security. For instance, separate access authorizations can be issued to different parties for each sub-project.

### Tested with flying colors

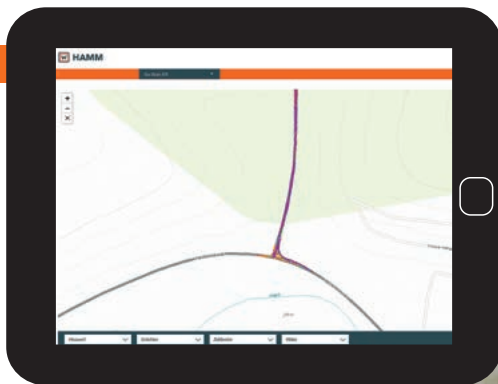
WITOS HCQ now has been used in several US states – on jobs in Sacramento, California, on Highway 50, Michigan and in Palmyra, Missouri, to name but a few. During the California project, it soon became clear that real-time tracking was saving the construction companies and authorities a great deal of time, particularly when the work was being carried out on distant job sites. What is more, it was fully possible to process the data from the HAMM system in VETA, with the result that all the requirements imposed by the authorities were met.

Meanwhile, a project in Missouri showed that the exchange of data between the GPS receiver of the HCQ Navigator and the VRS system used by the construction companies involved worked perfectly. In Europe, WITOS HCQ had already proven its credentials in a field test conducted by the Finnish road construction authorities.

WITOS HCQ is now available on the market, and the advantages offered by this solution are self-evident: Processes can also be controlled remotely by specialists and decisions made on the basis of salient information. That cuts down travel times and expenses while the prompt response times enhance quality.

### Simple data back-up

Last but not least, the portal solution means that data back-up is also incredibly easy with WITOS HCQ, because the project data are available on the WITOS portal for subsequent analyses and documentation. The data format meets the requirements of the US analysis software VETA.



Compaction with WITOS HCQ in Germany: It was possible to retrieve all the data acquired from this DV+ 90i during compaction via the WITOS portal in real time – both on the job site and on the office computer.





The HCQ Navigator shows the roller operator which points already have been compacted and how. The exact same data can also be viewed on a mobile phone, laptop or PC by any parties with the appropriate access authorization - at any location in the world.





# HP 180i from HAMM: Flexible, safe and convenient

The new HP 180i unites the proven advantages of HAMM pneumatic-tire rollers with attractive innovations: The HP 180i offers, for instance, simple and intuitive operation and an ergonomically optimized operator's platform. Another feature - typical of all HAMM machines - is optimal visibility. Operators can keep an eye on the job site, but also on the outer flanks of the wheels thanks to the asymmetrical frame design.

## **Innovative additive sprinkling and flexible ballasting**

And there are many other intelligent details, such as the innovative water and additive sprinkling system, including large tanks with pressurized refilling as

standard, and a new, convenient and highly efficient additive preparation system. Its advantage: The additive concentrate is now filled without premixing. It is mixed with water automatically during compaction in accordance with the dosing specifications.

HAMM has also enhanced the unique flexibility of its ballasting concept. Ballasting is extremely flexible, meaning the machine's weight can quickly be adapted to the type of asphalt, layer thickness or application. In total, the operating weight can be increased to a maximum of 37,919 lbs.

# HP 180i

## **Highlights of the HP 180i**

- > Very good visibility
- > Simple, intuitive operation
- > Large, comfortable cabin or operator's platform
- > Flexible ballasting concept
- > Innovative additive sprinkling system
- > Quick, convenient maintenance
- > Maximum safety





The compactors with a "C" in their name are designed for extra power, because the "C" stands for "climbing." A stronger hydrostatic drive system is installed in these machines that delivers up to 30% more torque. As a result, their traction and climbing ability are even greater than those of the standard models.

Every detail of these machines has been designed for maximum robustness and a number of added features are available for them, such as a specially shaped, heavy-duty dozer blade for heavy earth-moving applications and a remote control.

pushed/placed and then immediately compacted, without an additional grader. Furthermore, a remote control developed by HAMM made it possible on this project to compact the entire surface of the quarry, right up to the quarry face, under safe conditions.

The team can operate the compactor from a safe distance, far from the stones that could be loosened from the 115 ft-high rock wall by the vibration of the compactor.

#### Enhanced safety with remote control

A compactor of this kind was used to reclaim a quarry in Germany. Equipped with a pushing blade, the H 20i C P had not one, but two tasks to complete in a single pass: Smaller volumes of material were first

## HAMM H 20i C P compactor: Extra safe, extra strong, extra robust

#### Highlights of the H 20i C P

- > High torque for optimum traction and climbing ability
- > High compaction performance based on high linear load and high amplitudes
- > 3-point articulation for outstanding traction and off-road mobility
- > Easy Drive operating system
- > Hammtronic electronic machine management
- > Optimum view of the machine and the surrounding job site



KLEEMANN PRO line plants –  
Including the new MC 120 Zi PRO:

# Strong performance, team-oriented technology



Crushing big blocks of rock, producing precise grain sizes and shapes, using energy efficiently: KLEEMANN's PRO line plants deliver a strong performance.



KLEEMANN is showcasing two track-mounted crushing plants from its PRO line at Conexpo-Con/Agg 2020: the new MC 120 Zi PRO jaw crusher and MCO 11i PRO cone crusher. The latter plant has already been unveiled by KLEEMANN, but is now being joined by its ideal counterpart, the MC 120 Zi PRO, because these two powerhouses are optimized for linked operation. With their uncompromisingly durable design, the plants combine all the advanced technical features of the PRO line and are geared for continuous quarry operation.



CONEXPO  
2020  
INNOVATION

PRO  
line

# MC 120 Zi PRO

## **Efficient drive system: High output, high efficiency**

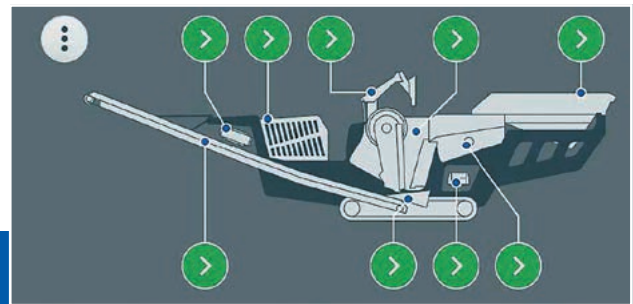
Progress pays off: The mobile PRO line crushers are equipped with efficient, powerful diesel-electric drives. The crusher unit and all conveyors are electrically driven, offering a number of advantages: The oil lines usually required by hydraulic drives are eliminated, which means less oil and longer intervals between oil changes. Compared to a conventional drive, this system is easier on the environment and saves money.

It makes the KLEEMANN PRO line plants real fuel-savers, and on top of that reduces costs. The option of fully electric operation, i.e. with an external power supply, has a strong economical appeal. This mode further reduces energy costs, emissions and noise.

## **Intuitive SPECTIVE control system: Easily controllable technology**

Focusing on the user: PRO line plants are operated via touchscreen with the easy-to-use SPECTIVE control system. All important information is visible at a glance and all components and functions can be conveniently controlled from the ground.

The 12-inch touchscreen is dustproof and always easy to read with its good light intensity and high contrast. The start screen shows an image of the entire plant with all adjustable functions.



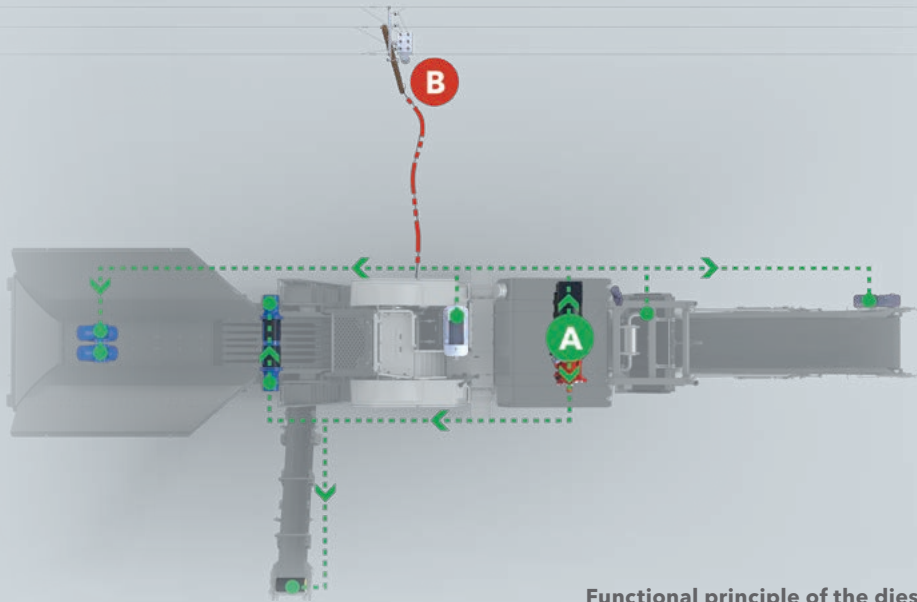
## **High performance in the first crushing stage: MOBICAT MC 120 Zi PRO jaw crusher**

### **Recommended applications**

- > Processing natural stone (e.g. limestone, granite, basalt)
- > Mining
- > Recycling (e.g. rubble, concrete, reinforced concrete)
- > For a continuous process: in combination with the MOBICONE MCO 11i PRO cone crusher and a MOBISCREEN screening plant

### **Highlights**

- > Diesel-electric drive system
- > Possibility of an external electric power supply (optional)
- > Independent, double-deck prescreen (4.2 yd²)
- > Automatic crushing gap adjustment
- > Continuous feed to the crusher with the Continuous Feed System (CFS)
- > Crusher discharge chute (optional)
- > Crusher unblocking system (optional)



**Functional principle of the diesel-electric drive:**

- A** | Efficient and powerful diesel-electric drive for low fuel consumption: The crusher unit and all conveyors are electrically driven.
- B** | External power supply for even more cost-efficient quarry operation.



# MCO 11i PRO



## **Accessibility and safety:** **Consistently integrated in development of the system**

The advantages of user-friendly design are above all evident in the area of maintenance. The more easily accessible plant components are, the faster servicing can be completed. That's why KLEEMANN PRO line plants have large hinged panels offering easy access to the engine compartment. The plant can even be refueled easily from the ground – in the case of the MC 120 Zi PRO with the help of an optional refueling pump.

KLEEMANN also made no compromises on the safety of its PRO plants. One example is the use of safety valves. They make sure every hydraulic cylinder stays in its current position in the event of a malfunction or shutdown to protect both the operator and the plant itself.

## **Linked operation:** **Smooth crushing processes**

Made for each other: The mobile MC 120 Zi PRO jaw crusher and mobile MCO 11i PRO cone crusher are a perfect match in terms of their output, dimensions and material flow concept. This means that these PRO line plants can be linked together using the line coupling option. It automatically optimizes the crushing process between the plants, ensuring that material is conveyed with maximum efficiency at all times.

A probe installed on the crusher discharge conveyor of the upstream plant monitors the fill level of the downstream plant. If it reaches a defined level, the feed rate is temporarily reduced to prevent the overfilling of individual plants. The Continuous Feed System (CFS) ensures the optimum utilization of the machines.



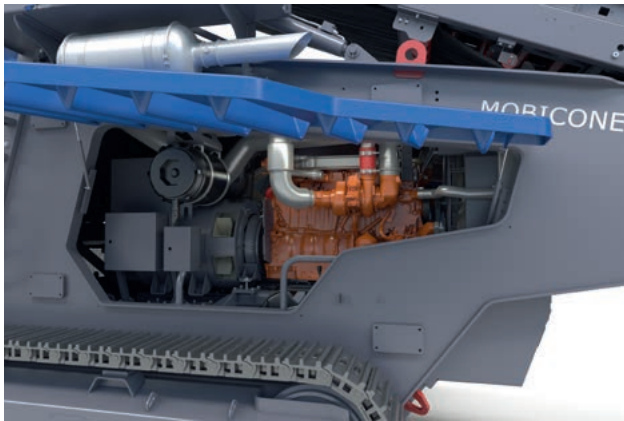
## Efficiency and maximum final product quality in the second crushing stage: MOBICONE MCO 11i PRO cone crusher

### Recommended applications

- > Secondary and tertiary crushing
- > Medium-hard to hard, abrasive natural stone
- > Mining
- > For a complete process: can be combined with the MOBICAT MC 120 Zi PRO jaw crusher and a MOBISCREEN screening plant

### Highlights

- > Generously dimensioned feed unit with simple slide mechanism
- > Continuous feed to the crusher with the Continuous Feed System (CFS)
- > Tramp release and ringbounce detection systems for reliable protection against overloading
- > Automatic crushing gap adjustment
- > Diesel-electric drive system
- > Possibility of an external electric power supply (optional)



Servicing made easy: Large hinged-panels provide easy access on all PRO line machines.



High ease-of-operation is further enhanced on the PRO line machines by LED lighting. An optional premium lighting system can provide even better illumination of all relevant plant components.

# Flexibility meets precision: MS 952i EVO from KLEEMANN

KLEEMANN is introducing its MOBISCREEN MS 952i EVO screening plant at Conexpo-Con/Agg 2020. It owes its high capacity of up to 551 US t/h primarily to the good flow of material through the plant. This begins with the feeding process which, due to the large hopper, can be handled by either a wheeled loader or an upstream crushing plant.

Material is transported on an extra-wide, 3-ft-11-in feed conveyor to the screen box. For maximum material throughput, the angle of the screen box can be adapted to the respective feed material, while maintaining optimum separation. An impact plate at the discharge point of the conveyor distributes the material evenly on the screen media to minimize wear and achieve high throughput.



## Technical data: MS 952i EVO

- > Feed capacity up to 551 US t/h
- > Maximum feed size 4 x 6.3 in
- > Hopper capacity 10.5 yd<sup>3</sup>
- > Screening unit type: double-deck vibrating screen
- > Drive system: diesel-hydraulic

- > Power rating (Tier 4f): 133 hp

## Transport weight

- > With standard features: 72,750 lbs
- > In maximum configuration: 89,300 lbs



### Advanced technology for simple operation

Safety is also a top priority for KLEEMANN's MOBISCREEN EVO screening plants. The screening plant is operated via a mobile control panel which can be mounted at three different points on the plant, ensuring the best position at all times for viewing plant functions currently being executed. All plant functions start up automatically, without each side discharge conveyor having to be activated individually. The control panel also displays data on machine operation.

Proportionally activated hydraulic valves support smooth motion of the plant, without jolts. When linked to EVO line crushing plants, the size and output of which are tailored to the EVO screening plants, the systems work very efficiently and achieve high output. Another advantage for safe plant operation is the emergency stop function, which controls all screening and crushing stages when plants are in coupled operation.



# MS 952i EVO



It worked great. There's no machine out there comparable to it.

Mike Crenshaw, President  
King Asphalt, Inc.



Pickens County | South Carolina



With this new generation, WIRTGEN has succeeded in developing the world's most advanced machines for cold-in-place recycling. The tracked cold recyclers deliver an impressive performance even on full-depth reclamation jobs, as the W 380 CRi proved in South Carolina.

# Full depth - High quality

Full-depth reclamation of a highway - amid flowing traffic: WIRTGEN W 380 CRi cold recycler demonstrates one of its many strengths.

## FDR on Highway 123

Four-lane Highway 123 in Pickens County was the site of the first full-depth reclamation (FDR) job on the roadways managed by the South Carolina Department of Transportation (DOT). A volume of up to 20,000 vehicles a day, 15% of them trucks, had made structural repairs of the 7-mile stretch unavoidable.

## Including widening of the roadway

The DOT wanted to take advantage of the construction project to also widen the roadway to 14 ft 5 in. "The first step was to mill off 2 ft of the inner shoulder, adjacent to the passing lane," said Mike Crenshaw, president of King Asphalt, Inc. contractors from Liberty, South Carolina, explaining the preparatory work executed by two WIRTGEN cold milling machines. Only then could the cold recycling train set off, with the W 380 CRi at the front. The tracked cold recycler removed the damaged pavement across a width of 12 ft 6 in and to a depth of 8 in in a single pass. It granulated the material at the same time, mixing it with 2.3% foamed bitumen, 1% pre-spread cement and 3 to 4% water.



# W 380 CRi

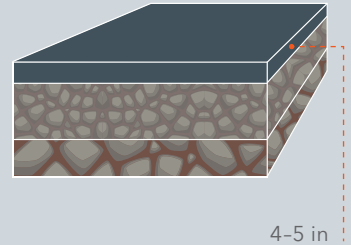




The W 380 CRi can recycle a roadway down to a total depth of 12 in, making it also ideal for full-depth reclamation (FDR). Here, it is working together with the VÖGELE SUPER 2000-3i paver and HAMM HD+ 140 VV-HF tandem roller.

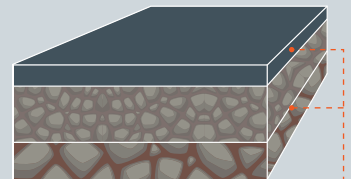
#### Application range: W 380 CRi

- > Cold in-place recycling: 4-5 in
- > 100% asphalt, well-supported base



4-5 in

- > Full depth reclamation: 4-12 in
- > Cold in-place recycling and full depth reclamation (FDR) applications



up to 12 in

The tracked WIRTGEN W 380 CRi cold recycler is multitasking when it comes to roadway rehabilitation.

#### Variable road rehabilitation beyond the machine's paving width

The W 380 CRi is further capable of rehabilitating roadways that exceed the available working widths of 10 ft 6 in, 11 ft 6 in and 12 ft 6 in. In this case, the recycler takes up the material previously milled alongside by a cold milling machine and feeds it to the mix

process. When rear-loading onto a road paver with suitable capacity and screed, the W 380 CRi can be used to rehabilitate even very wide roadways in a single pass thanks to its mix capacity of up to 787 US t/h.





Great equipment, great vibe: The team from King Asphalt and the team from WIRTGEN AMERICA.



### Binding agent for long-term stabilization

“With FDR, stabilizing the recycled layers by adding foamed bitumen gives the base the strength it needs to withstand recurrent stresses for decades,” explains Mark Stahl, director of recycling products, WIRTGEN GROUP North America.

### The right formula

Another decisive factor of course is the mix design, which involves specifying the right volume of binding agent. WIRTGEN laboratory equipment – the WLB 10 S laboratory-scale foamed bitumen plant and the WLM 30 laboratory-scale twin-shaft compulsory mixer – was used on this job to analyze six different material samples taken in the preparatory phase and determine the optimum composition of the mix for this particular job. Once rehabilitation was completed, the high-performing W 380 CRI had recycled over 100,000 US t of eco-friendly, high-quality asphalt mixed according to the right formula. Mike Crenshaw was thrilled with the machine’s output of around 420 US t recycled material per hour: “It worked great. There’s no machine out there comparable to it. The discharge conveyor moved over 7 US t a minute.”

W 380 CRI



### Versatility is key

Mike Crenshaw also considers the versatile application options of the new W 380 CRi to be a real advantage for his company: "It can also do the work of a cold milling machine. And that is a major advantage. The machine can be converted in just two hours."

2 IN 1

The WIRTGEN W 380 CRi cold recycler also performs outstandingly as an efficient, high-output milling machine for the upcut process.



ST Bunn Construction using a SUPER 1703-3i wheeled paver on a parking lot.



# Winning with wheeled

Able to travel under its own power, the VÖGELE SUPER 1703-3i wheeled paver fully exploits its outstanding mobility in Alabama.



Buhl | Alabama

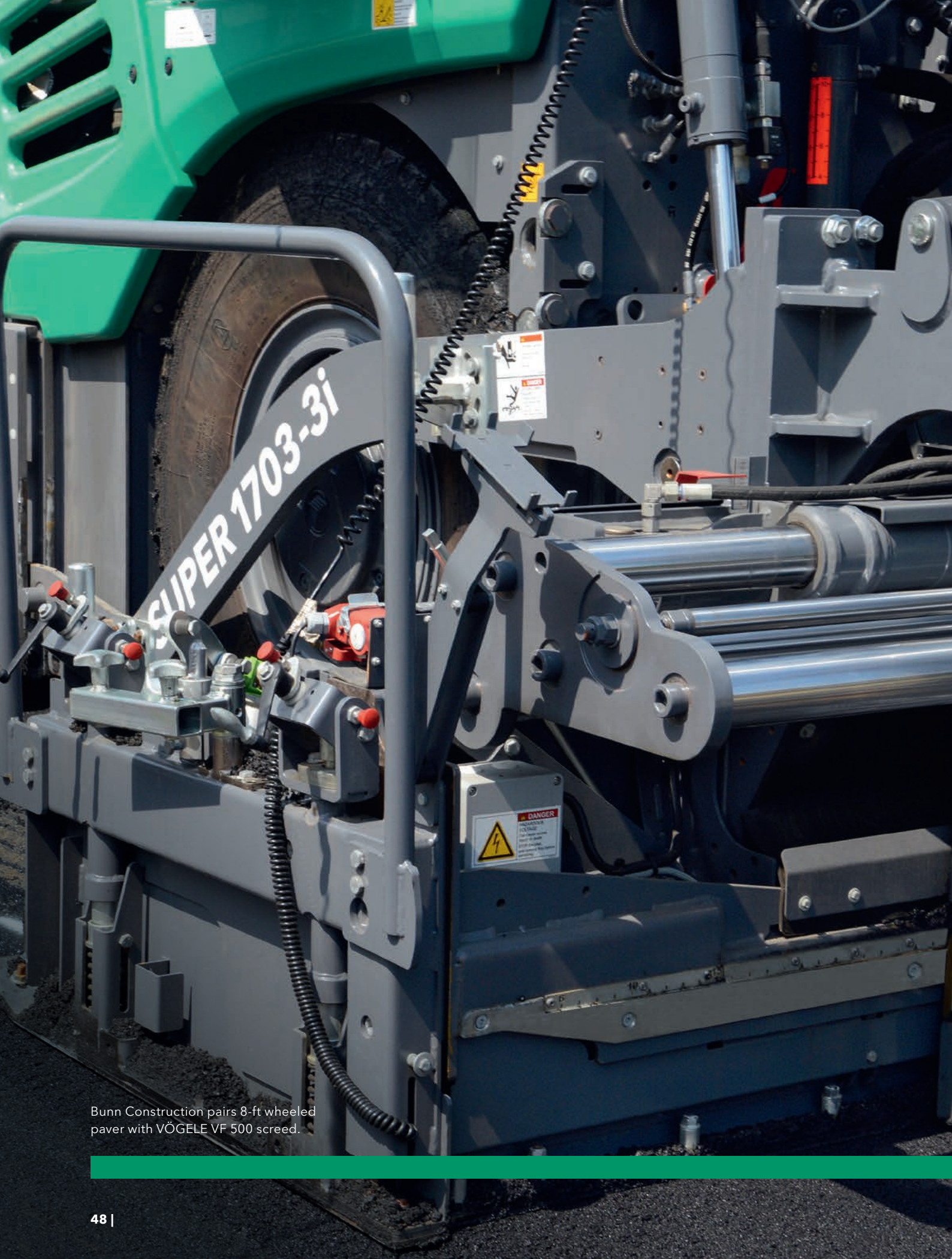


After eight decades, ST Bunn Construction Co., Inc., Tuscaloosa, Alabama, has settled on a platform of wheeled asphalt pavers. In the last two years, Bunn has acquired two 10-ft SUPER 2003-3i pavers with VR 600 rear-mounted screeds, and an 8-ft SUPER 1703-3i paver with VF 500 front-mounted screed, all from VÖGELE. These machines offer undeniable advantages, as exhibited by this job in Alabama and others.



**I have always tried to use the best equipment.  
The WIRTGEN GROUP machines, like our  
VÖGELE pavers, are top notch equipment.**

ST "Sonny" Bunn, Jr., President  
ST Bunn Construction Co., Inc.



Bunn Construction pairs 8-ft wheeled paver with VÖGELE VF 500 screed.



## Optimized design: The new VÖGELE extending screed

Right in time for Conexpo-Con/Agg 2020, VÖGELE has further optimized its VF 500 and VF 600 front-mounted screeds. The goal of the redesign was to improve the user-friendliness and quality of the paving process.

To achieve this, one step VÖGELE took was to modify the single-tube telescoping system for even more precise adjustment of the extending units. One highlight for users: an integrated tool box and shovel holder.



Wide paver operator's platform provides excellent visibility of the pavement below.

### Paving with the SUPER 1703-3i

In Buhl, the SUPER 1703-3i placed asphalt on a base course. The job involved negotiating tight radii on curves and parking lot curbs, but also long pulls in one direction which required the paver to back up for another run in the same direction. Bunn's SUPER 1703-3i paver has an 8-ft VF 500 front-mounted screed from VÖGELE.

### Two undercarriage designs maximize flexibility

"I've owned tracked pavers and wheeled pavers, and in our experience, wheeled pavers are less expensive to operate. There will always be times when we need a tracked paver. Just north of here, we can get into some very steep roads where we need the traction of a tracked paver, and sometimes we work in soil conditions in which we need a tracked paver," says ST "Sonny" Bunn, Jr., president.

### Wheeled undercarriage for easier relocations on site

While both wheeled and tracked pavers put down fine mats, it's the mobility of the wheeled paver that appeals to ST Bunn Construction. The mobility of wheeled pavers was made clear in June 2019, when Bunn paved a parking lot for a new school under construction in Buhl, Alabama, in west Tuscaloosa County. "If we are working multiple jobs in small towns, or even in the city of Tuscaloosa, we can 'road' the wheeled paver from one job to the other faster than we can a tracked paver," says ST "Sonny" Bunn, Jr., president.

# VF 500

## Extending Screed



## For added cost efficiency: Navitronic Plus

When it comes to paving cement-bound base courses, the Navitronic Plus 3D control system increases the productivity of the SUPER 2100-3i and the cost efficiency of the overall project.



Bentonville | Arkansas



# With stringless paving we're able to see an enhanced daily production.

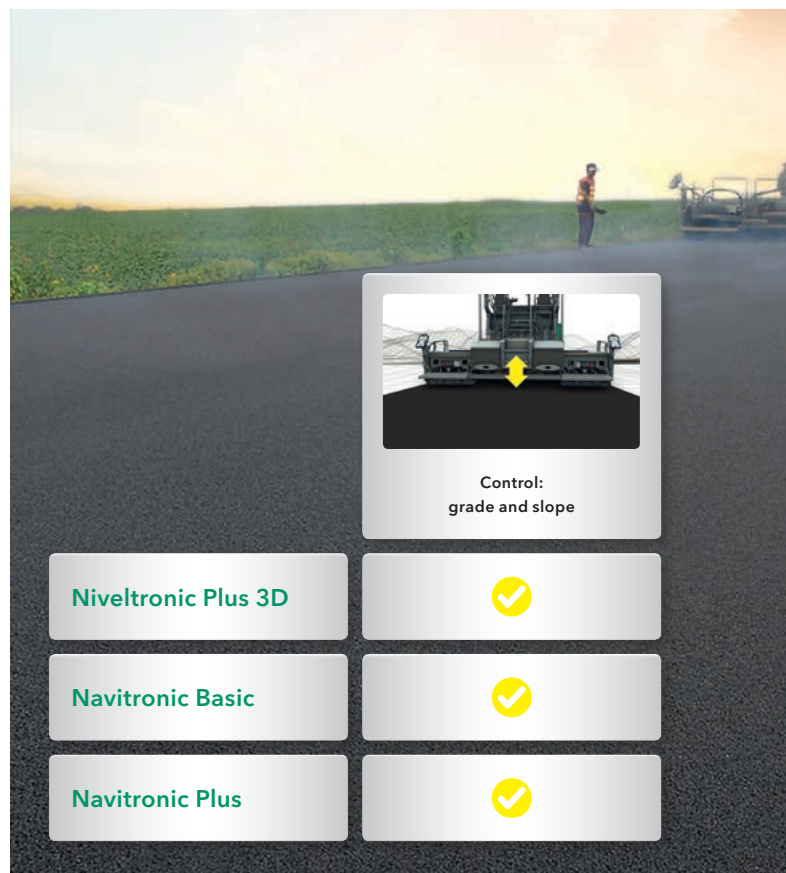
David Tag, Project Manager  
Emery Sapp & Sons, Inc.

**Work to replace alkali-silica reactivity-damaged runways and taxiways at Northwest Arkansas Regional Airport was underway, with Taxiway B being demolished and replaced by a new structure, incorporating first a cement-treated permeable base course (CTPB) on fill and geotextile, then a cement-treated base (CTB), and then topped with a Portland cement surface course.**

## **Paving with the VÖGELE 3D control system**

The cement-treated bases were both placed stringlessly using a VÖGELE SUPER 2100-3i paver with AB 600 TP2 screed, equipped with the Navitronic Plus system. Stringless paving with a 3D system permits automated paving, dispensing with the need to drive stakes, run stringline, tension it, then remove it and the stakes after paving, resulting in an enormous increase in productivity. "With the Navitronic Plus 3D system, we automatically are controlling the grade and slope, screed position and direction of motion," Tag says.

- 1 | Unique capability: Navitronic Plus controls not only the grade and slope, but also the position of the screed and the paver's direction of motion fully automatically.
- 2 | Focus on material feed and paving: The automated movement of the paver frees the operator for other tasks.
- 3 | Perfect control of the paving process: The control panel on the paver operator's platform displays the paver position.



## SUPER 2100-3i

### Replacing Taxiway Bravo with the SUPER 2100-3i and AB 600 TP2 High Compaction Screed

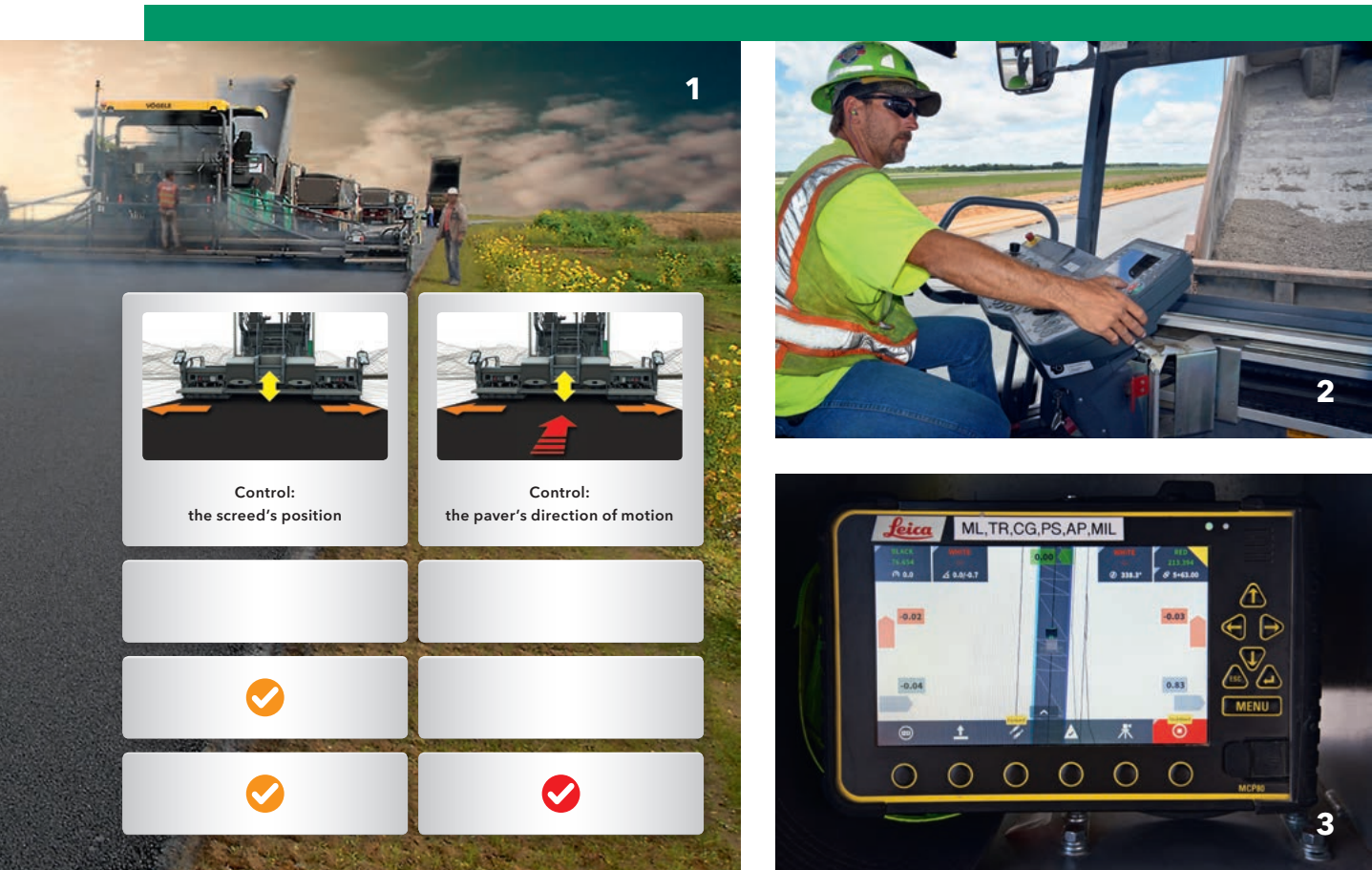
Taxiway B or "Bravo" reconstruction follows the complete rebuilding of the main Runway 16-34 and additional airfield pavement replacements in recent years. It is 5,000 ft long and 75 ft wide, and the contractor will be placing additional taxiway connections.

The 6-in-deep CTPB underlayer was placed by the SUPER 2100-3i in three "pulls" or passes 28 ft wide each, for a total of 84 ft. And the 6-in CTB on top of that was placed in three passes 27 ft wide each, for a total of 81 ft. The 75-ft-wide final pavement will have a 1.5% slope and be placed in four passes 18 ¾ ft wide and 15 in deep, by a slipform paver.

### Navitronic Plus: 3D control with total stations

The Navitronic Plus 3D system controls the paver steering, screed width and the depth on the right-hand and left-hand sides. These functions are built into the ErgoPlus 3 operating system that is organic to the SUPER 2100-3i paver. Not only does this intuitive system provide a user-friendly interface for 3D paver operation, unlike an aftermarket system with exposed cables, it is protected from damage during paving as it is housed within the paver.

"The Navitronic Plus system on the VÖGELE SUPER 2100-3i interfaces with the Leica 3D Positioning System, which does not use GPS," says Tyler Grotewiel, surveying and construction technology manager for Emery Sapp. Five of these total stations - in which the stringless guidance data is loaded - are set up at control points along the project, at 500-ft increments. The SUPER 2100-3i with Navitronic Plus delivered precision results.



#### Technology highlights:

- Unique capability: The Navitronic Plus controls not only grade and slope, but also the position of the screed and the paver's direction of motion fully automatically (available for VÖGELE tracked pavers)
- Open interface for connecting various 3D positioning systems from different manufacturers, such as Leica, Topcon or Trimble
- Existing survey data from earthwork can also be used to control the paver.

#### Navitronic Plus components:

- Navitronic Plus software
- Mast for mounting 3D receivers
- Angle sensor for the mast
- Sensors for picking up displacement of the screed's extending units

#### System requirements of the SUPER paver:

- VÖGELE Niveltronic Plus System for Automated Grade and Slope Control

#### Other required components:

- Laser total station or GPS system with zone laser

NAVITRONIC PLUS

Improving in-place recycling with HAMM compactors:

# VIO compactors add value



Grayling | Michigan



Two in one: The HAMM VIO system combines oscillation and conventional vibration in a single drum. Soil compactors equipped with these drums add value to in-place recycling projects by slashing the time it takes to compact the aggregate to the required density. In central Michigan, a HAMM H 13i VIO soil compactor working in oscillation mode was paired with a WIRTGEN WR 240i cold recycler to rebuild seven miles of the State Road M-72, crossing the lower Michigan peninsula.

Customers worldwide seeking a soil compactor with both oscillation and vibration find that only HAMM has the answer: the company's VIO drum.

## Crush-and-shape of Michigan 72

In the middle of State Road 72, near Grayling, the project included two miles of urban four-lane pavement and shoulders with concrete curbs in the city as well as five miles of rural pavement with 6 ft shoulders on both sides. The road needed rehabilitation, because the condition was pretty rough, with alligator cracking along the road.

"We're doing a crush-and-shape of Michigan 72," said Jeff Mertz, project foreman for D.J. McQuestion & Sons, Inc. of LeRoy, Michigan, as the Michigan Department of Transportation decided to rehabilitate the existing driving surface in-place. After this, the urban section with curbs got a top layer of 7 in of hot mix asphalt. The rural two-lane section with shoulders was covered with a 4 in-thick layer of asphalt.

## Recycling in situ in one pass

For the recycling process, the asphalt was pulverized 8 to 10 in deep in one pass with a WIRTGEN WR 240i down into the existing gravel base. While the asphalt was pulverized, it was mixed with up to 6% water. This water was introduced into the milling and mixing chamber via injection bars. In the end, the grain size of the resultant material ranged from 1 in down to fines.

An essential prerequisite to successful cold recycling is adequate compaction after mixing the aggregates. McQuestion on Michigan 72 routinely obtained 98% density using the H 13i VIO with vibration and oscillation as compacting technologies.

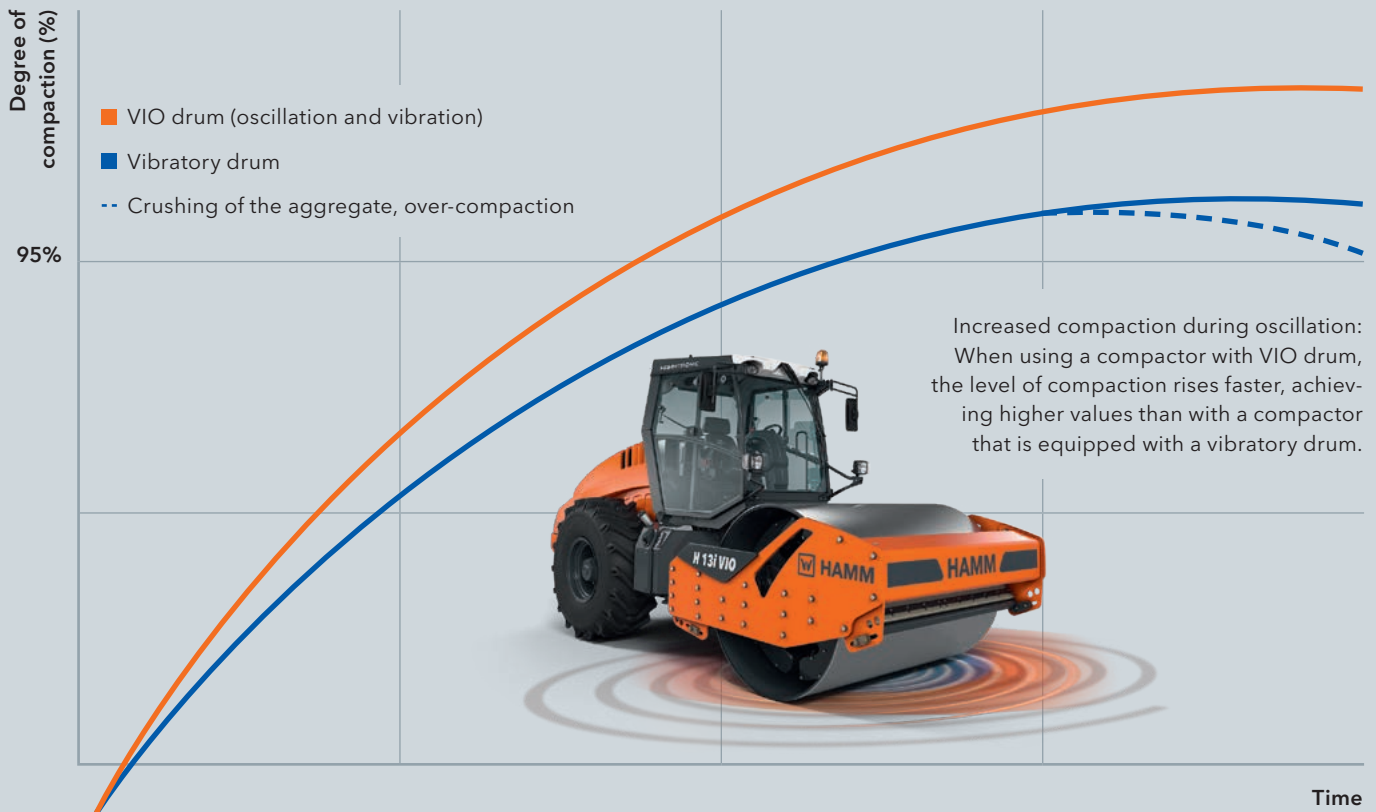
At first they compacted the surface in vibration mode for two passes. "Then we put the drum in oscillation mode and compacted for two to three passes. Doing this, we increase the density with every pass," Mertz says. "The oscillation really pulls the reclaimed material together in a way we don't get with conventional vibratory compaction." Using this method, in excess of 100,000 yd<sup>2</sup> were pulverized and compacted.

## Why HAMM oscillation compacts so fast

HAMM oscillation compaction differs from standard vibration compaction. Whereas a vibratory drum bounces up and down on the material being compacted, the oscillatory drum creates a rapidly alternating forward-backward rotary movement without the drum ever leaving the surface. It acts dynamically on the substrate all the time. In addition, the drum is continually in contact with the ground. So there is always a constant static load due to the weight of the machine. This leads to a rapid increase in compaction and therefore to an optimized process with fewer passes.

The H 13i VIO compactor comes with a weight of approximately 28,000 lbs (ROPS) and a drum width of 84.3 in.





In the four-lane urban section, the 8-ft WR 240i recycler was processing two 12-ft lanes in three passes.

### HAMM's VIO drum brings oscillation to earthworks

For asphalt works, standard tandem rollers with oscillation come with one vibration and one oscillation drum. Since soil compactors have only one drum, HAMM developed a solution that combines both systems: the VIO drum. There is no other manufacturer worldwide offering a similar system.

HAMM VIO soil compactors are capable of working either in oscillation or in vibration mode. That is ideal for earthworks, as the VIO drum is able to compact in depth with vibration and in the upper layer with oscillation. Roller operators can switch between vibration and oscillation even while the roller is in motion by pressing just one button on the operator's platform.

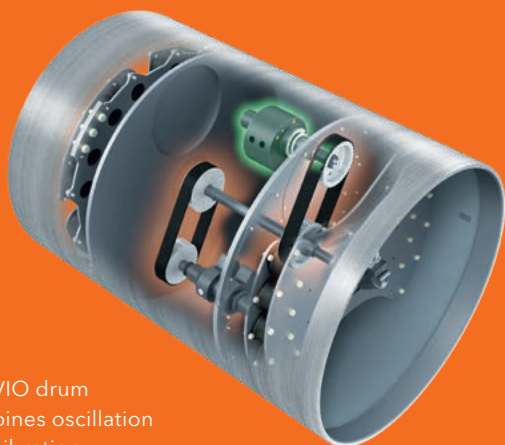
### HAMM's VIO compaction improves the quality

HAMM's VIO technology also improves the quality, for example the evenness. Areas that have been compacted by means of oscillation exhibit excellent longitudinal flatness. This is due to the fact that the drum is in continual contact with the ground and because there is no impact that could produce uneven areas on the ground.

All in all, this combination works and is also extremely economical. "We get density significantly faster with the VIO roller, which boosts our productivity," McQuestion's Mertz says.

### VIO - The HAMM solution for intelligent soil compaction

The patented VIO drum from HAMM combines both technologies: Depending on the position of the imbalances in relation to each other (in phase or shifted by 180°), the drum works in vibration or oscillation mode. The result on Michigan 72 is impressive: The VIO compactor leaves a well compacted, even surface. This is a good base on which to pave the asphalt surface course.



The VIO drum combines oscillation and vibration.



Mike Walsh, veteran roller operator at McQuestion, left, and foreman Jeff Mertz on the Michigan 72 job site.



**We get density significantly faster  
with the VIO roller, which boosts  
our productivity.**

**Jeff Mertz, Project Foreman**  
D.J. McQuestion & Sons, Inc.



MC120Zi PRO

MOBICAT PRO line jaw crusher:

# Hard rock – High performance

Quarry applications demand top performance from crushing plants. Many operate nonstop on multiple shifts, processing hard, abrasive rock. KLEEMANN engineered the MOBICAT MC 120 Zi PRO specifically to handle this kind of heavy-duty quarry work. On Norway's Sognefjord peninsula, the PRO line jaw crusher demonstrates just what it is capable of.



Norway | **Sognefjord**



Meets high demands: The MC 120 Zi PRO from KLEEMANN is designed for the first crushing stage and can – like here in Norway – also serve as a stand-alone solution.

## Powerful granite crushing

A single crusher surrounded by a huge quarry: A KLEEMANN MC 120 Zi PRO jaw crusher delivers a strong performance in Norway. Its capabilities are based on a number of powerful components, starting with prescreening of the feed material. This PRO line plant boasts the largest, independent prescreen in its class, which makes for an efficient crushing process, because it separates aggregate fractions already in the final grain size and feeds them past the crusher unit.

## Efficient process

As a result, the efficiency of the already very powerfully designed crusher unit is very high. And it has to be, because feed rates of up to 650 t/h, which are possible with the MC 120 Zi PRO, require an extremely high material throughput. The mobile crushing plant is putting its high performance capacity to the test at the Veidekke Hyllestad quarry in Norway. Right nextdoor, the Stangeland company produces asphalt mix from the crushed granite.

The MOBICAT MC 120 Zi PRO is operated as a stand-alone plant, i.e. it is not combined with additional crushing and screening plants, because Stangeland uses an existing, stationary plant for the second crushing stage.

## Effective prescreening

At the Stangeland quarry, prescreening was crucial to achieving the required performance because the feed material contained a high proportion of fines. Fine, dusty material has a very negative impact on productivity if it gets into the crusher unit, but this is effectively prevented by the independent, vibrating, double-deck prescreen.

Completely removing the fines in this way results in a high feed capacity and extends the service life of the two crusher jaws. Supplied as standard, the Continuous Feed System (CFS) makes sure the crusher unit operates at optimum capacity at all times and boosts the already high efficiency of the diesel-electric drive system.

Extra-tough technology:  
The MOBICAT PRO plants can even work through a Norwegian winter when armed with the optional cold package, which enables a plant to operate at temperatures down to -13 °F. A heat package (for temperatures up to 122 °F) supports reliable operation in hot climates.





#### Working parameters

Crushing capacity	330 US t/h
Closed side setting (CSS)	4 in

#### Equipment

KLEEMANN MOBICAT MC 120 Zi PRO  
jaw crusher



### **Reversible crusher drive is an unblocking system**

If the crusher unit ever gets clogged with material, the reversible crusher drive (optional) can be a valuable asset. With this system, the crusher can additionally be run in the opposite direction, which helps in most cases to get the crusher working again not only automatically, but also conveniently, because it can be activated by remote control right from the cabin of the excavator.



**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



#### Technical data: MOBICAT MC 120 Zi PRO

- > Feed capacity: up to approx. 717 US t/h
- > Crusher inlet: 48 in x 32 in
- Transport weight**
- > With standard features: 159,850 lbs
- > In maximum configuration: 187,500 lbs
- > Engine output: 489 hp

#### Big power, small dimensions

In Norway, the MC 120 Zi PRO replaced an existing, outdated plant. Because the dimensions of the crusher units were identical, the operator did not expect any significant increase in productivity. But after the new machine went into operation, the company soon realized that the KLEEMANN PRO line plant was reaching an entirely new performance level:

"Even with the biggest boulders, the crusher unit on the MC 120 Zi PRO hardly slows down or loses any power at all. The material just flows right through. Our old plant would have long since ground to a halt. The MOBICAT PRO won me over very quickly for that reason," says Arve Kenneth, Stangeland machine operator.

Dazzling nightlife on one of the  
world's most famous boulevards:  
the Las Vegas Strip.

