RoadNews for new roads

The WIRTGEN GROUP User Magazine for North America // № 03

WIRTGEN VÖGELE HAMM KLEEMANN

HAMM Oscillation:

An idea ahead for new roads

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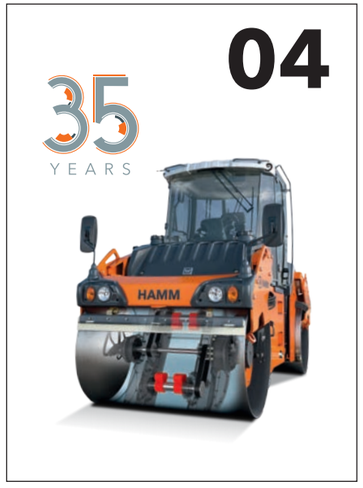

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Editorial

Dear Reader,

When developing new products, one of the goals is always to implement new technologies. To make sure our machines and plants continue to support intuitive operation, we at the WIRTGEN GROUP focus on one additional aspect: people. Because in the end, it's the users who have to work with our products to achieve flawless results. One highly successful example of this principle is ErgoPlus 3, the operating system for VÖGELE pavers.

Technologies naturally have to be easy to operate, but they also must deliver excellent results. One example is soil stabilization with the WR series machines from WIRTGEN, which eliminates the need to remove any soil. Similarly, HAMM's oscillation technology, which has been a success for over 35 years and accelerates compaction, has more than proved its effectiveness. Today, one in four rollers supplied features oscillation capability.

When you operate construction machinery, there is one parameter that really explodes costs, and it's fuel consumption. Just how much fuel you can save with our efficient drive concepts astonished a contractor in South Carolina, who recently invested in a machine set from KLEEMANN: "These machines literally sip fuel compared to the competitors."

We hope you enjoy reading this third issue of the WIRTGEN GROUP RoadNews for North America!

Jim McEvoy
President & CEO
WIRTGEN AMERICA, Inc.

HAMM Oscillation:

Successful in asphalt construction and earthworks for the last 35 years

Over 35 years ago, HAMM was the first roller manufacturer to introduce a drum with oscillation technology. Today this technology is an integral part of the HAMM product portfolio: One in four new HAMM tandem rollers is equipped with an oscillation drum. One reason behind HAMM's success is its broad range of products, including oscillation rollers in all weight classes and for all markets. With oscillation rollers from HAMM, you can complete high-quality compaction jobs quickly and cost-efficiently, and the range of applications is enormous. »»

35 YEARS

Oscillation from HAMM – The video

Watch it now – at

www.hamm.eu/oszillation

Oscillation from HAMM

Did you know that…

… HAMM is the pioneer of oscillation?

… HAMM has manufactured over 7,000 rollers with oscillation?

… today one in four HAMM rollers is ordered with oscillation?

Find out more about HAMM oscillation in the video – at

www.hamm.eu/oszillation

Oscillation from HAMM - The original

Product portfolio with over 35 oscillation rollers: Apart from tandem rollers from 7–14 t, HAMM is the only supplier worldwide to also manufacture oscillation rollers in the compact class (2.5–4.5 t) and soil compactors with a VIO drum that additionally supports oscillation compaction.

35 YEARS

Fast, cost-efficient, high-quality

Tandem rollers from HAMM with one oscillation and one vibrating roller drum achieve at least the same degree of density as a double vibrating roller drum, but with fewer passes. At the same time, they emit significantly less vibration to the surrounding area. Another plus: Oscillation rollers can begin dynamic compaction right behind the paver. Additionally, they can handle the main compaction work. Even when asphalt temperatures are low at the end of the process, oscillation makes it possible to increase the degree of compaction without grain destruction. Overall, the time available for compaction is considerably longer with oscillation than with vibratory rollers.

Use in earthworks and asphalt construction

Oscillation rollers can be used for all layers encountered in earthworks and road construction. In earthworks applications, they are in demand wherever the upper layers need to be prevented from re-loosening, for instance on landscaping jobs. Another important application is compacting surfaces in vibration-sensitive areas, such as above pipelines or in the vicinity of railway tracks. In asphalt construction, oscillation rollers reliably compact all base, binder and surface courses. They are particularly effective in compacting generally hard-to-compact asphalts, such as SMA or polymer-modified material mixes. This is because, in contrast to vibration compaction, the effective direction of the vibrations during oscillation promotes the desired redistribution of long-chain binding agents.

Demanding job sites

Other applications include work on thin layers (surface courses, thin overlay) in vibration-sensitive areas (bridges, confined urban spaces, buildings or parking decks) and anywhere where mix cools quickly (thin overlay, windy or cold environments). The compaction of joints is another important application: Here, oscillation rollers compact hot asphalt without damaging the adjacent cold asphalt. »»

Rollers with an oscillation and vibrating roller drum compact faster and achieve higher degrees of density than double vibrating drum rollers.

HAMM – A pioneer of Oscillation

- HAMM was the first to introduce oscillation rollers to the market and has since continuously advanced the technology.
- Today, HAMM has over 30 models equipped with oscillation technology in its range.
- HAMM is the only manufacturer worldwide to engineer rollers in the compact class and soil compactors with oscillation technology.
- HAMM offers oscillation rollers meeting different exhaust emissions standards (Tier 3 and Tier 4).

Advantages of Oscillation

Oscillation has a positive impact on the efficiency and quality of compaction.

Advantage 1: High compaction performance – High efficiency

Oscillation rollers compact very rapidly. Their compaction performance is extremely high, thanks to the combination of dynamic shear forces and continuous static load resulting from the net weight of the machine. Significantly fewer passes are required as a result, particularly when compacting large surface areas. Therefore, using oscillation is very cost-efficient on many major projects, because thanks to the rapid increase in the degree of compaction, fewer rollers are required for an optimized process.

Advantage 2: Easy operation

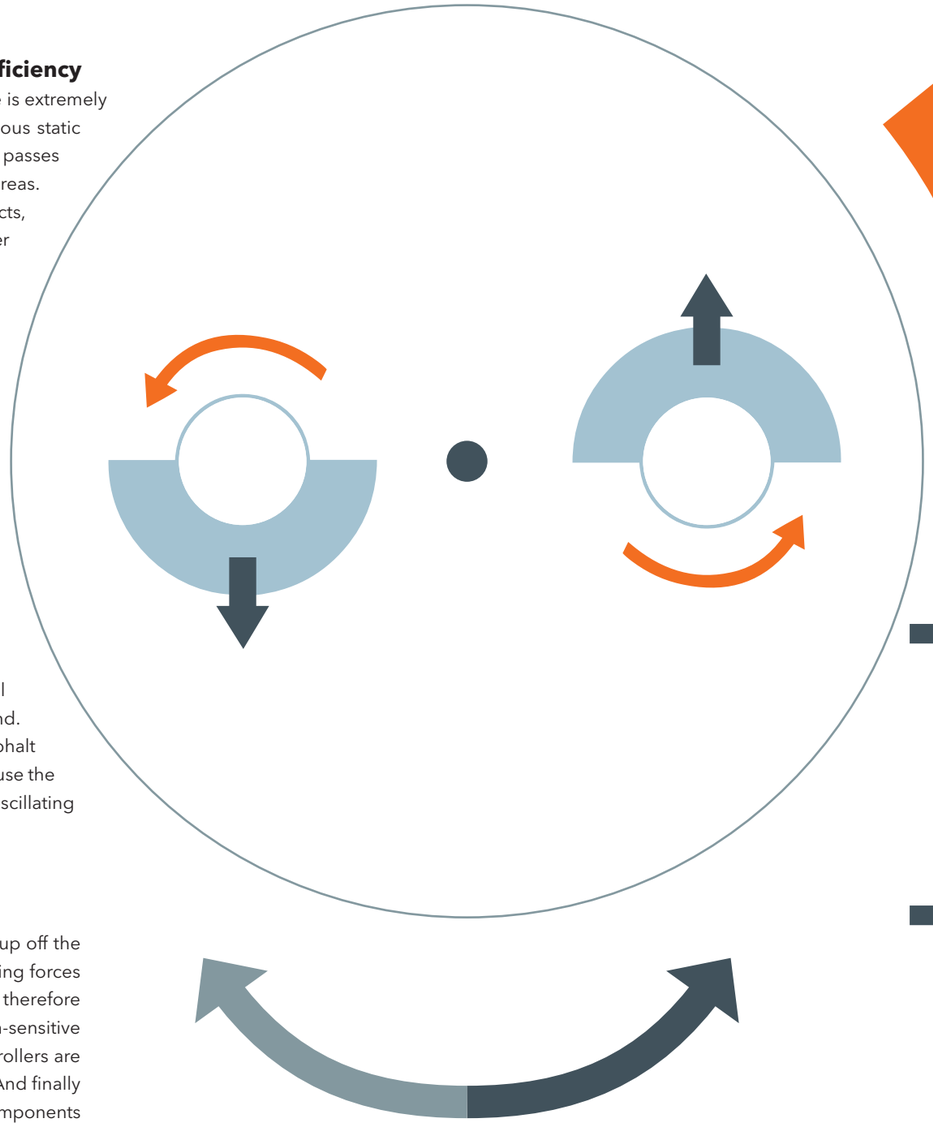
To generate vibration, HAMM harnesses the laws of physics in such a way that oscillation rollers are extremely easy to operate. Just switch on the machine and it automatically sets the right amplitude based on the rigidity of the material to be compacted. And it adjusts so quickly that compaction is at the optimal setting at all times, even when the type of ground varies. HAMM also prevents operating errors caused by choosing the wrong settings.

Advantage 3: Level, non-skid surfaces

Oscillation rollers produce surfaces with outstanding longitudinal evenness, because the drum is in continuous contact with the ground. Furthermore, no undulations result, even at high operating speeds. Asphalt compaction with oscillation also produces an excellent initial grip, because the drum abrades the asphalt mix on the surface of the pavement with its oscillating motion.

Advantage 4: Low vibration load

In comparison with vibration technology, oscillation drums do not rise up off the ground during compaction and therefore only about 15% of the vibrating forces are conducted into the ground around the roller. Oscillation rollers can therefore easily be used for dynamic compaction in the direct vicinity of vibration-sensitive buildings or systems. Because they generate less vibration, oscillation rollers are also considerably quieter and contribute to environmental protection. And finally but importantly, low-vibration compaction is easier on all the machine components and relieves some of the stress on the roller operator.



The principle of Oscillation

With vibration technology, a single eccentric shaft is responsible for the up and down motion of the drum. It hits the ground at high frequency. In contrast, two eccentric shafts rotate synchronously in the oscillation rollers, driven by a toothed belt. The eccentric shafts are mounted at an offset of 180°, which causes the drum to execute a rapidly alternating forward-backward rotation.

This motion conducts the compaction power, in the form of tangential shear forces into the ground towards the front and back. Unlike with vibrating roller drums, the compaction power acts continuously on the ground, because the drum is in continuous contact with it. Oscillation rollers thus compact dynamically but also statically at all times on account of their machine weight.

Advantage 5: Compaction does not damage the paving material

In vibration compaction, above a certain density level, you risk destroying the material structure or destroying the grain. This is not the case with oscillation, which ensures non-destructive redistribution of the aggregate particles. In other words, oscillation avoids grain destruction or over-compaction. Furthermore, oscillation compaction produces dense, durable longitudinal joints without damaging the cold asphalt.

Advantage 6: Wider temperature window

With oscillation, you widen the temperature window in which compaction is possible, because non-destructive compaction is possible for oscillation rollers even at relatively low pavement or ambient temperatures. Oscillation, therefore, is particularly suitable for compacting thin overlay or on rapidly cooling surfaces, like bridge decks. Furthermore, this characteristic enhances the flexibility of the construction process. »»

Clients worldwide are choosing oscillation

Governmental agencies and road building contractors know that dynamic compaction with oscillation improves quality in road construction, because oscillation has proven its worth on major construction jobs. The rapid increase in the degree of compaction optimizes the process and fewer passes are required. Using rollers with oscillation technology for compaction is an increasingly common requirement when rapid completion, quality and durability are of the essence. ///

Road construction site in Ithaca, New York: Oscillation is as much in demand in the USA as it is in Europe and Asia.

Earthworks between railway tracks and historic buildings in Oberwesel, Germany: Only one oscillation roller could deliver the required compaction here without damaging the half-timbered houses or the sensitive railway tracks.

Construction of the Hong Kong-Zuhai-Macao bridge in southern China: Oscillation rollers dynamically compacted the thin asphalt overlay on the 35-km-long bridge. The resultant surface was of outstanding quality, thanks to HAMM technology.

Construction of a motoway section on the A 61, Germany: Oscillation rollers from HAMM achieved a high compacting performance and premium quality results.

Compacting the roadbase around existing installations in a new housing development in Münchberg, Germany: The compact HAMM H 7i VIO compactor is in its element on jobs like this. Thanks to the VIO drum, this compactor can operate with either oscillation or vibration.

Constructing the Formula 1 track in Baku, Azerbaijan: When building this city circuit, a premium-quality asphalt surface had to be produced despite confined conditions as well as underground parking decks and pipelines. Oscillation rollers therefore were mandatory on this job.

Rehabilitation work along a railway line in Vienna, Austria: While replacing supply lines, the pavement of a main roadway had to be broken up, fresh asphalt was paved and compacted. Compact oscillation rollers from HAMM were used for this job.

Challenging milling depths

A fleet of six W 210i cold milling machines from WIRTGEN removed tens of thousands of tons of aged asphalt in less than 60 hours from a runway at Oakland International Airport in California – although the milling depths varied constantly.

California // Oakland

Milling subcontractor Pavement Recycling Systems, Inc. cut a veritable mountain of reclaimed asphalt pavement (RAP) from Runway 12-30 along the shore of San Francisco Bay. In total, 47,000 tons of asphalt were milled within a 60-hour time frame, nonstop day and night, plus a single-shift second phase a week later. “We started milling at 6 a.m. Monday and we worked 12-hour shifts nonstop until about 3:30 p.m. Wednesday,” said Kurt Eddy, Operations Manager for Milling and Restructuring, for Pavement Recycling Systems, Inc. Immediately after, the prime contractor DeSilva Gates Construction began paving. »»

The enormity of this project required us to use a machine we trust, and the durability and dependability of the W 210i cold milling machines have been great for us.

Kurt Eddy, Operations Manager for Milling and Restructuring Pavement Recycling Systems, Inc.

Tight window of construction

The short time slot was driven by substantial liquidated damages of over $700,000 per day, payable if the general contractor failed to open the runway on time. “DeSilva Gates made the deadline and they killed it,” Eddy said. “Everything we needed to support our operation was provided by them, and then some.” All raw, 3.5-in.-minus RAP was kept on the airport property and used to correct elevations of taxiways, building up a levee along the bay shoreline, as well as for other construction purposes. The cold milling machines, equipped with the optional wider milling drum, cut at a width of 7 ft., 3 in., according to Terry Graves, Superintendent for PRS. The challenge was not the width of the passes, but the varying milling depths.

One of the largest milling fleets in the United States

“We all had extremely tight time constraints,” Eddy said. “We chose the W 210i due to our experience with this model. It has been a durable and dependable machine for us. The enormity of this project required us to use a machine we trust, and the W 210i cold milling machines have been great for us.” »

WIRTGEN’s powerful large milling machine range for the US market

Milling width	W 150 CFi	W 200i	W 200 Hi	W 210i	W 220i	W 250i
2 ft.	●	●		●		
3 ft.	●	●		●		
4 ft.	●	●		●		
4 ft. 11in.	●	●		●		
5 ft. 11 in.	●					
6 ft. 7 in.		●	●	●		
6 ft. 11 in.					●	●
7 ft. 3 in.		●		●	●	●
8 ft. 2 in.		●		●		●
10 ft. 2 in.						●
11 ft. 6 in.						●
12 ft. 6 in.						●
14 ft. 5 in.						

● = standard milling width ● = optional milling width

The operators love the W 210i.

Kurt Eddy, Operations Manager for Milling and Restructuring
Pavement Recycling Systems, Inc.

Milling depths were changing constantly between zero in some areas, to 11 in. in other areas. No problem for the large milling machines – thanks to WIRTGEN's LEVEL PRO leveling system.

Highlights of the W 210i: Versatile front loader for professional operations

- The two-meter cold milling machine is suitable for demanding milling jobs thanks to its high efficiency and versatility
- The tried and tested professional machine offers a wide range of applications including surface course rehabilitation, complete pavement removal and fine milling jobs
- The ergonomically designed, walk-through operator's platform and the intuitive operating concept support high daily production rates
- With the innovative FCS Light, various milling drums and milling units with working widths of 4 ft. 11 in., 6 ft. 7 in. and 7 ft. 3 in. can be implemented to achieve higher levels of flexibility and machine performance
- Three adjustable milling drum rotation speeds allow for high milling outputs under changing demands

A step ahead: Leveling with WIRTGEN's large cold milling machines

With the W 210i, three selectable engine speeds enable complete pavement removal at a full depth of 13 in. However, at OAK, the milling depths varied constantly. "Cutting to the digital models, and staying within the confines of all the different models, was one of the biggest challenges of this job," Eddy said. To achieve optimum milling results, WIRTGEN cold milling machines offer state-of-the-art features. These include one of WIRTGEN's core technologies – leveling. When the surface course is removed, the LEVEL PRO leveling system continually compares the actual milling depth with the preset target milling depth. LEVEL PRO can work with different 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 leveling is also possible with installed interfaces that are compatible with 3D systems from common manufacturers.

The digital terrain model presents challenges

So the total station system interfaced seamlessly with WIRTGEN's LEVEL PRO system, which converted the signal to WIRTGEN's 'language' and "made the appropriate grade changes based on the currently required elevation," Eddy said. Accuracy of milling was within hundredths of a foot. "The speed and the depth varied so much, as we went from cutting zero in some areas, to 11 in. in other areas, depending on what the digital models required," added Graves. In fact, there were five different models for the W 210i cold milling machines to work with. "There were benches of pavement remaining everywhere, at all different sizes, shapes and depths," explained Eddy. "Areas of distressed pavement were identified prior to the milling operation, and they were built into the digital models," Graves continued. "There was a minimum requirement of asphalt to be removed for each. The asphalt was to be milled out at 3 in. increments, so if we had to cut 8 in. we had to go 9 in. deep." »»

By removing the asphalt fast and efficiently, the W 210i produced an even base which is true to line and level.

Leveling technology – Always on the level

Overall, the LEVEL PRO system comprises the clearly structured LEVEL PRO panel, a controller and multiple sensors. The LEVEL PRO panel provides a clear readout of key parameters. An additional milling depth indicator on the screen – showing the difference between scraper blade and side plate positions – enables convenient monitoring of the actual milling depth. In addition, the memory feature is extremely useful to pre-program, store and retrieve set values. When the automatic leveling system is activated, the machine is lowered automatically at maximum speed together with the rotating milling drum. Once the side plates reach the ground, the lifting columns continue lowering in slow mode; the lowering rate is adjusted further in the milled cut, if required.

Varying challenges

The changes in models were marked using limit lines on the runway surface. “Whenever we came up to another line painted on the pavement, it would have a model number which we’d have to change in the settings,” Eddy said. Essentially, PRS would mill at one depth to a limit line; stop and change the parameters that they were working with to get to the new depth prescribed; then proceed to the next line, where the setting would have to be changed once again. “We would work in a lineal fashion, and from left to right, within the confines of the models in order to cut the proper areas the way they wanted,” Eddy said. “Stringlines were painted all over the runway to identify the different tasks. We could not just start at one side of the runway and go across laterally. Instead, areas were specified for the models. If you overlapped one, you would run into the next. The problem with overlapping was that if you wandered off the area, you would be off-model and essentially off-grade. Therefore, it was imperative that we milled within the confines of each painted outline.”

Excellent performance

“Due to the variable cutting depths that were required, we weren’t able to just go in and operate at 100% load all the time,” Eddy said. “Otherwise our timeline would have been a lot shorter for pulling the tonnage out that we did.” WIRTGEN’s advanced Parallel-to-Surface technology (PTS) – which automatically keeps the cutter housing level as the W 210i moves into a cut – accelerated production. “We set-in hundreds of times out on the airfield and used it on every machine, over and over, to cater to the multiple depths the job involved,” Eddy said. “The operators love the W 210i. From their standpoint, it’s the preferred machine in the company to run. It was the right fleet of machines for this project and they performed excellently.”

Confidence in WIRTGEN cold milling machines

PRS has great confidence in its WIRTGEN cold milling machines. “Our experience has been that they are top-notch machines,” Eddy said. “They are extremely dependable and productive. They are the most technologically advanced machines out there, and were capable of working with the automatic machine guidance systems that we are required to use. The majority of our fleet is WIRTGEN, including our cold milling machines as well as our recyclers/reclaimers. The fact that we had zero breakdowns, and the machines performed the way we expected them to, took downtime out of the equation.” ///

High load-bearing capacity for the entrance ramp to Interstate 69: The WIRTGEN WR 250 delivered a top performance stabilizing soil in Indiana.

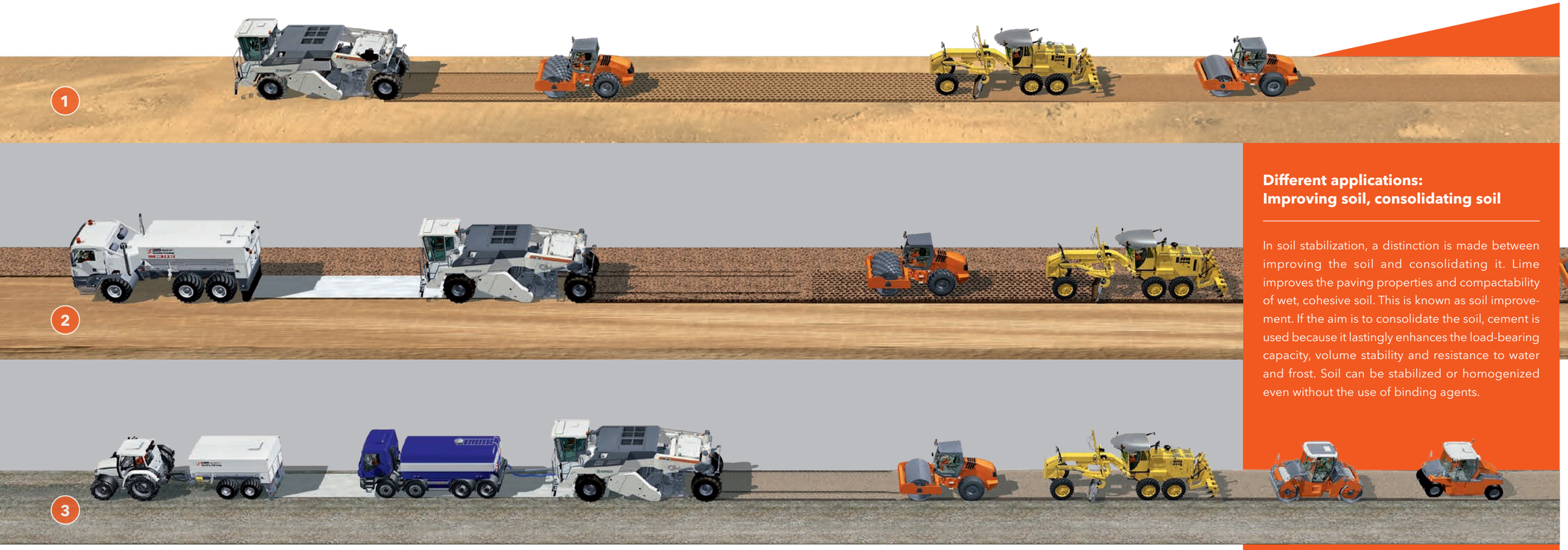
Soil stabilization has the edge over soil exchange

Soil stabilization is proving to be the optimum solution whenever the properties of soil have to be altered to make it suitable for further processing. That was the case in Bloomington/Indiana, USA, for instance, where a WIRTGEN WR 250 soil stabilizer laid a load-bearing base for the construction of a new approach road to Interstate 69.

Soil stabilization is the method of choice when it comes to ensuring the load-bearing capacity and quality of soil in preparation for road construction projects. The targeted addition of binding agents can, for instance, help to reduce the moisture content of soil, which is vital for further processing. Compared to the process of exchanging the entire soil, soil stabilization is an economical and resourceful method. Cost savings result from the simpler job-site logistics, for instance, with fewer hauling trips and shorter construction periods. Resources are also conserved, because all of the existing soil is used in the stabilization process with only binding agents such as lime or cement being added – or a combination of both in the form of a mixed binding agent. »»

WIRTGEN technology for soil stabilization: Flexibility is key

Many invitations to tender continue to specify that the soil is to be removed and replaced – but this is no longer a state-of-the-art method. The WIRTGEN soil stabilizer uses its powerful milling and mixing rotor to mix pre-spread binding agents such as lime or cement into existing soil with insufficient bearing capacity, transforming it into a high-grade building material right on the spot. The homogeneous mixture of soil and binding agent that is produced offers a high load-bearing capacity as well as lasting resistance to water and frost, and volume stability. Typical applications include the construction of paths, roads, high-volume highways, routes, parks and sports grounds, industrial estates, industrial plants, airfields, dams, backfilling and landfills.



Different applications: Improving soil, consolidating soil

In soil stabilization, a distinction is made between improving the soil and consolidating it. Lime improves the paving properties and compactability of wet, cohesive soil. This is known as soil improvement. If the aim is to consolidate the soil, cement is used because it lastingly enhances the load-bearing capacity, volume stability and resistance to water and frost. Soil can be stabilized or homogenized even without the use of binding agents.

Perfect stabilization: The powerful milling and mixing rotor of the WR 250 processes the pre-spread binding agent, creating a homogeneous mixture of soil and binding agent.

1 Homogenization

In the homogenization process, the powerful milling and mixing rotor of the WIRTGEN soil stabilizer granulates the native soil without the addition of binding agents and loosens it. While a grader profiles the homogeneous soil mixture that is produced, soil rollers take care of the compaction process.

2 Soil improvement with lime

A machine train is generally required if the properties of the soil are to be lastingly improved. This begins with a binding agent spreader that deposits the binding agent, followed by a WIRTGEN soil stabilizer. The WR 250 uses its milling and mixing rotor to mix the soil homogeneously with the pre-spread lime. A pressurized scraper on the rear rotor plate ensures that the processed material is smoothed evenly. While a grader profiles the processed soil mixture, earthwork rollers ensure optimum compaction.

3 Soil consolidation with cement

Stabilization with cement creates water-bound base courses. The binding agent is placed by a spreader, which is followed by a water tanker. Behind it, the milling and mixing rotor of the WIRTGEN soil stabilizer mixes the soil with the pre-spread cement to form a homogeneous mass. At the same time, water is sprayed into the mixing chamber by means of an injection bar. Here, too, graders profile the treated material and rollers complete the job by ensuring optimum compaction. »»

Case example: Soil stabilization in Bloomington/Indiana, USA

In the soil stabilization project on Interstate 69 south of Indianapolis, the newly embanked soil first had to be stabilized in order to create the necessary load-bearing capacity for the asphalt paving of the new approach road. The contractor, Specialties Company, LLC, used lime as the binding agent and took advantage of WIRTGEN's applications expertise. Lime immediately reduces the water content in the soil-binding agent mixture. This ultimately improves compactability and increases the load-bearing capacity of the treated soil. "To achieve the optimum outcome, we always liaise closely with the applications professionals from WIRTGEN. They are always on hand to offer their consulting expertise," explains Jamie Cardiff, Equipment Manager at Specialties Company.

WIRTGEN WR 250 soil stabilizer required

When it came to choosing the machine, too, the team from Specialties Company put their trust in the innovative technologies from WIRTGEN, opting for the WR 250 wheeled soil stabilizer. The 766-hp (571-kW) powerhouse, which is also used to pulverize asphalt in cold recycling processes, is the most powerful machine in the WR generation and specially configured for the stabilization of heavy and boggy terrain. With this machine, daily performances of up to 160,000 sq. ft. are far from uncommon in soil stabilization applications. After the lime had been pre-spread, the high engine power and optimum traction of the WR 250 enabled it to effortlessly work through the heavy and sometimes deep soil. The height adjustment of the 4-fold full floating axle ensured the necessary ground clearance here. The WR mixed the soil and binding agent homogeneously across the entire working width of 7 ft., 10 in. to a depth of exactly 12 in.

Strong performance, easy operation

"Operating the machine is child's play. The multifunctional joystick on the right armrest, for instance, gives me easy control of all the main basic functions," says Richard Clark, describing the high operating comfort. One of the challenges was the uneven condition of the earth, which varied from very firm to loose. "The milling speeds can be controlled from the operator's cabin, so our machine operators were able to respond directly to the frequent changes in soil conditions. This ensured a high mixing quality at all times," Cardiff adds. It took just five days to complete the stabilization work and lay the load-bearing base for the new entrance ramp to Interstate 69. Trucks carrying material for paving the surface began to roll onto the job site only a short while later. ///

> **"The WR 250 is a real power pack and works extremely efficiently."**
>
> **Jamie Cardiff, Equipment Manager**
> **Specialties Company, LLC**

VÖGELE SUPER pavers in the 8-foot and 10-foot class for the North American market achieve a paving speed of up to 250 fpm. Such high speed demands absolute precision from paver and screed operators at all times. For this reason ErgoPlus 3 is a tremendous help to them.

ErgoPlus 3

The operating system that sets the standard

The more technologies integrated in a machine, the more important the user interface. Only when users can quickly identify and ergonomically operate all functions do they feel they have everything under control – and contractors can be certain that every step is carried out correctly. The "Dash 3" generation of VÖGELE road pavers uses a solution called ErgoPlus 3, which has acquired an excellent reputation on job sites all over the world, and for good reason: The innovative operating system focuses on the operator, without any compromises.

Three modules, one system: The modularly designed ErgoPlus 3 operating system offers every user the right hardware – console for the paver operator, plus a console and additional remote control unit for the two screed operators.

ErgoPlus 3 – Quality paving, simply organized

Logical, simple, safe: VÖGELE has been setting standards for years now with ErgoPlus. For the new “Dash 3” generation, the user-friendly and site-proven ErgoPlus 3 operating system has been further enhanced and equipped with additional functions. The re-designed, high-contrast color display is even easier to read, offering brilliant visibility even in poor lighting conditions. The interface and all symbols meet every requirement imposed on modern product design. Easily interpreted, language-neutral symbols enable all operators to control the machines intuitively, regardless of their cultural background. In addition to the operating consoles, ErgoPlus 3 also encompasses an ergonomic operator’s platform, which can be adjusted to perfectly suit any operator, due to features like the swing-out seat. The operator’s platform is also intelligently designed to offer an unobstructed view of the entire work area.

Intuitive access to machine technology

The ErgoPlus 3 operating system establishes an optimum interface between the machine technology and the paver or screed operators. For example, push-buttons on the paver and screed operators’ consoles for the most frequently used functions give users direct feedback as to whether a button has actually been pushed. Thanks to the “Touch and Work” principle, every function is executed immediately, i.e. without having to confirm. The operator has a console with all relevant functions clearly arranged and divided into logical function groups. VÖGELE equips the screed operators on the right- and left-hand sides of the paver with two operating consoles each: the screed operating console and a remote control unit for activating important functions when working alongside the paver.

Highlights of the ErgoPlus 3 operating system

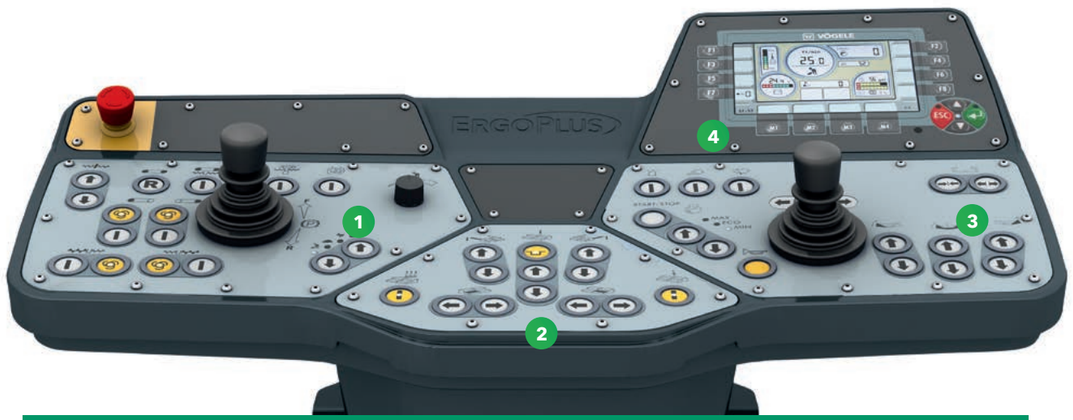
- Three modules, one system: The durable paver operator’s console, screed console and remote control unit are of consistent design; they can be operated intuitively and thus contribute to greater paving quality
- Logical layout for intuitive operation – Identical on all “Dash 3”-generation SUPER pavers
- The operating system also includes the ergonomic operator’s platform
- It is the optimum interface to the machine technology for both paver and screed operators
- The push-buttons on the paver and screed consoles give direct feedback, enabling ease of operation
- With the “Touch and Work” principle, every function is executed immediately to accelerate job-site workflows
- High-powered LED lights on the screed console also illuminate the work area

Paver operator's ErgoPlus 3 console: The SUPER paver command center

The console for the paver operator is the heart of the ErgoPlus 3 system. It is designed to make complex tasks easy, because paving requires numerous activities to be carried out and supervised simultaneously: material transfer from the feed vehicle, material handling, steering, speed control and many other details. The paver operator's ErgoPlus 3 console is very clearly arranged and designed to meet practical needs. All functions are clustered in logical groups so that the operator can find a specific function right where he expects it to be. What is more, all functions are executed immediately, without requiring confirmation, thanks to the "Touch and Work" principle. In other words, a selected function is performed right away, without having to be confirmed.

Monitoring and selecting functions on the color display

Current machine and screed settings can be quickly checked or changed on the display, such as the height of the tow point cylinders or the capacity level of the conveyors. Additional settings, such as tamper and vibration speed or auger conveying capacity, can also be easily controlled here. The operator can also access engine data, including fuel consumption and operating hours. »



Total control for the operator: The function groups on the paver operator's console

Module 1: Material handling and operating speed: Option to select different operating modes, such as travel or paving, or speed with the joy stick

Module 2: Screed functions: Control functions, such as paving width and electric screed heating activation, are also found on the screed console

Module 3: Material hopper and steering: Functions found here include controlling the material hopper walls, operating the optional truck hitch and more

Module 4: Display for entering basic settings on Menu Level 1 and less frequently used functions on Level 2

3 Questions for… Jim Holland

Vice President VÖGELE, WIRTGEN AMERICA, Inc.

What makes ErgoPlus 3 stand out in your opinion?

Our operating system is about much more than just product development, because the entire process was closely supported by researchers and practitioners. And the results are evident on every job and every time you push a button. ErgoPlus 3 is perfectly engineered right down to the last detail.

Which function or detail is your personal favorite?

As Vice President of VÖGELE, it's naturally difficult for me to pick just one highlight. For me, it's the sum of all the elements that work so smoothly together in ErgoPlus 3, from the individual operating consoles all the way to the adjustable seat, which gives the paver operator an even better view of the entire job site.

Anyone who has worked with ErgoPlus 3 …

… goes from being an ErgoPlus 3 user to an ErgoPlus 3 fan.

ErgoPlus 3 Screed Operator's Console: Maximum paving precision

Like the paver operator's console, these two screed consoles are also of durable and practical design. For example, frequently used functions, such as compacting system speed, vibration and material handling capacity, can be controlled directly from here using the waterproof push-buttons and from the left or right-hand side of the screed. VÖGELE has a convenient solution for changing the paving width, a common requirement in practice: Easy and precise changes can be made with the SmartWheel, which can be controlled without the operator having to take his eyes off the end gate. Another highlight is the high-powered LED downlights, which fully illuminate the screed operator's work area.

The ErgoPlus 3 remote control units: Giving screed operators room to move

The innovative remote control units on the SUPER pavers increase the screed operator's radius of motion. They also enable the operator to make all key settings from an ergonomic position, this being a valuable advantage particularly when working at high paving speeds or in confined spaces. When these operating units are not needed, users can quickly stow them anywhere on the screed thanks to the magnetic mounts. »»

Screed console

- Operating the intuitive Niveltronic Plus for premium paving results offers one main advantage: The VÖGELE System for Automated Grade and Slope Control has access to all machine data and is therefore easy to operate and uniquely precise
- The high-contrast display shows all important information at a glance
- Push-buttons with direct feedback for activating frequently used functions
- SmartWheel for ergonomically adjusting screed width without taking your eyes off the action

Remote control units

- Control important functions even from working positions alongside the paver
- Self-explanatory symbols for intuitive operation
- Magnetic mount on the back – means the remote control unit is always stowed properly and easy to grab

Flexibility in paving: The remote controls units further enable the operator to make screed settings from a position alongside the paver, which is a real competitive advantage.

3 questions for … Dennis Butler

Screed Operator at Kelly Paving, Inc. in Williamstown, West Virgina

What makes ErgoPlus 3 stand out in your opinion?

It is simply a great system that gives me exactly the kind of support I need every day in every situation. Additionally, a lot of the details underline how practical ErgoPlus 3 is, such as the high-quality design with push-buttons. You can always tell if you've really pushed a button or not, even if you're wearing gloves.

Which function or detail is your personal favorite?

Two things are especially practical for my everyday work: the SmartWheel and the remote control unit. With the SmartWheel, you can change the paving width of the screed without taking your eyes off the end gate. And with the remote control unit, you can activate important functions even when standing alongside the paver. It gives you room to move.

Anyone who has worked with ErgoPlus 3 …

… won't want to ever do without it.

The operator's platform: One of the safest and most ergonomic workstations

Anyone who has to concentrate and deliver precision results on the job needs an ergonomic workstation. The ErgoPlus 3 system therefore includes not only the operating consoles, but also the SUPER paver operator's platform. Its advantages start with the outstanding, all-around view of all critical processes, including the feed vehicle, the flow of material, the screed and of course the overall job site. Having a good view also reduces the risk of accidents to an absolute minimum. The operator's seat can be swung out to enable the most ergonomic working position possible. If the VÖGELE machine is equipped with the optional glass fiber reinforced polymer hardtop to protect against rain and sun, its sunshades even shield the seat in its extended position.

Two operator seats enhance safety and comfort

The operator seats themselves also make an important contribution to ergonomic and safe working. They are comfortable, but not too soft, to actively relieve some of the stress on the operator. VÖGELE has integrated two of these seats on the platform so that the operator can work from either side of the paver, depending on job-site conditions. An operator can simply unlock the high-tech operating console and slide it into the desired position, or also adjust its height and direction. These are just a few of the reasons why the VÖGELE operating concept has already won over thousands of users worldwide. In combination with its operating consoles, the ErgoPlus 3 demonstrates that a clever design can make innovative technology ergonomically efficient, intuitive and comfortable to operate. ///

Easy up and down: VÖGELE has made the steps up to the operator platform convenient and safe by positioning them in the center on the screed.

3 questions for… Mike Hylbert

Paving Superintendant for Shelly & Sands, Inc. in Zanesville, Ohio

What makes ErgoPlus 3 stand out in your opinion?

For a construction company like ours, it's naturally important for paving crews to be able to handle the machine control system and be productive. ErgoPlus 3 meets this requirement in full. Another point of interest for us is that the concept is identical on all the SUPER pavers, because that significantly reduces the time and effort needed for training.

Which function or detail is your personal favorite?

I like the high durability of the operating consoles; it means that the high-tech interfaces will continue functioning long-term. I also like the practical vandalism protection system, which makes sure nothing happens overnight.

Anyone who has worked with ErgoPlus 3 …

… will never want to work with any paver other than ones from VÖGELE.

Clearly structured and uncluttered: The platform is a highly professional workstation for the operator with lots of storage space.

Mini Class, maximum satisfaction

From the East Coast to the far West, contractors are learning that the versatile SUPER 700-3i gives them the means to tackle paving projects from bike paths, to shoulders, to utility cuts, to parking lots, and even residential streets and country roads. The SUPER 700-3i is a small-sized asphalt paver that provides big productivity and profitability, as demonstrated by two jobs in Ogden, Utah and Bethesda, Maryland.

Highlights of the VÖGELE Mini Class SUPER 700-3i paver

- Laydown rate up to 280 tons/h
- Clearance width only 4 ft. 7 in.
- Wide range of paving widths from 20 in. to 10 ft. 6 in.
- Simple operation with the innovative and easy-to-grasp ErgoBasic operating concept
- Combines with AB 220 Extending Screed in the V version (vibration)
- Several feed options with the asymmetrical material hopper
- Powerful and cost-efficient thanks to the 74 hp Deutz diesel engine and ECO mode

Experience the SUPER 700-3i in action.

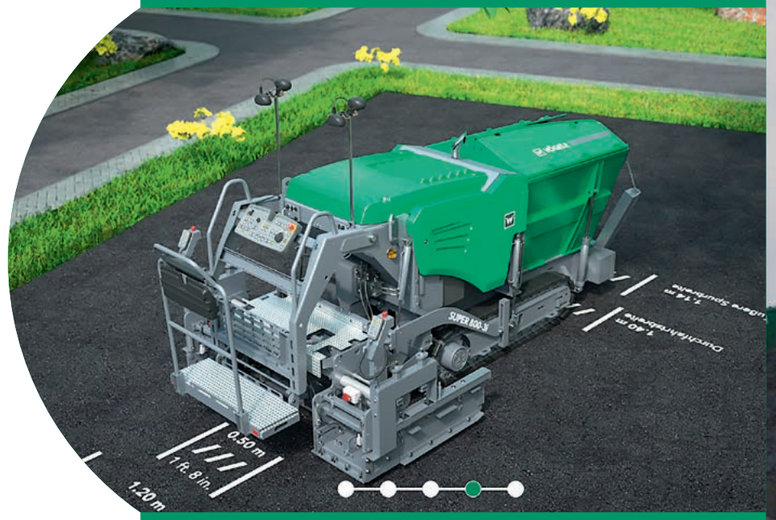
See practice-based animations of all the highlights of the innovative VÖGELE Mini Class SUPER 700-3i paver. Watch them now at

www.voegele.info/miniclass

Mini Class
SUPER 700-3i

Great things come in small packages: The machine design of the SUPER 700-3i allows a wide range of applications on the most diverse job sites.

Learn all about the Mini Class in individual, instructional and informative animations:



The VÖGELE Mini Class SUPER 700-3i paver: Experience it now at

www.voegele.info/miniclass

- All about the fields of application of the SUPER 700-3i
- All about its perfect material management
- All about flexible material feed
- All about the ErgoBasic operating system
- All about the AB 220 V Extending Screed

Utah // Ogden

In Utah, a SUPER 700-3i demonstrated its utility and ease of use when it paved both a bike path and a utility cut in the same morning. In Ogden, forces of Aspen Paving Inc. used their new SUPER 700-3i to place a 6-ft.-wide bike path 6 in. deep in a subdivision under construction, then trailered it to south Ogden where it paved a 6-ft.-wide secondary water line cut much faster, and with more precision and smoothness, than the toss-and-roll method the firm previously used.

When paired with the standard AB 220 V vibrating extending screed from VÖGELE, the SUPER 700-3i can pave a narrow 20 in. wide, up to a maximum of 10 ft. 6 in., making it ideal for commercial, utility or landscape contractors.

Example 1 in Ogden, Utah: One morning, two jobs

Wide paving range thanks to the AB 220 V Extending Screed

For the path, a 0.5-in. NMAS hot asphalt mix containing 15% RAP was placed on a graded berm. The 480-ft. long patch for Pineview Water Systems filled a cut which had been backfilled by Pineview following a water line replacement. “The SUPER 700-3i will go down narrow enough to go in the cut with its tracks,” said Bart LaRose, Vice President at Aspen. “We bought this machine primarily for paving 8 ft. wide and down.” If paving a trench less than 3 ft. wide, the paver’s tracks will straddle the trench with the screed lowered. “Anything bigger than 3 ft. is perfect, and anything smaller than 3 ft. is perfect,” said Mike LaRose, President of Aspen. “Exactly 3 ft. is tough because you have one track in the trench and one out. That’s where the versatility of this paver comes in. We can do a lot of small stuff, but also go up to a 7-ft.-wide trench.”

The Niveltronic Basic Automated System for Grade and Slope Control enhances precision

Acquired in spring 2017, the SUPER 700-3i relieves Aspen of having its crews do extensive work by hand. “We use it on our smaller jobs, as it saves us hand work and gives us a smoother product,” he said. “It speeds our jobs up quite a bit and improves the quality.” After acquiring the paver in early 2017, Aspen had been leveling its placements by hand. Later the Niveltronic Basic Automated System for Grade and Slope Control was installed to better refine placements. Fully integrated into ErgoBasic control system, Niveltronic Basic is easy to use, with a separate remote control unit for each side of the screed.

Even small surface areas can be paved cost-efficiently

“We did our leveling manually, but with the automated system we now don’t have to have two guys on the machine, freeing one up for other work. Once it’s set up, the operator can run the whole machine, so we don’t have to have two screed men, or even one. Now the workers can do other things on the job,” Bart LaRose said. “Anything you do with a paver, versus by hand, will give you a better end result,” Mike LaRose said. “That’s why we purchased this machine. The Niveltronic Basic system is easier on the guys because they can’t crank the screed fast enough, while the automatic system does it for them. Our end result is smoother and our quality is better.” »»

The SUPER 700-3i speeds our jobs up quite a bit and improves the quality.

Mike LaRose, President
Aspen Paving Inc.

Mini Class delivers maximum quality

For the Pineview utility cut, a 0.75-in. NMAS standard hot asphalt mix containing 5% liquid asphalt and 30% RAP was being placed by the VÖGELE paver 6 in. deep in two 3-in. lifts, for a total of 110 tons. “That’s where this little paver comes in handy,” said Mike LaRose. “Because of the grade of the backfill, if we were doing it by hand, the patch surface would stay rough. But the paver will take the roughness out, because the screed blows through the inconsistencies in the grade. The paver’s quality makes our final product better, and gets it placed faster. It’s a great deal for us.” The larger aggregate used in the utility patch – compared to the trail path – is used to stand up better to vehicular traffic that would not be present on the path. “On the utility patch we are shooting for 95 to 96% density,” Mike LaRose said. “That’s where this little paver helps too; when you place patches with skid steer loaders or hand shovels, you’re not getting any initial compaction. But when it’s coming out of that vibratory screed, it’s getting compaction early on.”

Unbeatably maneuverable and easy to transport

The SUPER 700-3i’s maneuverability makes transport easier, said Bart LaRose. “You can get in and out of anything,” he said. And its asymmetrical material hopper – in which one hopper wing can raise or lower independently of the other – allows this mini-paver to be easily fed with material in extremely confined spaces. “When we have to go by a mailbox or a wall, we can bring a wing up and pave right next to it,” Bart LaRose said. “The hopper wings fold up nicely so you can get into tighter areas. If trucks can’t get in, you can get a dump in it, fold it up, and be on your way. We have the option of placing shoulders with the paver, although we haven’t done that yet. We’re still learning about its capabilities. It’s performed really well and done everything that they said it would do.”

First-class results, high satisfaction

Aspen purchased the paver sight-unseen from Honnen Equipment in Salt Lake City. “My salesman, Marc Robinson, brought me a brochure,” Mike LaRose said. “We didn’t even look at the paver. Marc knew our scope of work, and knew the SUPER 700-3i would be right for us. Based on what I’ve experienced I would not buy any other small paver out on the market.” »»

Example 2 in Bethesda, Maryland: Resurfacing in high-speed mode

Maryland // Bethesda

On the other side of the country, a utility contractor uses its new WIRTGEN cold milling machine and SUPER 700-3i paver to finish underground pipe work in Maryland. There, in summer 2017, Rivers Construction Group Ltd., Jessup, Md., was using its new 5-ft. WIRTGEN W 120 CFi cold milling machine to remove a temporary utility patch in advance of final patch placement by the SUPER 700-3i within a residential neighborhood in Bethesda. Rivers was founded in 2006 by the current President Luis Rivera, his brother Romero (now Vice President), and employed a single helper. Eleven years later it has gone from three employees to 135, and specializes in underground utility construction including water mains, water meter vaults, sewers, storm drainage, and concrete flatwork like sidewalks, aprons, curbs, gutters and driveways.

Cold milling and paving

"We concentrate on sewer and water utility construction, roadways and concrete," Rivera said. "In many cases now, instead of removing pavement with an excavator, we bring our cold milling machine in to dig the asphalt out, and then follow with the backhoe to remove fill." Thus the combo of the WIRTGEN "Compact" W 120 CFi and SUPER 700-3i leverages time and enhances profitability for Rivers Construction, in addition to providing a better end product. "These machines save time and make money for us," Rivera said. "We can do the work faster, and we work to our own schedules, rather than a subcontractor's. They allow us to do three times as much work as before."

Clients are thrilled with the modern technology

And there is a tangential benefit to Rivers Construction upgrading its equipment with the WIRTGEN milling machine and VÖGELE paver. "It also creates respect for us when our customers see the milling machine and paver on the job site. It's completely different from laying asphalt with excavator or shovels. When they see our new equipment their faces change immediately. For us, it's a big, big change and a great benefit." When cutting pavement for a utility repair, Rivers will cut 10 in. deep, although the W 120 CFi can go a full 13 in. deep. "All we do is reveal the fill surrounding the pipes, and a backhoe finishes the job in advance of the hand work around the pipe," Rivera said. »»

"The WIRTGEN "Compact" W 120 CFi and SUPER 700-3i save time and make money for us."

Luis Rivera, President
Rivers Construction Group, Ltd.

Perfect addition to the SUPER 700-3i: WIRTGEN Compact Class W 120 CFi cold milling machine.

From the front or side with a truck, a material feeder like the MT 3000-2i Offset PowerFeeder from VÖGELE or with an excavator as shown here: The SUPER 700-3i makes the material feed process a snap.

Large material hopper: With a capacity of 5.8 t, the receiving hopper is designed to ensure a steady supply of mix without bottlenecks.

SUPER 700-3i: The powerhouse among VÖGELE's Mini Class pavers

Its small footprint and low profile, with a minimum clearance of 4 ft. 7 in. – combined with its easy maneuverability – makes it suitable for paving interior facilities with their tight spaces, as well as driveways and roadways outdoors. For high productivity, the SUPER 700-3i can pave up to 98 fpm with a laydown rate up to 280 tph. And to make things easier, it comes equipped with VÖGELE's ErgoBasic operating system which provides intuitive paver control that's as good as those found on the big machines.

The AB 220 V Extending Screed achieves a density of at least 95%

For placement of the 19.5-mm NMAS asphalt hot mix, Rivers Construction likes to situate its SUPER 700-3i with both tracks in the trench. If there's enough room in the road, the paver will be fed by truck; otherwise, as in the case of Bethesda, the paver is fed by skid steer loader. The mix is compacted to at least 95% density with help from the AB 220 V Extending Screed with vibration.

Productivity wonder: The SUPER 700-3i

Typically, if the trench is 8 in. deep, 6 in. of asphalt will be placed in the trench by loader, compacted, and then followed by the final 2-in. driving surface placed by the SUPER 700-3i. "We can't keep up without the paver," Rivera said. "We will pave about 1,000 linear feet of water main today. There is no way we can do it with excavator and by hand, unless we double or triple the number of people, and we still won't have the quality driving surface we want. With the SUPER 700-3i, we've gone from an average 150 to 750 linear feet per day. Everything is better."

High machine availability thanks to outstanding service

Rivers counts on its distributor, Elliott & Frantz, Inc., to keep its WIRTGEN GROUP equipment working. "They make sure our equipment, both cold milling machine and paver, are available whenever we need them." A win-win situation: "Rivers Construction benefits from the higher quality of the patch from the paver, as well as the higher productivity," said Bob Schaeffer, President, Elliott & Frantz, Inc., equipment distributor for Rivera. ///

Speed production and cut costs

An independent contract crushing company is using its new KLEEMANN mobile jaw and cone crushers – flanking a new mobile screen – to boost aggregate processing productivity while saving money on fuel. “Our current business model is to do contract crushing,” said Duff Boyd, President, Riverbend Construction Services, Jefferson City, Tenn. “We focus on mining of construction aggregates and material recycling.”

Efficient technology: In a closed circuit, KLEEMANN crushers and screens turn out high-quality final product.

USA // South Carolina

At an established quarry in South Carolina, Riverbend was taking granite production to a new level that was unattainable by the quarry owner working with its own forces and equipment. There, a new MOBICAT MC 110 Zi EVO primary jaw crusher, a MOBISCREEN MS 15 Z screen, and a MOBICONE MCO 9i EVO secondary cone crusher – all from KLEEMANN – were working together to smooth production and lower costs. “Here we are making crusher run granite road base and a No. 4 material, which is 2 in. by 1 ½ in. with no fines,” Boyd said. The crusher run size is 100% passing 1 ½ in., all the way down to 200 mesh size. Riverbend does the drilling and blasting of the gray granite, and loads and hauls the raw stone to the processing site on the top of the pit. »»

Its durable design protects the MOBICAT jaw crusher: The extra-long, movable crusher jaw supports a smooth material flow, because it reduces blockages, while enhancing productivity at the same time.

The track-mounted jaw crusher MOBICAT MC 110 Zi EVO at a glance

› Feed capacity up to approx.:	364 t/h
› Feed size max.:	41 in. x 26 in.
› Drive concept:	diesel-direct drive
› Engine power (Tier 4f/Stage IV):	326 hp
› Transport weight:	94,350 lbs

Precision meets productivity: The quarry owner could not meet the specified level of quality for the final product with its own equipment. Riverbend's KLEEMANN plant fulfilled all requirements with flying colors.

The KLEEMANN EVO series – powerful mobile crusher plants for flexible application

With its EVO series, KLEEMANN GmbH offers the whole range of robust crushing plants for professional crushing contractors – from the jaw crusher MOBICAT and the impact crusher MOBIREX to the cone crusher MOBICONE. All plants are equipped with the latest technology, which makes them particularly suitable for flexible use in natural stone processing and recycling. They are characterized by a high output and cost-effectiveness, combined with low rates of wear.

Closed-circuit crushing

The equipment is set up in a closed circuit. Material is primary-crushed at the MC 110 Zi EVO, and both crushed material and all fines go to the mobile screen. The MS 15 Z mobile screen has two decks, the top with 2-in. panels, and 1 ½-in. panels on the bottom deck. The top deck overs go to the MCO 9i EVO to be sized down (as the jaw is set to 65 mm, a 4- to 5-in. size rock goes to the cone). The cone crushes that material and sends it back to the screen for resizing. The bottom deck overs are a 2 x 1 ½-in. rock, and the bottom deck screen throughs is a 1 ½ in. size which is stacked as a product. Anything dropping through is crusher run which is stockpiled and loaded onto trucks.

Prescreening optimizes the crushing process

With the new equipment, Riverbend was averaging 305 to 335 tph, depending on the feed. "If the feed is a good, well-blasted material, with this closed-circuit arrangement I can easily put up to 340 tph through. "By well-blasted, I mean a rock that's not chunky, that's shot well throughout with some fines in it and a variety of sizes that go into the primary. The moving jaw on the jaw crusher is much longer than the fixed jaw," said Duff Boyd, President, Riverbend Construction Services. "That longer crusher jaw not only protects the pitman on the jaw crusher, which is great, but secondarily, it eliminates the edge or lip found on competing crushers, with their shorter crusher jaws – a place that bigger rocks tend to catch and hang on to. KLEEMANN's taller crusher jaw all but eliminates stoppage due to big rocks. If you are doing 330 tph, and you have to stop for a half hour to dig the rock out, you've lost 165 tons of productivity." Instead of a grizzly, Boyd's new MC 110 Zi EVO primary jaw crusher utilizes an independent prescreen that speeds productivity. "The prescreen pulls all the fines out, and that's where the tons per hour really pick up," Boyd said. "But if it's a coarse material, it all has to go through the jaw and my tons per hour will go down. The prescreen is the ticket. It cuts down on the wear on the crusher jaws and the wear plates. It prevents wear and tear, and increases throughput."

Fines do not get into the crushing process

"Currently we don't drop any fines through the prescreen that kick out the side; instead they drop right underneath and bypass the jaw, and we blend and mix them at the MS 15 Z scalping screen. When we crush through the MCO 9i EVO, those fines return and we blend the pit fines with the crusher fines to make a more consistent crusher run product, with stable gradation," Boyd said. If we kicked them out at the jaw, and made crusher run at the screen, we'd have two separate products. The feeder itself sets the feed rate for the tons per hour coming into the plant. »»

These machines literally sip fuel compared to the competitors. I've been very, very impressed with the consumption.

Duff Boyd, President
Riverbend Construction Services

Boosting efficiency with a diesel direct drive

"One great benefit of the KLEEMANN plants is its diesel direct drives," Boyd said. "The MC 110 Zi EVO and the MCO 9i EVO are diesel over electric," he said. "The crushers are run off fluid couplings but the rest of the plant is electric. The advantage is that the electrical systems are much easier to work on; any electrician who knows about three-phase electricity can troubleshoot or repair it. That's unlike competing makes, in which all of the products are hydraulically driven. And when you have hydraulic problems, they are very difficult to troubleshoot. »»

Riverbend operates in the southeastern States of Tennessee, Georgia, Alabama and South Carolina. Riverbend owns no quarries or gravel pits; instead it provides services to the aggregates industry, such as overburden removal, drilling and blasting, site development, and in this case, contract crushing and screening.

Optimized material flow increases productivity

The other great benefit Boyd found was how the EVO plants optimize their material flow. Both crushers are equipped with the Continuous Feed System (CFS) which controls the speed at which the material is conveyed in relation to the crusher fill level. This clever system results in high output. With the continuous crusher loading, a high final product quality is also achieved and wear is reduced. “As the day progresses, and we start to see a little manganese wear on the cone or die wear on the jaw, and factors change throughout the day, the plants can be easily adapted,” Boyd said. If he sees the recirculating load is rising out of the MCO 9i EVO in the closed-circuit loop, Boyd can “tighten” the cone via adjustment of its closed-side setting.

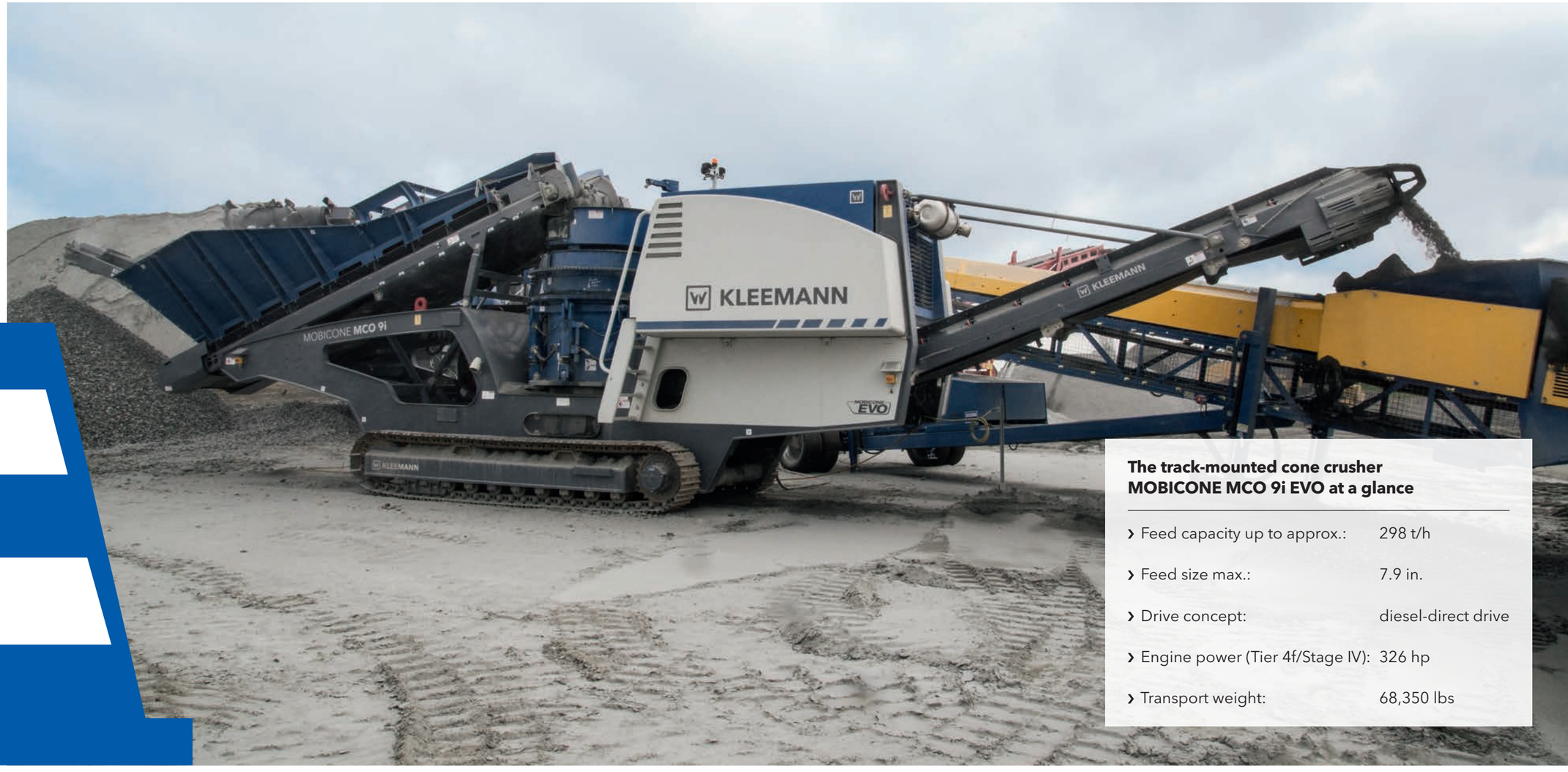
Automatic gap setting and zero-point detection

“We can go in on a daily basis and do a zero-point set on the MCO 9i EVO,” Boyd said. “The cone will screw itself down until it touches, and then back itself off. It’s a super-accurate way of checking your closed-side setting. If you just go in and set it, unless you know where the zero point is, it’s not an accurate measurement. By being able to automatically zero out your cone, you don’t have to use lead weights or crush slugs to measure the lead, in order to see what the setting should be. The automatic setting is fantastic; you push a couple of buttons and it’s set within five minutes. The MOBICAT jaw crusher design also aids maintenance,” Boyd found. Like the MOBICONE, it features fully automatic hydraulic crushing gap adjustment, which guarantees quick setup times and on-the-fly adjustments.

A partnership that pays

While Riverbend has two other mobile aggregate processing plants of other makes, Boyd chose KLEEMANN after doing research that included visiting KLEEMANN’s plant in Göppingen, Germany. “I visited KLEEMANN’s factory about two years ago, and was fascinated by the design, engineering and fabrication of KLEEMANN equipment,” Boyd said. “The engineering is fantastic. As a result I had to give them a try.” At the same time, he found support for his existing equipment was getting weak. “The support I get from KLEEMANN and Linder Industrial Machinery Co. has been fabulous,” he said. “It’s of excellent quality.” ///

MOBICONE cone crushers can be used as secondary or tertiary crushers. Thanks to its low total weight, the crusher can easily be transported to new locations by flat-bed trailer. All components can also remain attached to the plant during transportation. Short setup times and high plant flexibility are the result.



The track-mounted cone crusher MOBICONE MCO 9i EVO at a glance

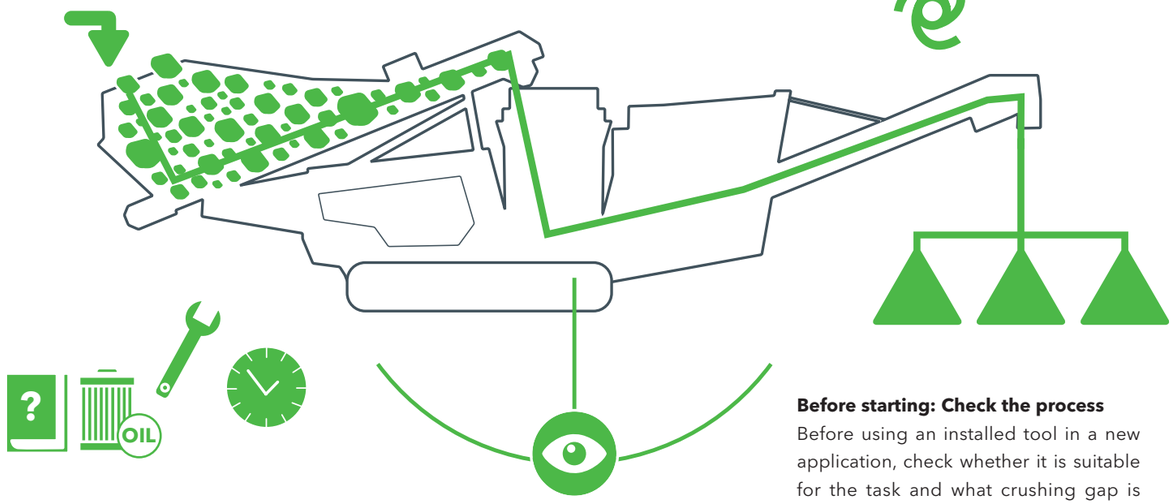
› Feed capacity up to approx.:	298 t/h
› Feed size max.:	7.9 in.
› Drive concept:	diesel-direct drive
› Engine power (Tier 4f/Stage IV):	326 hp
› Transport weight:	68,350 lbs

Using cone crushers efficiently

How users achieve optimum results

In addition to the proper liner configuration, there is a large number of variables that influence the performance of a cone crusher. The following points must be observed if a cone crusher is to be operated efficiently.

Fill evenly and avoid idling
There should always be a layer of material in the feed hopper, as this helps reduce wear. Avoid overfilling and make sure you fill evenly all round.



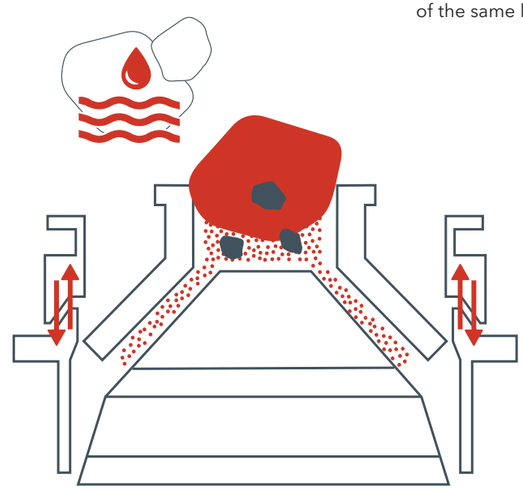
Keep to maintenance and inspection intervals
Schedule routine maintenance and inspection intervals prevent damage and increase plant availability and hence productivity.

Monitor processes regularly in operation
Regular monitoring enables operators to identify overloading at an early stage and adjust process parameters accordingly. It is important to avoid overfilling hoppers and return conveyors.

Before starting: Check the process
Before using an installed tool in a new application, check whether it is suitable for the task and what crushing gap is possible. A process simulation can help here.

No wet, tacky feed material
This causes clogging and sticking in the crushing chamber.

Countermeasures: Avoid loading with wet and tacky feed material – prescreening may be necessary. Clean a clogged crushing chamber.



Avoid fines
Tool wear is much greater if fine material is fed than if the feed material undergoes prescreening.

Countermeasures: Activate prescreening in the upstream jaw crusher. Alternatively, install a screening plant before the cone crusher in order to separate off fine aggregate.

Make sure the feed size is appropriate
If the feed size is too large or too small, this will have a negative effect on the process and could damage the cone crusher.

Countermeasures: Select a cone liner appropriate to the feed size or adjust the feed size to the tool. Feed only material of the same kind and avoid gap grading.

In the event of overloads
Overloading of the crusher will be indicated by the crusher suddenly coming to a stop when the overload protection on the drive engine is triggered.

Countermeasures: The feed material must be crushed prior to being fed, or fine material must be screened first. Enlarge the gap if necessary and – if this is not sufficient – increase the speed.

Asphalt as far as the eye can see:
A dead-straight road in Death Valley, California, USA.

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