RoadNews for new roads

The WIRTGEN GROUP User Magazine for India // № 01

WIRTGEN VÖGELE HAMM KLEEMANN BENNINGHOVEN

Technologies from the WIRTGEN GROUP power ahead in India:

Putting quality on the road

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Dear Reader,

Close to our customers – this is the central pledge of the WIRTGEN GROUP, a pledge we live up to each and every day. With machines and technologies which demonstrably advance road construction. With innovations which improve processes and boost efficiency. And with dedicated employees who understand just what it is that drives our customers.

In India, the WIRTGEN GROUP operates out of Pune, where the final assembly of HAMM compactors, VÖGELE pavers and KLEEMANN screens takes place. A strong network of sales and service companies in 22 locations all over the country offers services and application know-how to our customers. In this way, we are making an important contribution to the quality and productivity of India's infrastructure, which is being modernized at a breathtaking pace.

From now on, we will be informing and inspiring you with our RoadNews user magazine. Along with articles from India, job reports from all around the world will show you just what our machines are capable of. In technology articles, we present innovations which are making construction companies more productive and cost-effective. The new WIRTGEN cold milling machines, which make work simpler – and hence faster – with their automated functions, are a perfect example.

We hope you enjoy reading this first issue of RoadNews India!

Best wishes,

Ramesh Palagiri
Managing Director & CEO
WIRTGEN INDIA Pvt. Ltd.

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The cold milling machine W 100 H makes milling easy in confined spaces.

Safer urban roads

!

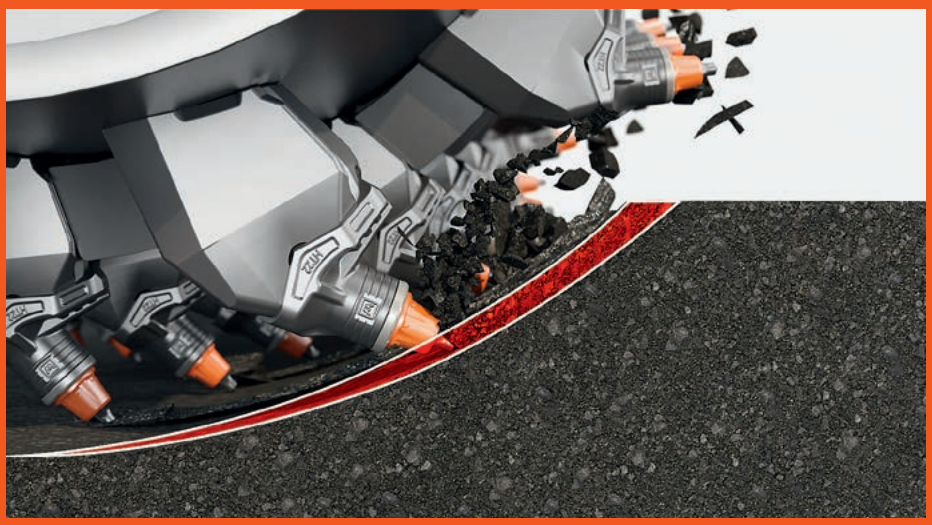
The Municipal Corporation of Nagpur has started upgrading its road network from asphalt to concrete. A total of 3 WIRTGEN W 100 H cold milling machines were chosen to guarantee maximum surface evenness before the concrete paving process began.

Maharashtra // Nagpur

Nagpur is the constituency of Mr. Nitin Gadkari, Union Minister for Roads and Transport, Government of India. In 2011, the project started with an initial solo package, which was delayed when it encountered execution problems and failed to gain approval from civic bodies. The second package worth 324 crore was introduced in 2016 and received funds raised by NIT. Milling was specified as a means of reclaiming the asphalt and reusing it – a solution which reduces costs and benefits the community. WIRTGEN as a reliable brand was chosen by the customer due to their premium products and customer support. A total of 3 new W 100 H milling machines were used for the milling work on the 70km road network as part of a project comprising 22 packages. »»

Cutting process:
Major effect on quality, cost and milling performance

Cold milling machines are used for the quick, highly efficient removal of asphalt and concrete pavements. In this process, they create an even base, true to cross-section, line and level, for the construction of new surface courses of uniform layer thickness. During the cutting process, the rotating milling drum equipped with rotating cutting tools works in upmilling mode, which means that the cutting tools cut into the material in an upward direction.



Cost-efficient milling

The W 100 H offers a milling width of 1,000mm and is fully geared to meet all challenges in field operation. Its hydraulic milling drum drive translates the engine output into high daily production rates. The optimized arrangement of the toolholders and clever tooling of the drum periphery ensure excellent milling power. In addition, centrally arranged ejectors reliably transport the milled material from the drum housing. Last but not least, simple tool replacement guarantees that downtimes of the cold milling machines are kept to a minimum.

Maximum surface eveness

First the WIRTGEN milling machines milled the surface course evenly to ensure a perfectly levelled base course which provided a sustainable base for the new concrete road. The reclaimed material can also be reused to produce a sub-base with a high bearing capacity – for example when roadways are extended at the same time – which leads to significant cost savings. After the 3 W 100 H cold milling machines had created the basis for the concrete paving, the slipform paver took centre stage. Here again, WIRTGEN offer economical and quality solutions with their comprehensive portfolio of slipform pavers and mature processes for facilitating the construction of city roads, heavy-duty motorways or airport runways and the production of poured-in-place concrete profiles. In Nagpur, paving the new concrete road was handled by a WIRTGEN SP 500. Thoroughly impressed with the performance of the milling machines and slipform pavers, the city department is keen to employ these technologies again for future road construction projects. ///

W 100 H: Efficient milling in the one-metre class

- Robust machine in the one-metre class, known for high milling output rates with its tried and tested machine concept
- Simple und precise operation supports an efficient work process
- Particularly cost-efficient with low diesel and tool consumption
- Levelling system LEVEL PRO provides precise milling results
- To optimize the material loading process, powerful rear-loading system can be flexibly adjusted

The EVO

Product campaign from KLEEMANN with the new MOBISCREEN EVO screens.

They classify crushed natural stone as well as a wide variety of recycling materials, and they enhance the quality of the end products: classifying screens play an indispensable role in the production of mixes of all kinds. With their new MOBISCREEN EVO generation, KLEEMANN are launching innovative screens on the market whose high performance, flexible applications and ease of transport take efficiency to the next level. »»

lution continues

The MOBISCREEN EVO screening plants boast a wide field of applications and come as double or triple-deck classifying screens with screen surfaces of 7m² or 9.5m².

MOBISCREEN EVO for flexible applications

In total, KLEEMANN are expanding the EVO series by 4 classifying screens: 2 double-deck classifying screens, the MS 702 EVO (with a screen surface of 7m² in the upper deck) and MS 952 EVO (9.5m²), as well as 2 triple-deck classifying screens, the MS 703 EVO (7m²) and the MS 953 EVO (9.5m²). All four are mounted on crawlers. Like the crushing plants of the EVO series, the classifying screens meet the needs of contractors thanks to their compact transport dimensions and short set-up times.

Sophisticated material flow for high performance

The MS 702 EVO and MS 703 EVO achieve a maximum output of 350t/h, the MS 952 EVO and MS 953 EVO an hourly output of up to 500t. This high performance is largely attributed to the well organized flow of material through the plant. It begins with loading: thanks to the large feed hopper, MS EVO screens can be supplied with material both by wheel loaders and by an upstream crushing plant. This material is transported to the screen case on an extra-wide, 1,200mm feeding conveyor. To allow the screening plant to be adapted flexibly to a variety of applications, the screen angle can be adjusted as required, ensuring high quality and output. An impact plate at the discharge point of the feeding conveyor distributes the material evenly over the screen media, resulting in less wear and a high throughput.

Outstanding safety standards and high operating comfort

KLEEMANN have established excellent safety standards for the EVO screening plants. The screening plant is operated by means of a mobile control panel that can be attached to the plant at three different points, ensuring the best possible visibility of the plant functions being executed. The control panel also displays data on the operation of the machine. If the MS EVO screening plants are being operated in combination with other EVO crushing plants, all of them can be switched off at once in the event of a hazardous situation via the emergency stop function. The lowering brake stop valves on all discharge conveyors further enhance safety, keeping the conveyors in position if the hydraulic system fails. »»

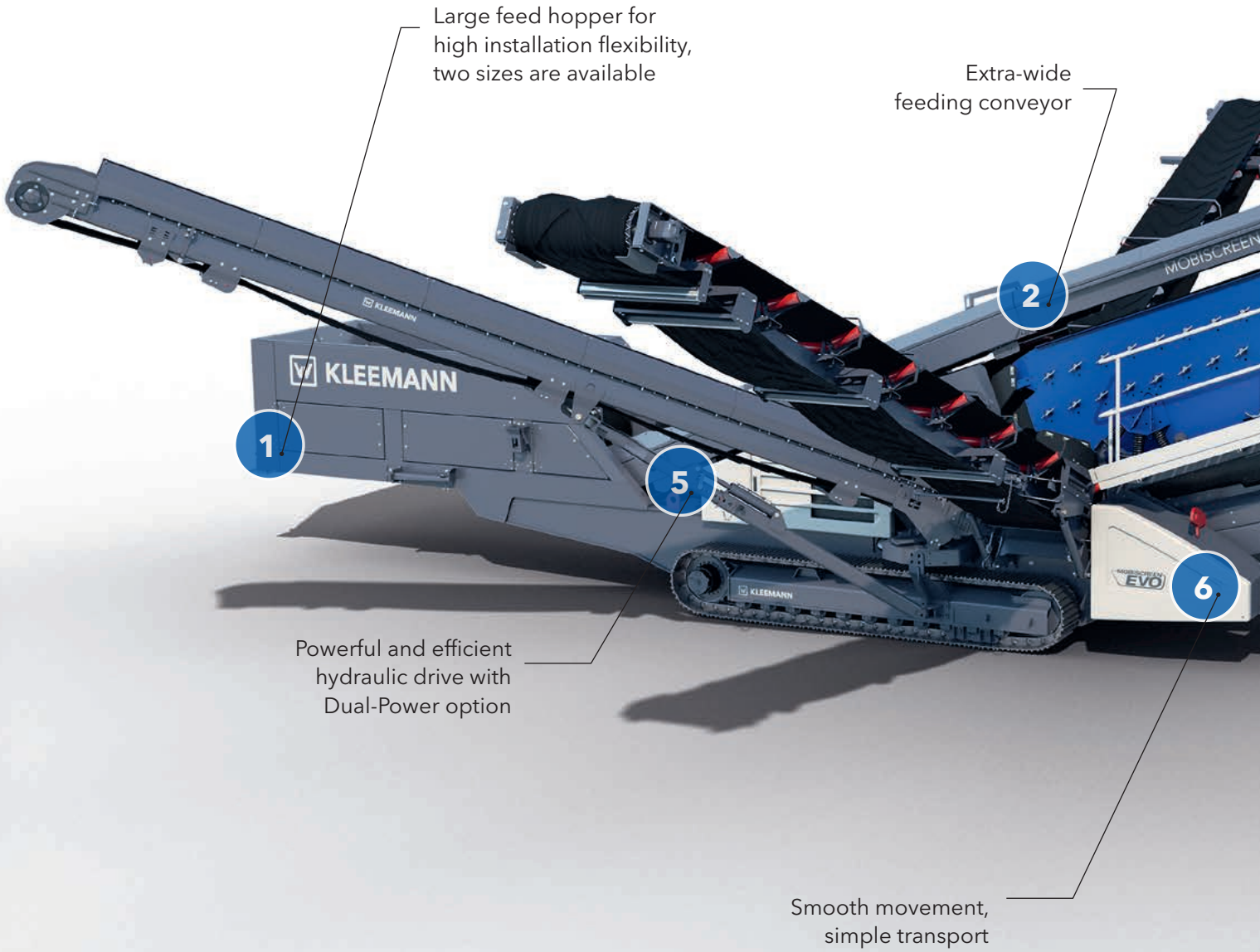
The MS EVO screening plants from KLEEMANN take efficiency to the next level.

Kirpal Singh Sian,
Product Manager
KLEEMANN

A team player: the screens operate particularly efficiently when linked with crushers of the EVO series that are configured in size and output to the MS EVO screens.

Service and maintenance: Easy screen media changes

The issue of maintenance is particularly important in plants that often have to handle thousands of tonnes of rock in one shift. With the MOBISCREEN EVO screens, the capacious engine compartment makes inspection much simpler. Other service elements can be reached quickly and easily via the all-round work platform with handrails. The easy access to the screen decks also makes it simpler for the user to change the screen media. The fine grain conveyor, for instance, can be lowered in order to enable access to the lower screen media. KLEEMANN also offer a wide array of screen media and are certain to have the right one for every application. »»



Machines with 7 or 9.5m² screen surface and adaptable screen angle

4 Easy-to-use control system via mobile control panel

Technical data for MOBISCREEN EVO plants

	MS 702 EVO	MS 703 EVO	MS 952 EVO	MS 953 EVO
Type	vibrating classifying screen	vibrating classifying screen	vibrating classifying screen	vibrating classifying screen
Screen decks	2	3	2	3
Screen surface (upper deck)	1,550 x 4,500mm	1,550 x 4,500mm	1,550 x 6,100mm	1,550 x 6,100mm
Feed capacity up to approx.	350t/h	350t/h	500t/h	500t/h

Ready to deliver a top performance: MS 703 EVO at work on an irrigation project

The new MOBISCREEN EVO screening plants work particularly efficiently in combination, making a significant contribution to the productivity and cost-effectiveness of construction projects. The screening plants currently located near Hyderabad in India are furnishing clear proof of this. Here, mining specialist BGR Mining & Infra Pvt. Ltd. have invested in 4 sets of crushers and screens from KLEEMANN – the MOBICAT MC 110 Z EVO jaw crusher, the MOBICONE MCO 9 EVO cone crusher and new mobile triple-deck screening plants of type MS 703 EVO. One of the main attributes that prompted BGR Mining & Infra Pvt. Ltd. to opt for KLEEMANN was the high flexibility of their mobile plants. With a few adjustments to settings, the MC 110 Z EVO can also work alone.

The Palamura Ranga Reddy Lift Irrigation (PRLIS) project is an irrigation scheme that aims to supply water to a 404,685ha area in the Mahabubnagar, Ranga Reddy and Nalgonda districts. BGR were awarded the contract to build the Venkatadri Reservoir in Vattem. It will have a capacity of 464.24 million m^3. To construct the dam, BGR need approx. 3 million tonnes of crushed granite sand with a grain size of 0–6mm and up to 2 million tonnes of granite with a grain size of 0–80mm.

The combination of 3 KLEEMANN plants – including the new MS 703 EVO classifying screen – processes granite for the construction of a water reservoir in Vattem.

200t/h of end product in two grain sizes

The 4 linked KLEEMANN plants prepare the construction material, beginning with the MC 110 Z EVO jaw crusher. The feed size of the granite rock can be as much as 600mm. In the first crushing stage, the granite is crushed down to 0–160mm before being fed into the MCO 9 EVO. The cone crusher produces a grain size of 0–45mm that is classified into two exact end products by the MS 703 EVO. The oversize grain is returned to the MCO 9 EVO. This enables the plants to supply up to 50t/h of end product in the grain size 0–6mm and up to 150t/h in the grain size 6–45mm. ///

Crushing and screening plants of the EVO series: Leading technology from KLEEMANN

High output plus low operating costs, a multitude of pioneering innovations, flexibility in use, excellent transportability, rapid set-up times, efficient operation and an intuitive operating concept: the EVO series from KLEEMANN has been setting standards in processing technology for many years. The immense performance is delivered by suitable drive concepts that combine power with economical consumption.

The EVO series includes the MOBICAT EVO mobile jaw crushers, the MOBIREX EVO2 mobile impact crushers and the MOBICONE EVO mobile cone crushers. Now they have been joined by MOBISCREEN EVO screening plants – giving operators and users yet another advantage: the plants are optimally tailored to each other and can be operated as a combination in multi-stage crushing processes.

It is due to WIRTGEN GROUP India's continuing support and service that we went for KLEEMANN equipment.

Kola Brahmananda Tara Prasad,
Plant Manager
BGR Mining & Infra Pvt. Ltd.

The Power of VÖGELE

for India's infrastructure

A tough performer with innovative technology: the two new VÖGELE machines, the SUPER 1400 tracked paver and the SUPER 1403 wheeled paver, lead the way towards a high-quality and productive future. The Universal Class pavers were developed by an Indo-German team of engineers. The machines are manufactured in the WIRTGEN GROUP production facility in Pune.

Two pavers, tailored to the Indian market and capable of tackling all manner of road projects from motorway construction to the rehabilitation of winding urban roads: this was the briefing for the development of the SUPER 1400 and the SUPER 1403 – and it presented the team of Indian and German VÖGELE engineers with an inspiring task. The machines the team went on to create are pathbreaking in terms of quality, productivity and economic efficiency. »»

Precision on tracks: thanks to its powerful crawler unit, the SUPER 1400 delivers its full engine power to the base, even on difficult terrain.

Offering high manœuvrability and traction: the SUPER 1403 wheeled paver with separate hydraulic drives and an optional drive for one set of front wheels (6x4).

Ready for top performances

Driven by efficient 6-cylinder Cummins diesel engines rated at 112kW, the new Universal Class pavers can handle a wide range of construction projects. And needless to say, they can operate under extremely tropical conditions. Effective cooling enables the drive to deliver its full power, whatever the weather, whatever the season. Capable of handling up to 600t of mix per hour, the material conveying concept is also designed for high performance. All components which come into contact with mix are manufactured highly precisely from high-quality wear-resistance steel. What is more, a special kit is available which can withstand particularly abrasive materials such as Wet Mix Macadam (WMM) for long periods. Even when their work is done, VÖGELE machines continue to boost economic efficiency. With their transport width of 2.55m, they can be transferred quickly and easily to the next job site on standard low-bed trailers.

ErgoBasic for simple, intuitive operation

The simple and easy-to-grasp operating concept ErgoBasic is typical of the world market leader VÖGELE. It applies the principle that technologies can only deliver on their strengths if they can be operated as intuitively as possible. The ErgoBasic operating concept comprises the paver operator's platform, the paver and screed operators' consoles as well as the Niveltronic Basic System for Automated Grade and Slope Control. For instance, all functions are arranged on the ErgoBasic paver operator's console in logical function groups while push-buttons with self-explanatory symbols ensure clarity. The screed operators control the important functions, each working from their own console. The screed's position is controlled via remote control units for the VÖGELE Niveltronic Basic System for Automated Grade and Slope Control.

Cutting-edge VÖGELE AB 480 TV Extending Screed

The hydraulics are also designed for high performance. They drive the conveyors and augers highly precisely, constantly ensuring an optimum head of mix in front of the screed. Combined with a cutting-edge AB 480 TV Extending Screed, which is optionally available with electric heating, they support high-quality paving in varying widths from 2.55 to 4.8m and, with bolt-on extensions, up to 7.3m (SUPER 1400) and 6m (SUPER 1403). The VÖGELE compacting systems tamper (T) and vibrators (V) ensure excellent precompaction values across the entire pave width. Equipped with the AB 480 TV Extending Screed – a truly high-tech unit – the new VÖGELE pavers from Pune build top-quality asphalt pavements with a high degree of evenness.

Leading technology that's easy to use: the SUPER pavers and VÖGELE screeds are operated with the intuitive ErgoBasic operating concept.

Highlights of the SUPER 1400 and SUPER 1403 pavers

- Perfect paving quality due to perfect material management
- Simple operation with the innovative and easy-to-grasp ErgoBasic operating system
- Powerful and reliable thanks to the 112kW Cummins engine
- New and easy-to-use Niveltronic Basic System for Automated Grade and Slope Control
- Easy service concept, perfectly geared to the requirements of the workshop and service staff
- Combines with the AB 480 Extending Screed in the TV version
- Electric screed heating provided for all compacting and smoothing screed elements
- SUPER 1400: powerful crawler tracks and accurate steering
- SUPER 1403: maximum power transmission thanks to separate, hydraulic drives provided for the rear wheels and, as an option, for one set of front wheels

Developed by professionals for professionals: the new generation of small and compact milling machines from WIRTGEN.

Small, compact and tough

WIRTGEN launch a product and innovations offensive: small and compact milling machines reach the next level.

The market leader in cold milling machines has completely revamped its range of small and compact milling machines over the last two years. The latest generation of products integrates a wide array of innovations and improvements. The development focused on simple handling for the machine operator and process optimization during use of the machines. Both of these objectives are reflected in the innovations, which prioritized control technology and ergonomics: the more user-friendly the machines, the more productive and hence the more efficient the work. »»

There is an almost unlimited range of applications for the small milling machines. Typical examples include partial roadway repairs, cutting trenches and removing road markings.

WIRTGEN cold milling machines: Good reasons to opt for premium quality

1. The most comprehensive product range

WIRTGEN offer a total of 35 cold milling machines, 21 of them small and compact models – one for every application profile.

- 13 small milling machines with milling widths of 0.35 to 1.3m
- 8 milling machines in the compact class for milling widths of 1.0 to 1.5m
- 14 large milling machines with milling widths of 1.2 to 4.4m

2. Focus on the user and job site practices

Product development focuses on the users and process optimization.

- Practically oriented solutions actively support everyday work
- Intuitive operation
- Which in turn enables fast and efficient working
- Preventively minimizes operating errors and enhances the quality of the milling result

The range of applications of the compact class even extends to removing complete road pavements, which is actually a domain of large milling machines.

WIRTGEN cold milling machines: Our only status symbol is know-how

Cold milling machines and WIRTGEN are two terms that simply belong together. After all, the market leader pioneered this technology and has been steadily advancing it ever since. Initially, it was with the aim of becoming a service provider in road construction. Today, the experience acquired over four decades is channelled into every enhancement. WIRTGEN customers across the world reap the benefits of this experience and the company's collected applications know-how. The pioneering spirit and passion for genuine progress are now a part of the DNA of the entire Group, so that the rehabilitation of roads is inseparably linked with the machines from Windhagen, Germany.

3. The most advanced fleet of small and compact milling machines

Totally new: no model is older than 24 months.

- Manœuvrable small milling machines that are easy to reposition on the job site – all of them rear loaders – deliver flexibility and productivity on small jobs
- The compact milling machines combine the advantages of the small models with the front loader design and the productivity of the large machines

4. Leading technology: One generation ahead

The latest generation is brimming with cutting-edge technologies and innovations.

- Exemplary ergonomics thanks to the multifunctional armrest and the optimized visibility concept
- Innovative control concept with many automated features for steering, positioning and milling
- Precise and easy-to-understand levelling system: LEVEL PRO Plus

WIRTGEN innovations that make the difference when the going gets tough

Multifunctional armrest for small and compact milling machines: Keeping the job firmly in control

One of the highlights of the new generation of small and compact milling machines is the standardized operating concept. The key component is the ergonomic multifunctional armrest. It features four "favourites" buttons that can be programmed with any of 20 different functions. The height of the machine can also be adjusted from the armrest. The control screen, meanwhile, shows the operator the position of the scraper and allows all job data such as lorry loads and total tonnage to be logged.

Automatic efficiency

1 Automated functions of the milling unit: Intelligent self-protection

With the active floating position, the side plate is raised at intervals to keep it from sinking when the machine is working on loose ground. The scraper on the rear rotor plate also comes with new features: a sensor prevents the scraper from catching on edges. The scraper is then raised automatically. Furthermore, a sonic sensor picks up the distance between the scraper and the milled material during partial transfer, in order to regulate how wide the scraper should ideally be opened so that the material is deposited optimally behind the milling unit. The result? Greater output and less wear on the components, milling drum and cutting tools.

2 Automatic height adjustment of the crawler units: Convenient and smart, too

To support the levelling and milling process, the operator can make use of an automatic lowering function to position the machine in the milled cut. When the milling unit reaches the surface to be milled off, the lowering speed is adjusted automatically so that the milling drum slowly penetrates the material down to the set depth. The height of the crawler units can be adjusted in steps of 1mm or 5mm using a new millimetre height function to precisely set the milling depth. The most frequently used height settings can be stored in three height-adjustment memories and called up quickly at any time.

3 Automated milling functions: Efficiency at the push of a button

A range of automated milling functions promotes maximum efficiency in the milling process. A load limiting controller integrated in the machine control system keeps the machine within an optimum performance range at all times. The anti-stall system prevents the engine from shutting off in the event of sudden overloads by automatically releasing the clutch in a fraction of a second. The amount of water required to cool the cutting tools and control dust is also regulated automatically as a function of the engine load. This permits long productive periods while reducing water consumption.

4 Automated steering and positioning functions: Simply versatile

In the 1-meter compact milling machine W 100 CF, for instance, the right rear support wheel is folded in automatically without lowering the milling drum or manually loosening a bolt. In addition to the “basic position”, the right rear crawler track can also be put into the “outside” or “folded in” positions. In the “outside” position, the crawler unit is located within the cutting diameter of the drum, enabling the machine to be easily positioned along the right-hand milled cut. ///

150km of future-oriented road construction

Machines from VÖGELE and HAMM participate in the biggest infrastructure project in Turkey.


VÖGELE
SUPER 2100-3
VÖGELE

Job site details

Constructing a 150km stretch of the new O-33 motorway from Gebze to Izmir, Turkey, with a total length of 427km

Length of section:	2 x 26km plus a 7km approach road
Width of section:	16m

Working parameters

Pave width:	2 x 8m "hot to hot"
Layer thickness:	base course 12cm binder course 11cm surface course 4cm
Paved material quantity:	base course 300,000t in total binder course 270,000t in total surface course 100,000t in total

Material

Base course:	base course material (0/38)
Binder course:	binder course material (0/25)
Surface course:	surface course material (0/16)

Equipment

2 VÖGELE SUPER 2100-3 pavers with AB 600 TV screed
4 HAMM HD+ 110 VV rollers

Full steam ahead for the new O-33 motorway: VÖGELE pavers and HAMM rollers withstand extreme stresses.

Turkey // Marmara

An exceptional road construction project is currently under way in Turkey. The new O-33 motorway linking the metropolitan area of Istanbul with Izmir on the Aegean coast is being constructed in a move to expand the country's infrastructure. In addition to 384km of motorway, approach roads with a total length of 43km are part of the project. The Turkish contractor Enerji İnşaat Taahhüt Ticaret ve Sanayi A.Ş., abbreviated as ENI, won the contract for 150km of motorway construction. First of all, the paving teams tackled a 26km stretch of the O-33, a task which saw the machines from VÖGELE and HAMM sprinting through a truly prodigious programme.

It is a very demanding project, since the time allowed is very limited. That is why we are working in three shifts. The team can stop for breaks, but not the machines. Technology that functions reliably is very much of the essence. We trust our VÖGELE pavers and HAMM rollers 100%. They are not only absolutely reliable, but also produce a perfect paved result.

Hilmi Özdemir, Site Manager
ENI (Enerji İnşaat Taahhüt Ticaret ve Sanayi A.Ş.)

The asphalt pavement is made up of three layers. A 12cm base course was placed first, followed by a binder course 11cm thick and a 4cm surface course. All layers were paved by two SUPER 2100-3 tracked pavers and compacted by four HAMM rollers of type HD+ 110. The large amounts of asphalt required highlight the sheer scale of this project: all in all, 670,000t of material – the equivalent of roughly 27,000 lorry loads – were paved and compacted to produce a 26km stretch of dual carriageway plus a 7km-long approach road.

VÖGELE pavers work "hot to hot"

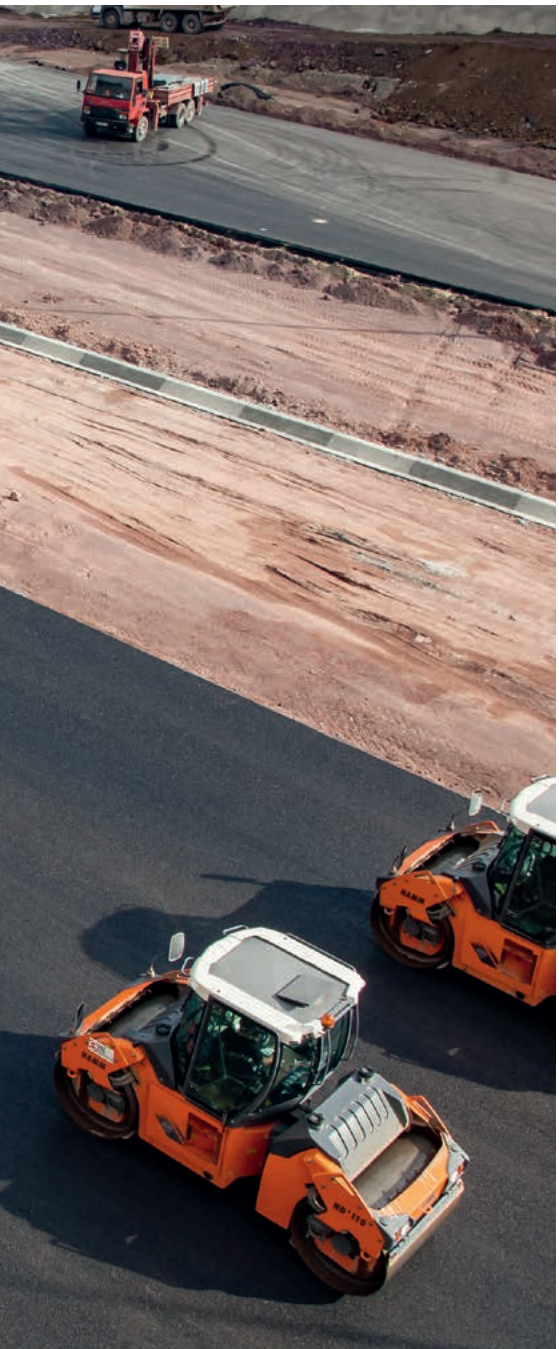
The two SUPER 2100-3 pavers placed all three layers in a pave width of 8m, working "hot to hot" – in other words, alongside one another. This resulted in a quasi-jointless pavement of two 8m strips. With their powerful Cummins engine, the two Highway Class pavers still had reserve power in virtually all situations and could place up to 1,100t of material per hour.

Cutting-edge drive technology for perfect laydown rates

The modern drive concept is a typical feature of the "Dash 3" generation of pavers from VÖGELE. The SUPER 2100-3 is equipped with a modern, powerful and totally reliable 6-cylinder Cummins diesel engine. This drive concept ensures that the paver delivers perfect laydown rates at exactly the required pave speed. This precision had a significant impact on the cost-efficiency of this major project in Turkey. »»

Intensive project support and on-site service: Mehmet Ali Serbest, Marketing and Sales Manager at WIRTGEN Ankara (right) and Barbaros Yargıç, Branch Sales Manager at WIRTGEN Istanbul (left) – here together with Hilmi Özdemir, Site Manager for ENI.

The motorway which is currently under construction from Gebze, southeast of Istanbul, to Izmir is the largest infrastructure project in Turkish history. Together with the approach roads, this new traffic artery will be 427km long and one of several future-oriented infrastructure projects to extend the Turkish motorway network from 2,200km today to 7,500km by the year 2023. The motorway also includes the world's fourth largest suspension bridge, with a length of roughly 3km, across the Gulf of Izmit. The construction project is being implemented as a public-private partnership for the Turkish state motorway directorate KGM (Karayollari Genel Müdürlügü).



The HD+ drivers are overjoyed with the machines' easy operation, spacious panoramic cabin and very bright lighting.

Barbaros Yargıç, Branch Sales Manager WIRTGEN Istanbul

Asphalt compaction with the HD+ from HAMM – Quality is a must

Rapid high-quality final compaction of the asphalt was undertaken by four HAMM tandem rollers of type HD+ 110 VV. An efficient water system with large tanks and intelligent control is a major quality factor. It automatically adapts the water spray to the operating speed. A short glance at the drum is sufficient to verify whether the right amount of water has been selected, for the open design of the frame gives the operator a clear view of the drums and spray bars.

To ensure that the work is not only of high quality but also cost-efficient, HAMM equip their HD+ 110 rollers with the Hammtronic electronic engine management system as a standard feature. This system monitors the traction drive and vibratory drives as well as the engine speed, optimizes machine functions and adjusts the vibration and operating speed in line with the conditions on site. The result: economical operation combined with maximum performance. ///

Job site details

Filling the cavity between two concrete safety barriers on the A 81 Black Forest motorway near Tuttlingen, Germany

Length of section:	7km
Width of section:	2.5m

Working parameters

Pave speed:	5m/min.
Pave width:	2.5m
Layer thickness:	10–12cm

Material

Filling:	0/32 mineral aggregate

Equipment

VÖGELE MT 3000-2i Offset PowerFeeder
VÖGELE SUPER 800-3i paver with the AB 220 TV Extending Screed

Continuous filling enhances efficiency

Filling cavities between safety barriers on the A 81 Black Forest motorway with an MT 3000-2i Offset PowerFeeder and a SUPER 800-3i paver demonstrates the added value delivered by the VÖGELE PowerFeeder series.

Continuous filling amid moving traffic: the VÖGELE MT 3000-2i Offset PowerFeeder makes this possible with its pivoting conveyor.

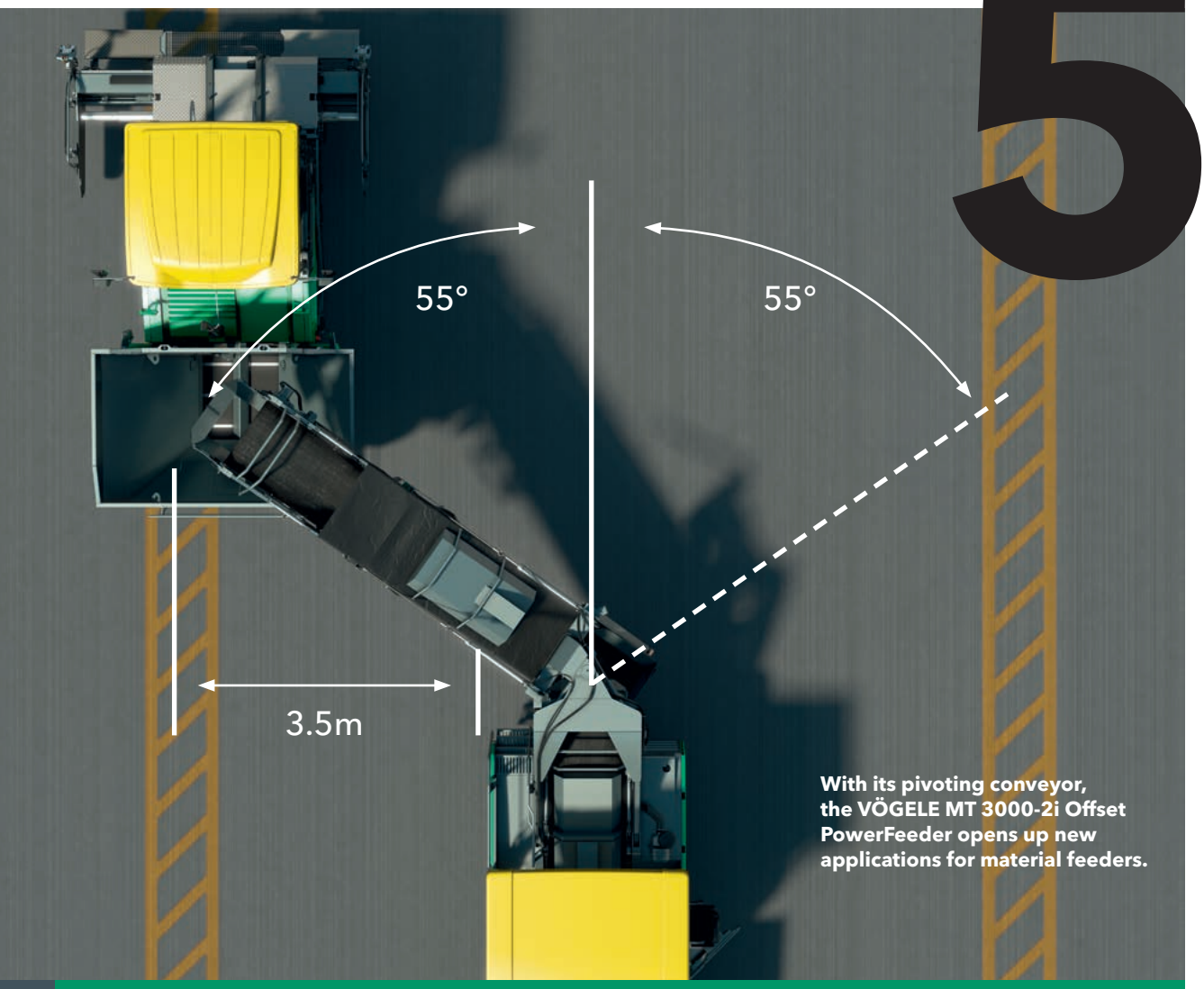
Germany // Tuttlingen, Black Forest

Using material feeders boosts the paving quality. Decoupling the paver and feed lorry improves job site logistics, prevents sudden jolts to the screed during docking and actively counteracts segregation. For these reasons, material feeders are being specified for an increasing number of construction projects in many countries. With the two material feeder models in their PowerFeeder series, VÖGELE are spearheading technological advancement in this machine segment. With its proportionally controlled pivoting conveyor, the MT 3000-2i Offset PowerFeeder in particular offers flexibility to paving teams – and opens up completely new applications to construction companies. This was demonstrated by a job on the A 81 Black Forest motorway in which an MT 3000-2i Offset PowerFeeder fed a SUPER 800-3i Mini Class paver from the side. By these means, it was possible to fill a cavity between two safety barriers on the median strip of the motorway continuously – and therefore efficiently. At the motorway job site in the Black Forest, the innovative PowerFeeder brought yet another added bonus into play with its pivoting conveyor: the technology is so robust that it cannot only handle asphalt, but also water-bound base course material or – as on the A 81 – mineral aggregate. »»

Feeding the paver from the side is really easy with the precise joystick control.

Ralf Wagner, Foreman
J. Friedrich Storz Verkehrswegebau GmbH & Co. KG

Learning by doing: the construction project in Tuttlingen was an interesting case study – also for construction engineer student Desirée Hermann from J. Friedrich Storz Verkehrswegebau GmbH & Co. KG.



With its pivoting conveyor, the VÖGELE MT 3000-2i Offset PowerFeeder opens up new applications for material feeders.

Flexible thanks to its pivoting conveyor: VÖGELE MT 3000-2i Offset PowerFeeder

The ultra-modern MT 3000-2i Offset PowerFeeder can do a great deal more than other material feeders. The pivoting conveyor in particular opens up a wide range of applications that greatly improve machine utilization. An innovative feed concept maximizes conveying capacity, while the ErgoPlus operating concept ensures safe and simple operation.

- Non-contacting material transfer makes for maximum paving quality
- Homogenized material in the receiving hopper of the material feeder due to conical augers
- Wide range of applications thanks to the pivoting and inclining conveyor
- Reliable material transfer based on automatic distance control and collision protection
- Optimum overview and safety thanks to the convenient and practical ErgoPlus operating concept
- Outstanding power and low consumption from the powerful Deutz diesel engine, which delivers 160kW at 2,000rpm
- Outstanding mobility on any terrain and steering precision provided by crawler tracks with powerful separate drives

Feeding the paver from the side boosts efficiency

It was an unusual sight on the motorway job site: the largest and smallest VÖGELE machines joined forces to work as a team. This yielded a number of advantages: since the paver was supplied with material from the side, it was possible to safely maintain the flow of traffic. The alternative – filling the cavity with an excavator or wheeled loader – requires an additional slewing and manœuvring area, lorries have to tip the material onto the traffic lane and work cannot proceed uninterrupted. "Working on a motorway has seldom been so relaxed. Traffic simply passed us by without affecting the construction work at all. The lorries with the mineral aggregate simply merge in front of the VÖGELE material feeder and transfer the material with no further ado," enthused Ralf Wagner, Foreman at J. Friedrich Storz Verkehrswegebau GmbH & Co. KG, describing his experience working with the MT 3000-2i Offset PowerFeeder. Additional compaction was also unnecessary when placing the mineral aggregate with the SUPER 800-3i and the AB 220 TV Extending Screed. As a result, the new concrete safety barriers, which form a 7km-long structural separation of the traffic lanes, were quickly and safely filled. ///

Transfer of material to the pivoting conveyor: the robust rubber belts also convey abrasive materials with ease – and without any losses.

Transfer to the material hopper of the paver: even the relatively small hopper of the SUPER 800-3i is neatly filled – without losses.

100 miles day and night

In San José, in-situ cold recycling with a WIRTGEN 3800 CR recycler proves to be the most economical solution.

One special challenge was that the job sites were spread over the entire downtown area of this highly-populated city.

USA // San José

Time is money, especially in road construction. When it comes to cost efficiency, being able to put all equipment to maximum use is a critical factor. Consequently, it is a major advantage when a machine can be used flexibly, like the 3800 CR recycler from WIRTGEN, which can use the up-cut and down-cut cold recycling processes or operate as a high-output milling machine. Thanks to its diverse application options, the recycler fulfils unique construction specifications as required by an application or invitation to tender.

In California, the Golden State, the 708kW powerhouse is resurfacing 100 miles of San José's main traffic arteries in situ (on the spot), together with a VÖGELE VISION 5200-2i tracked paver in a rear-load process. With this method, the 3800 CR travels in reverse, removing the damaged asphalt layers in a down-cut process and transferring the recycled material to the paver.

Down-cut method increases paving quality

The contractor, MCK Services Inc., elected to use the process for this job to achieve a particularly high level of paving quality. In the down-cut process developed by WIRTGEN, the milling drum rotates in the direction of travel, not against it as in the up-cut process. As a result, particle size can be precisely controlled when processing the material, especially on very brittle, thin, old asphalt roads.

New load-bearing capacity for the streets of San José

One illustrative example is W. Campbell Avenue, a main road in San José in the heart of Silicon Valley. The WIRTGEN cold recycler, with its usual reliability, first milled off a 10cm layer of damaged asphalt across a width of 3.8m, granulated it, and mixed in the 1% pre-spread cement. Two tank lorries supplied the recycler with

hot bitumen and water via connected hose lines. Added pressurized air generates foamed bitumen. Microprocessor-controlled injection bars ensure precision injection of the foamed bitumen – in this case 2.5% – into the mixing chamber, where it is optimally processed with the granulated material. Ejectors positioned on the rotor then transfer the mix to the 3800 CR's conveyor belt.

Meanwhile, traffic in front of the Starbright Theater, at the corner of Fulton Street, continued to flow by the recycling train apparently undisturbed, thanks to the fact that pavement rehabilitation is completed in a single pass, without the lorries having to weave in and out of the lane. This increases safety and is a tremendous relief to the traffic system. »»

Job site details

Rehabilitation of main and secondary downtown roads in San José, California

Costs:	US$ 13.7 million
Length of section:	100 mi.
Area of section:	224.000m²

Working parameters

Width of section:	3.8–4.9m
Layer thickness:	10cm

Material

Quantity of mix:	50,545t
Percentage of foamed bitumen:	2.5%
Percentage of cement:	1%
Optimum moisture content:	5–7%

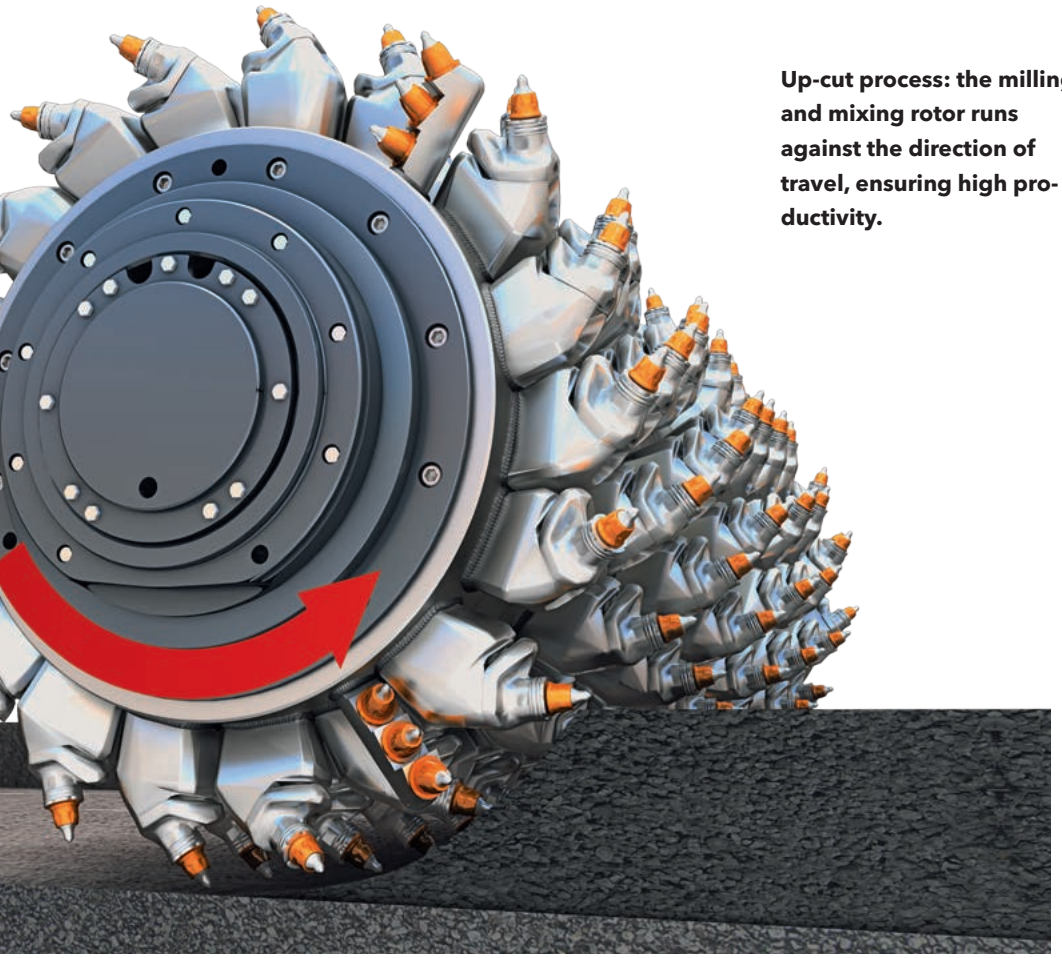
Equipment

WIRTGEN 3800 CR cold recycling machine
VÖGELE VISION 5200-2i paver
HAMM HD+ 110 VV HF tandem roller
HAMM GRW 280i-20 pneumatic tire roller

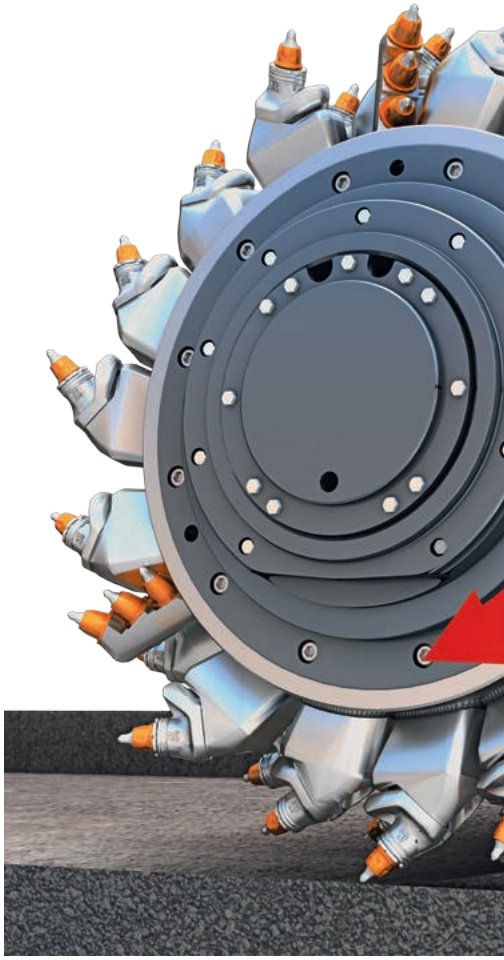
Recycling train with the 3800 CR in rear-load mode (down-cut)

If necessary, a binder spreader first pre-spreads cement, followed by water and binder tank trucks. The milling and mixing rotor on the WIRTGEN cold recycler granulates the asphalt layers down to a depth of 18cm. At the same time, the cement is mixed in and the water and bitumen emulsion or foamed bitumen are injected into the mixing chamber by injection bars. The prepared material is fed directly from the discharge conveyor to the material hopper of the VÖGELE paver, which paves it true to line and level. HAMM rollers then take over compaction.

> **Cold recycling in-situ fulfils exacting quality requirements, is extremely economical, environmentally-friendly, and has the least impact on the public.**
>
> **Frank Farshidi,**
> **Project Manager for the City of San José**



Up-cut process: the milling and mixing rotor runs against the direction of travel, ensuring high productivity.



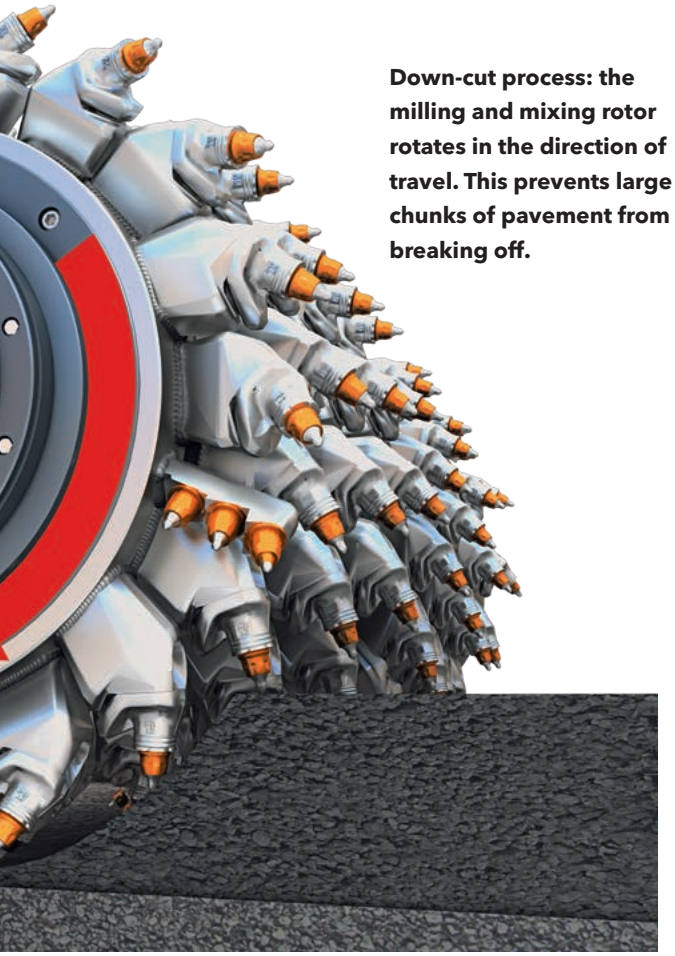
Working direction ❯❯❯

Working direction ❯❯❯

Recycling train with the 3800 CR using the up-cut process

If necessary, a binder spreader first pre-spreads cement, followed by water and binder tank lorries. The milling and mixing rotor granulates the asphalt layers down to a depth of 15cm. At the same time, the cement is mixed in and the water and bitumen emulsion or foamed bitumen are injected into the mixing chamber by injection bars. After an auger spreads the prepared material across the entire pave width, the VÖGELE extending screed paves it true to line and level. HAMM rollers then take over compaction.

When fitted with an extending screed, the 3800 CR can handle not only recycling in the conventional up-cut process, but also the down-cut process developed by WIRTGEN.



Down-cut process: the milling and mixing rotor rotates in the direction of travel. This prevents large chunks of pavement from breaking off.

The WIRTGEN 3800 CR machine concept is geared to maximum output so that rehabilitation projects can be completed quickly. With this in mind, the conveyor system also has an extremely high conveying capacity. The slewing and height-adjustable conveyor rapidly transfers material to the material hopper on the tracked paver, which then places a 10cm layer and precompacts the surface. The HD+ 110 VVHF tandem roller and GRW 280i pneumatic tire roller from HAMM perform final compaction, giving the road a closed, smooth surface texture.

Cost-efficient and eco-friendly

After 100 miles and – thanks to in-situ cold recycling – a short construction time, Bob Garrigan, Superintendent at MCK Services, is pleased: "Thanks to the WIRTGEN 3800 CR, we were able to fully comply with the traffic and budget requirements stipulated by the City of San José."

In the end, the results speak for themselves: Some 9,600 fewer lorry hours significantly reduced CO_2 emissions, fuel consumption and construction traffic on streets that receive between 12,000 and 35,000 vehicles daily. In total, the city saved some US$1.5 million. ///


HAMM
HD*110
OSCILLATION
68
HAMM

State-of-the-art technology for the Baku city circuit

HAMM rollers and VÖGELE pavers deliver excellence for the first Formula 1 track in the Caucasus.

Job site details

Conversion of the city roads to a Formula 1 circuit in Baku, Azerbaijan

Length of the circuit:	6,003m
Width of the circuit:	7.5–19m
Asphalt-paved area:	113,400m²
Slope	+12% to –9%

Working parameters

Paved material quantity

Binder course:	10,400t
Surface course:	11,600t

Layer thickness

Binder course:	5cm
Surface course:	4cm

Material

Binder course:	AC 16 BS SG
Surface course:	AC 11 RT

Equipment

1 WIRTGEN W 2100 milling machine
8 VÖGELE SUPER 1900-2 pavers with AB 600 TV Extending Screed
4 HAMM HD+ 110 VO tandem rollers
4 HAMM HD+ 90 VO tandem rollers
2 HAMM HD 110 tandem rollers
2 HAMM HD 90 tandem rollers
2 HAMM HD 10 tandem rollers
1 HAMM HD 14 tandem roller

The race circuit in Baku features 8 righthanders and 12 lefthanders – including a lap around the historic city centre with a double chicane and an uphill section. At the end of the circuit, the Formula 1 racers reach top speeds of more than 340km/h on the approximately 2km straight.

Azerbaijan // Baku

Whenever the 22 Formula 1 pilots race around the track, vying for pole position, the air in one of the many metropolises around the world is charged with excitement. In June 2016, Baku, the capital city of Azerbaijan, got its first taste of this heady cocktail of top speeds, precision and thrills, glamour and celebrations. This spring, a city circuit was created in the centre of the capital, on the "balcony of Europe" amid the centuries-old buildings, contemporary high-rise towers and the port on the Caspian Sea. To make sure that the pilots can safely keep their powerful 815hp (600kW) racing cars on the track, WIRTGEN, VÖGELE and HAMM machines built a high-quality asphalt pavement on the narrow streets and the wide boulevards of the city. »»

First choice for the top league

Formula 1 races make the highest demands on the pavement. The asphalt must be particularly homogeneous and even – and naturally have an outstanding grip. Ideally, such circuits are paved on a defined sub-base. This was not possible in Baku, however, as the circuit passes straight through the city. At the beginning of the year, the streets were a mixture of normal, asphalt roads and historic cobblestones.

Special formula for the ancient cobblestones

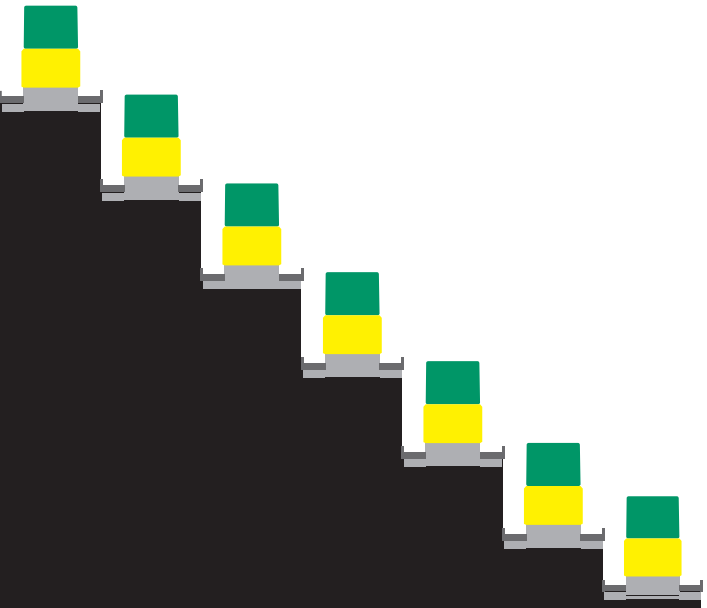
As a feature of a UNESCO World Heritage site, the historic cobblestones had to remain intact and be restored to their original glory after the race. "We solved this unusual challenge by separating the cobblestones from the asphalt with a layer of chippings. A pavement of base course, binder course and surface course was then paved. In the cobbled areas, a carbon-reinforced asphalt layer was integrated into the surfacing. It was designed to prevent the new asphalt pavement shifting over the cobblestone," explains Dr Rainer Hart, an asphalt consultant.

On the other circuit sections, the contractor, AzVirt LLC from Baku, employed 3D-precision milling to create an exact, precisely pre-defined profile that met Formula 1 standards on the existing city roads. »»

AzVirt used several rollers following closely behind the pavers to compact the asphalt in the optimum time frame – an important aspect for meeting the highest quality demands.

At the moment, Baku can justifiably claim to have the best city roads in the world.

Dr Rainer Hart, Managing Director
Hart Consult International GmbH



52m "hot to hot"

The perfectly interlocked asphalt pavement

The formation of the joints has a crucial impact on the service life of asphalt surfaces. This is because cracks at the joints or those resulting from heavy loads are the first places to be attacked by water. "Hot to hot" paving is therefore recommended to permanently prevent moisture from penetrating the asphalt pavement. At least two pavers simultaneously place the asphalt strips "hot to hot" in a slightly staggered formation. Two or more pavers working in echelon is the best way to ensure perfectly bonded longitudinal joints.

EXPERT TIPS

- The distance between the individual pavers should be kept as short as possible so that the joint face of the first strip is still sufficiently hot.
- Rollers with a light operating weight should follow directly behind the pavers. They should compact the surface from the outside inwards in the direction of the joint. It is recommended that the rollers work with an overlap of at least 15cm parallel to the longitudinal joint.
- Joints should be offset in the individual pavement layers and produced with oblique faces.

Eight SUPER 1900-2 pavers with AB 600 TV Extending Screed

The binder and surface courses were then paved onto the previously prepared roadways. This was accomplished by an impressive armada of VÖGELE pavers and 15 HAMM rollers, with the machines sometimes working simultaneously on different sections; all in all, 8 SUPER 1900-2 pavers were used, each equipped with an AB 600 TV Extending Screed. The use of identical screed types was stipulated in the contract.

"Hot to hot" through Baku: the VÖGELE pavers produced a perfectly interlocked asphalt surface.

Perfect logistics

During paving, the asphalt production, transport and feeding were controlled so as to ensure that the pavers were able to work at an almost constant pave speed. More than 40 lorries transported the asphalt from three mixing plants to the pavers. Due to their careful preparation and planning, AzVirt were able to supply asphalt to the pavers just in time without stoppages, despite the difficult traffic situation in the city centre – an impressive feat of logistics and civil engineering.

Seven at one blow

The absolute highlight was the "hot to hot" paving in the area of the seafront, where 7 pavers plus 15 rollers featuring operating weights of between 2 and 14t built the asphalt pavement for the track and the spectator area in a single step. Their combined width spanned 52m – a true highlight for all involved! »»

HD, HD+ and HD CompactLine for high-quality compaction

The AzVirt experts know that final compaction has a decisive influence on the surface quality of the asphalt pavement. With this in mind, they exclusively used HAMM tandem rollers of the HD, HD+ and HD CompactLine series. The design of the articulated rollers already ensures a regular weight distribution – a key factor for outstanding pavement evenness without bumps and cracks. An added advantage is the excellent side clearance combined with the large track offset. Ideal for ensuring consistently precise and full compaction along curbs, road fittings and walls.

Safe and effective with unique visibility

All HAMM rollers feature outstanding visibility. On the HD+, this is guaranteed by the clever frame construction combined with the panoramic cabin. The compact machines of the HD CompactLine range provide drivers with a full view of the working area at all times due to the slim-line front end. This not only influences quality, but is also a safety aspect, particularly when a large number of rollers closely follow the pavers as in Baku.

Protecting historic buildings

Another decisive factor for the quality of the compacting work in Baku was the use of oscillation rollers. They cause significantly lower levels of vibration to the surrounding area than vibratory rollers.

The invitation to tender specified oscillation compaction, as the entire circuit is flanked by century-old buildings. In addition, there are gas pipes as well as underground car parks and tunnels under many of the roads. Vibration compaction was therefore an absolute no-go in most areas. For Manfred Martin, Head of the AzVirt Technical Division, there was no alternative to the HAMM rollers: "As a pioneer in this field of technology, HAMM have more than 30 years of experience with oscillation – much more than any other manufacturer."

Final finish with oscillation compaction

However, oscillation has a great deal more to offer than "just" low-vibration compaction. The special drum movement also creates even surfaces with a good initial grip – the second key point in favour of using oscillation in Baku.

The best city roads in the world

Oscillation compaction was also the first choice for the surface course of the F1 circuit, as areas compacted with oscillation have an excellent longitudinal evenness. The final quality control to check the position and evenness of the track showed that AzVirt had built a superb pavement on the originally inhomogeneous city roads and easily met the stringent surface accuracy requirements of 3mm over a distance of 4m. ///

Oscillation technology from HAMM was used for dynamic compaction of the circuit around the historic city centre, the modern government district and the stylish seafront, without impacting above-ground and underground structures. The compaction results achieved in the process were excellent.

Oscillation

Low-impact methods for the city
On city-centre job sites with confined conditions, dynamic compaction with oscillation is recommended, as it only introduces around 15% of the vibrating force into the surrounding area in comparison to vibration. This protects the surrounding buildings as well as the pipes and installations below the pavement.

ADVANTAGES
- Low vibrating forces in the area around the machine
- Dynamic compaction, also for vibration-sensitive areas

Perfect surfaces for Formula 1 races
Surfaces that are compacted with oscillation feature a very high degree of longitudinal evenness. This is because the drum is in constant contact with the ground. This type of asphalt compaction also produces an excellent initial grip, as the drum rubs the bitumen on the upper surface of the pavement with its oscillating movement. A clear bonus when it comes to safety.

ADVANTAGES
- Excellent longitudinal evenness, no irregularities in the surface
- High level of initial grip


Berlin
Netherlands
Germany
Büchel Air Base
Czech Republic
France
Switzerland
Austria

WIRTGEN GROUP prepares air base for take-off

Reconstruction of the surface course at Büchel Air Base using technologies developed by four WIRTGEN GROUP brands.

Germany // Büchel

Concentrated power of the WIRTGEN GROUP on the job at Büchel Air Base: Together with asphalt mixing plants from BENNINGHOVEN, machines built by WIRTGEN, VÖGELE and HAMM successfully reconstructed the surface course and handed over a top quality runway right on schedule. The success was based on painstakingly planned site logistics, reliability and precision of machine technology and the commitment of the contractors involved.

New asphalt surface course for Tornado jets

Every month, Tornado aircraft take off and land roughly 200 times at Büchel Air Base, set amid the uplands of the Eifel region. Large transport planes also take off and land here. After more than ten years of service and several harsh winters, signs began to emerge that there was a risk of "foreign object damage" (FOD) on the runway. FOD is the damage sustained by aircraft, for instance when they draw in mineral particles from the asphalt, which may destroy the jet engines as they start up. Such "foreign objects" are hence a bane for all airfield operators.

When loose particles measuring up to 5cm in diameter were occasionally found on the runway in Büchel, planning started immediately for reconstruction of the roughly 4.5cm-thick asphalt surface course with its 0.5cm overlay of anti-skid material. The Brenner engineering office in Hennef, Germany, considered several possibilities during the planning process. In the end, they decided to reconstruct the surface course with stone mastic asphalt. Compared to conventional materials, stone mastic asphalt offers much better non-skid properties, is durable and highly resistant to deformation. »»

Job site details

Reconstructing the surface course of the Büchel Air Base runway, Germany

Length of section:	2,250m (approx.)
Width of section:	46m (approx.)
Total area:	103,000m² (approx.)

Working parameters

Milling	
Milling depth, fine milling:	10mm
Milled material quantity:	2,100t (approx.)
Milling depth, standard milling:	3.5cm
Milled material quantity:	8,400t (approx.)
Total water consumption:	60,000 litres per day (approx.)
Pavers	
Pave width, strips 1 and 4:	11.25m (approx.)
Pave width, strips 2 and 3:	2 x 11.5m "hot to hot"
Transverse slope:	1.4% (approx.)
Layer thickness:	4cm
Asphalt mixing plants	
Mixing plant in Boppard:	140t/h
Mixing plant in Ürzig:	160t/h
Mixing plant in Niederwörresbach:	140t/h

Material

Surface course:	SMA 0/11 S with 25/55 PmB (polymer-modified bitumen) and 4kg of cellulose fibre per tonne
Paved material quantity:	10,000t in four days (approx.)

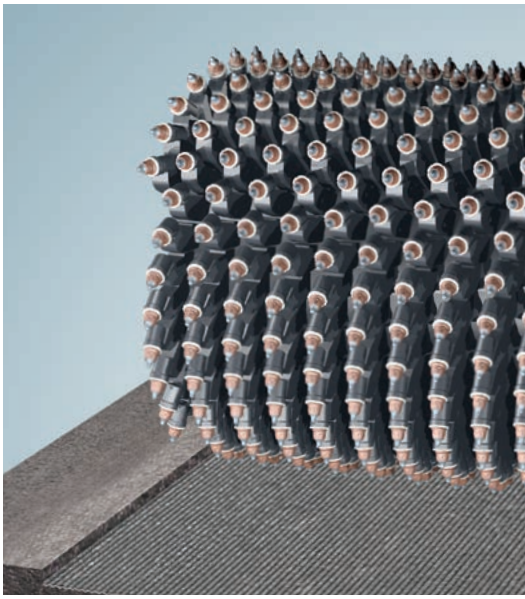
Machinery and plants

2 WIRTGEN W 210i cold milling machines with fine milling drum LA 6
1 WIRTGEN W 250 cold milling machine with 3.8m milling drum

1 VÖGELE SUPER 2100-3i paver with SB 250 TV Fixed-Width Screed
1 VÖGELE SUPER 2100-2 paver with SB 250 TV Fixed-Width Screed
1 VÖGELE MT 3000-2i Standard PowerFeeder
1 VÖGELE MT 1000-1 material feeder

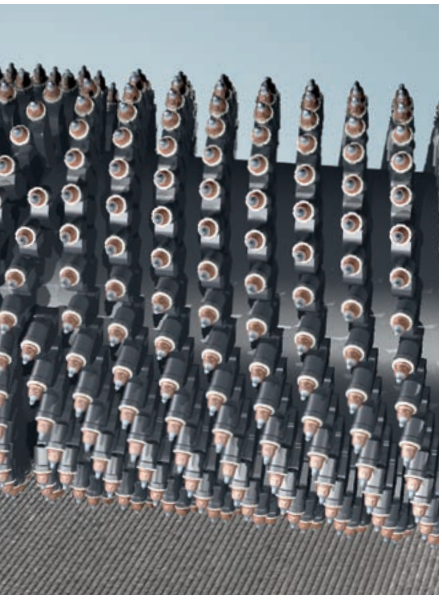
2 HAMM HD+ 90 rollers
2 HAMM HD+ 110 rollers
2 HAMM HD+ 120 rollers
1 HAMM HD+ 120 OV roller
3 HAMM HD 90 OV rollers

1 BENNINGHOVEN BA 3000 asphalt mixing plant
2 BENNINGHOVEN BA 4000 asphalt mixing plant



The small tool spacing of the micro-fine milling drums produces surfaces featuring extremely low surface roughness and a fine surface texture.

The cabin can be displaced beyond the zero-clearance edge on both the right and the left-hand sides and, in all positions, pivots through 110° in either direction. This gives the operator of the W 210i a clear view of the working area, even when reversing.



When working at small milling depths, only one of the two engines installed in the machines is running. This reduces fuel consumption considerably.

Dieter Klein, Managing Director
DKS Gesellschaft für Fahrbahnsanierungen
(Society for Road Pavement Rehabilitation)

Precision work by WIRTGEN milling machines with super-fine milling drum

The first step was to remove the damaged asphalt pavement with the aid of WIRTGEN cold milling machines, a job that was carried out in two passes. The first 5–10mm were interspersed with anti-skid material and had to be disposed of separately. For this reason, the top layer was removed to a depth of exactly 10mm by super-fine milling. This sufficed to remove the entire layer and at the same time minimize the volume of special waste. A perfect job for the 2 WIRTGEN milling machines of type W 210i, both fitted with a micro-fine milling drum with 1,008 cutting tools distributed over a milling width of 2m.

Needless to say, accurate levelling is essential for such a precision job. On large milling machines, the modern automatic levelling system LEVEL PRO ensures that the milling depth is precisely adhered to. The height is adjusted via four lifting columns in the front and rear crawler tracks, all of which are interlinked hydraulically. As soon as one of the crawler tracks runs over an elevation or into a depression, the other tracks automatically balance out the resultant difference in height. This four-fold full floating axle system ensures that the machine always adapts to the base. »»

Large W 250 milling machine with 3.8m working width

The two large milling machines, each with an on-board power rating of 537kW, work their way through the asphalt at an enormous operating speed of roughly 25m/min. An even larger cold milling machine followed hot on their heels, almost matching them for speed: a W 250 with a milling width of 3.8m. It removed the remaining asphalt surfacing to a depth of some 3.5cm in a second pass. Incidentally, two diesel engines are installed in each of the three cold milling machines. The principle: one engine is in operation all the time to provide a drive for all function groups, while the second engine is only activated when required.

One particular challenge was to ensure a sufficient supply of water. The water is injected into the milling chamber to bind dust and cool the cutting tools. Each of the large milling machines comes with two separate water spray bars. The water pressure adjusts as a function of load and the water quantity is infinitely variable for optimal cooling of the cutting tools. Around 60,000 litres of water were needed every day for the three milling machines – an exceptionally large amount. When all 103,000m² of asphalt surfacing had been removed after just four working days, the VÖGELE pavers and HAMM rollers appeared on the scene to pave and compact the new surface course.

103,000m² in four days: the large milling machines from WIRTGEN did an outstanding job of removing the asphalt surfacing.

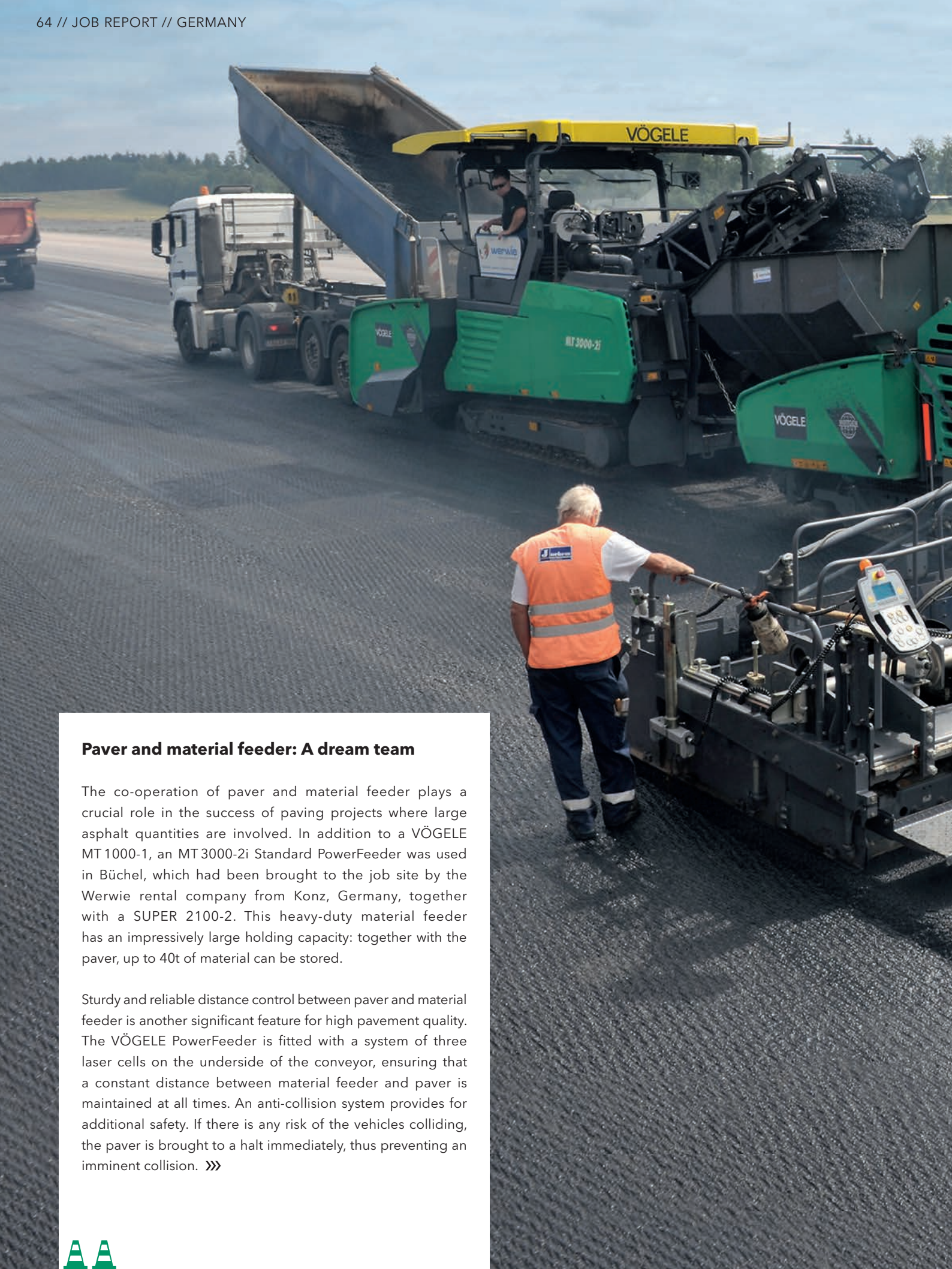
VÖGELE pavers pave 23m “hot to hot”

For the new asphalt surface course, general contractor Juchem Asphaltbau used a SUPER 2100-2 and a SUPER 2100-3i paver from VÖGELE, each equipped with a 11.5m-wide SB 250 TV Fixed-Width Screed. A VÖGELE material feeder was used in front of each paver to ensure continuous paving in a high quality. The surface course on the outer right-hand strip of the 2.3km runway was completed in just one day. On the second day, the two pavers, each preceded by a VÖGELE material feeder, built a 23m-wide asphalt surfacing “hot to hot” with no joint in the central and most heavily stressed area. Working with a material feeder, the SUPER 2100-3i completed the asphalt surface on the outer left-hand strip. The result was an asphalt pavement 46m wide with a constant transverse slope of 1.4% and just two “real” joints far away from the centreline. »»

Hydraulic bolt-on extensions from VÖGELE: Flexibility for fixed-width screeds

The pave width of fixed-width screeds can also be adjusted by up to 1.5m with VÖGELE hydraulic bolt-on extensions. This technology combines the advantages of a fixed-width screed with those of an extending screed.

- Hydraulic bolt-on extension, left and right, for SB 250 and SB 300 Fixed-Width Screeds
- Can be extended by 0.75m on either side (1.5m in total)
- Available in the versions T (with tamper), TP1 (with tamper and one pressure bar) and TP2 (with tamper and two pressure bars)
- Electric screed heating for screed plates, tamper bars and pressure bar(s)



Paver and material feeder: A dream team

The co-operation of paver and material feeder plays a crucial role in the success of paving projects where large asphalt quantities are involved. In addition to a VÖGELE MT 1000-1, an MT 3000-2i Standard PowerFeeder was used in Büchel, which had been brought to the job site by the Werwie rental company from Konz, Germany, together with a SUPER 2100-2. This heavy-duty material feeder has an impressively large holding capacity: together with the paver, up to 40t of material can be stored.

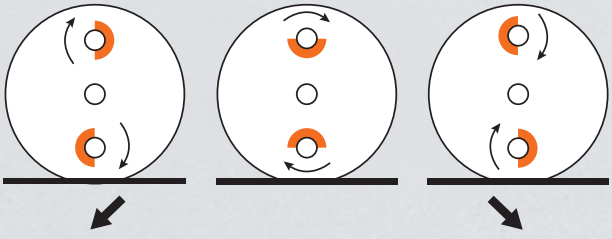
Sturdy and reliable distance control between paver and material feeder is another significant feature for high pavement quality. The VÖGELE PowerFeeder is fitted with a system of three laser cells on the underside of the conveyor, ensuring that a constant distance between material feeder and paver is maintained at all times. An anti-collision system provides for additional safety. If there is any risk of the vehicles colliding, the paver is brought to a halt immediately, thus preventing an imminent collision. »»

Hydraulic bolt-on extensions help us achieve any intermediate width whatsoever, even with a fixed width screed – an extremely practical solution.

Markus Stumm, Site Manager
Juchem Asphaltbau GmbH & Co. KG

Oscillation speeds up the work

One third of the rollers working on the Büchel project were equipped with oscillating drums. Developed by HAMM, this compaction technology is equally advantageous for compaction work on small areas, bridge decks or in multi-storey car parks, and for large areas, such as motorways or airport runways.



› The principle of oscillation

An excitation system inside the drums generates an oscillating movement. In contrast to vibratory compaction, however, oscillation does not introduce any vertical forces into the asphalt pavement. Instead, the drum performs a forward-backward movement, remaining in permanent contact with the asphalt while dynamic shear forces are additionally exerted. This takes place during both the forward and the backward movement. In other words, the roller actually operates with twice the compacting frequency.

› The advantages of oscillation

The result of oscillation, on the one hand, is a rapid increase in density. This is an advantage, above all, when compacting thin layers. Furthermore, oscillation prevents aggregate grains from being crushed and avoids over-compaction. And since the oscillating drums introduce constant shear forces into the asphalt instead of vertical forces, surfaces without any irregularities are achieved which meet the highest demands in terms of evenness.

HAMM rollers guarantee high output per unit area

A total of 10 HAMM rollers behind the two VÖGELE pavers carried out high-quality compaction of the new surface course. For this job, Juchem and Werwie chose articulated rollers of the HD+ and HD series with operating weights between 9 and 12t, four of them equipped with oscillating drums. An outstanding feature of the HD+ series is the excellent view from the fully glazed cabin, nothing obstructs the operator's visibility. He always has a clear view of the job site, his working area and the drums. This significantly enhances the rollers' high safety standard.

"Outstanding visibility is one of the reasons why customers like to rent our HD+ series HAMM rollers," explains Matthias Beckmann, Rental Park Manager at Werwie. In addition, the large, heavy rollers from the HD and HD+ series used in Büchel are particularly appreciated for their high performance per unit area. It results from the combination of wide drums with large diameters, powerful drives and an intelligent automatic reversing function. The rollers, furthermore, feature amply dimensioned tanks for diesel fuel and water allowing them to work throughout an entire shift without a need for refilling. This way, HAMM rollers are equipped with all it takes to achieve high productivity – one of the reasons behind their selection for the Büchel Air Base project. »»

High-quality compaction assured

Another key feature of the HD+ series is the very favourable weight and load distribution. It is due above all to the position of the articulated joint almost in the machine centre and its specific kinematic characteristics. This results in excellent driving stability. And thanks to their uniform weight distribution, HAMM rollers from the HD+ series are capable of producing surfaces of perfect evenness very rapidly, a primary factor when it comes to compacting surface courses.

In addition to load distribution, the water sprinkling system is also crucial for compaction quality. This is why HAMM equip their HD+ series rollers with powerful pumps delivering the required amount of water precisely and reliably to the spray nozzles. The water sprinkling system can be easily monitored by the operator, who always has a clear view of the spray bars from his panoramic cabin due to the smart frame design. The amount of water applied is conveniently adjusted from the operator's station. Last but not least, storing the water in two separate tanks provides for uniform weight distribution in any operating situation.

The driver's seat on the HD+ rollers can be moved right up to the outer edge of the cabin and pivoted through 90° in either direction.

Three asphalt mixing plants from a single source

On a project of this size, large amounts of asphalt need to be produced in a very short time. In Büchel, three BENNINGHOVEN mixing plants owned by the Juchem Group produced no less than 10,000t in four days. While the two pavers worked simultaneously, each of the mixing plants in Ürzig and Niederwörresbach prepared some 140t, and the plant in Boppard some 160t of stone mastic asphalt per hour. The three mixing plant supervisors were in contact with each other all the time throughout the four days in order to ensure that the two high-performance pavers were continuously supplied with the required quantities of mix. During these days, up to 50 lorries were in operation. The identical quality of the mix produced in each of the three mixing plants was an important requirement for the project's success.

With this in mind, Juchem used raw material from the same quarries at all three locations and carried out numerous checks. Not only the mixing plants' capacity, but also their technology was crucial for the asphalt quality. "We use modern BENNINGHOVEN control systems at all three locations. As a result, we were able to set up the plants precisely and produce exactly the desired mix. At the same time, the new control systems allowed energy-saving mixing, thus cutting the costs of consumables," explains Mixing Plant Supervisor Karl-Heinz Thiem. »»

EVO JET: Multi-fuel burner from BENNINGHOVEN for cost-saving operation

- The Juchem Group's BENNINGHOVEN asphalt mixing plants are operated by EVO JET burners of the latest generation.
- Various fuels can be used: heavy fuel oils, liquid gas, natural gas, solid fuels such as coal dust, or a combination of several fuels.
- The plant can be switched from one fuel to another at the push of a button, with no need for mechanical conversion.
- Depending on the current market prices, the operator can choose the cheapest fuel, thus boosting the plant's cost-efficiency.

Once in operation, a BENNINGHOVEN burner keeps going and going. It's the Mercedes among burners!

Karl-Heinz Thiem, Mixing Plant Supervisor in Ürzig
Juchem GmbH & Co. KG

Ultra-modern mixing plant – Despite being built in 1986

Karl-Heinz Thiem monitors and controls the BENNINGHOVEN type BA 3000 asphalt mixing plant in Ürzig installed back in 1986. It was one of the first mixing plants built by BENNINGHOVEN. Even then, the youngest member of the WIRTGEN GROUP was coming up with visionary concepts characterized by their great flexibility. This consequently made it possible to modernize and enlarge the plant repeatedly with new technology, such as a new control system.

"Ready for take-off" after just two weeks

After two weeks of highly concentrated work with WIRTGEN GROUP machinery and plants, Juchem completed this demanding project, from milling through to paving and compaction, right on schedule. The customer's project manager, Uwe Müller from LBB (state-owned company for properties and construction supervision) in Rhineland-Palatinate, Germany, was fully satisfied with the project's punctual completion and outstanding result: "We are right on schedule and the quality of the asphalt pavement is impeccable." After no more than two weeks in the hands of the construction machinery, the Air Base could be handed back to its operators. ///

A colourful connection:
bridge link in the Leh region.

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