RoadNews for new roads

The WIRTGEN GROUP User Magazine for India // № 03

WIRTGEN VÖGELE HAMM KLEEMANN BENNINGHOVEN

Local development and production plus on-site service from the WIRTGEN GROUP:

Going all-out for India

Contents

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Dear Readers,

In the WIRTGEN GROUP, every innovation and every technology must satisfy two key criteria: quality and cost-efficiency. After all, our machines and plants can only give our customers and users an edge, if they deliver high-quality results at a low cost.

A selection of articles in this edition of RoadNews will reveal how this is achieved; most notably, our top feature on KLEEMANN EVO line plants, which are processing rock and stone for the construction of a bypass in Udaipur. Their transport-friendliness has proven a winning feature when moving between different operation sites. Our machines excel, not only in the construction of new roads, but also in rehabilitation applications – for instance WIRTGEN's W 195 cold milling machine and WR 240 cold recycler and soil stabilizer.

But the WIRTGEN GROUP's closeness to its customers goes beyond the supply of reliable technology and an on-site service. WIRTGEN INDIA develop and produce an increasing number of machines at our local production facility in Pune, working in close alliance with the German brand headquarters. The models produced here include the HD 99 tandem roller and the 311 compactor from HAMM. We will also be presenting two VÖGELE innovations developed with an eye to guaranteeing top quality in asphalt paving, too: the Niveltronic Plus System for Automated Grade and Slope Control, which delivers maximum surface accuracy, and RoadScan, the non-contacting temperature-measurement system.

We hope you enjoy reading this third edition of RoadNews India!

Best wishes,

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

A fast-track solution

for Udaipur

Anyone intending to drive through Udaipur must have time to spare. To relieve the strain on the city's roads – and on the nerves of travellers – a bypass is now being built. KLEEMANN crushing and screening plants in the EVO line are supplying the necessary material.

Processing rock and stone with KLEEMANN EVO line plants: the screens of the MOBISCREEN EVO series – in this case an MS 703 EVO – are manufactured in the WIRTGEN GROUP's local production and assembly facility in Pune. They are doing a first-class job not only in India, but also worldwide.

Job site details

Processing granite for the construction of a bypass for Udaipur, Rajasthan

Feed material:	Granite
Feed size:	0–550mm
Crushing capacity:	150t/h
Final products:	0–5mm, 5–10mm, 10–20mm, 10–30mm, Granular Sub-Base (GSB)

Plants

KLEEMANN MOBICAT MC 110 Z EVO jaw crusher
KLEEMANN MOBICONE MCO 9 EVO cone crusher
KLEEMANN MOBISCREEN MS 703 EVO screening plant

India // Rajasthan

Udaipur is a beautiful city in the Indian state of Rajasthan. It has a population of around 470,000. They are joined by just over two million tourists a year, making Udaipur one of the most frequently visited places in India. The three artificial lakes around the city and its various palaces and temples are big attractions for many tourists, making tourism an important pillar of the local economy. Equally, however, many companies have also settled in the region. This has left Udaipur facing a problem: urban traffic. The streets are so congested that at peak times it can take up to five hours to drive through the city. The journey is particularly taxing for lorries, since they cannot use all the roads and shortcuts. A new bypass has therefore been planned to remedy the situation. The 24km or so between the towns of Kaya and Debari, located to the south and east of Udaipur, can then be covered in about half an hour, a significant time saving.

Three reasons for using KLEEMANN EVO plants

1. Productivity:
EVO plants can be interconnected by line coupling, automatically achieving a high output.

A strong case for strong machines

The National Highway Authority of India (NHAI) conceived the road construction project, which will take two years and is tipped to cost some INR 8.9 billion. The contract was ultimately awarded to Sadbhav Infrastructure, which in turn subcontracted the task of crushing the material used to build the road to SK Khetan Infra. SK Khetan Infra is a local building contractor that has already been involved in a number of smaller road construction projects. The company also carries out work for the mining activities of Binani Cement. The current road construction contract is the largest infrastructure project the company has handled to date. The contractor therefore needs powerful and reliable machines if it is to tackle the important task. It opted for the MC 110 Z EVO mobile jaw crusher, the MCO 9 EVO cone crusher and the MS 703 EVO classifying screen. What ultimately clinched it for the owner, S. K. Khetan, were three points in favour of KLEEMANN: the Continuous Feed System (CFS), which controls the feeding of the crusher, and the possibility of interconnecting multiple plants by means of line coupling to ensure a high output. The plants also work efficiently thanks to the diesel-direct drive, saving fuel. The crusher unit is driven directly by the diesel engine, while the conveyors, for instance, are operated electrically. Meanwhile, the high degree of automation of the machines reduces the personnel required. That adds up to three good reasons for choosing the EVO line from KLEEMANN. »»

Made in Pune, successful worldwide

The MOBISCREEN MS 703 EVO mobile screening plant – manufactured in the WIRTGEN GROUP's production and assembly facility in India – is used as a classifying screen. The plant boasts a 7m² screen casing and is fitted with a triple-deck screen. It is hallmarked by its flexibility in use, excellent transportability, rapid set-up times and efficient operation – along with superb performance values.

2. Efficiency:
the drive concepts of the EVO crushing and screening plants combine high performance with an outstandingly economical use of fuel.

3. High degree of automation:
EVO plants feature a high degree of automation, which means they can be operated by fewer workers. The excavator operator, for instance, can also control the plants.

KLEEMANN plants perfectly fulfil my requirements. I am very satisfied with their performance and with the service provided by the WIRTGEN GROUP.

S. K. Khetan, Proprietor
SK Khetan Infra

Flexibility and high performance

A total of 1.8 to 1.9 million tonnes of material will be needed for the new bypass. SK Khetan Infra extract the necessary granite from hills or use the material taken from excavations along the new road, which runs through a hilly region. The KLEEMANN plants are to crush just over 1 million tonnes. The rest of the material will be bought in. The final product size required is 0-5mm, 5-10mm, 10-20mm and 10-30mm. About 250,000t of granite have already been crushed so far. The machines are in operation for approximately 8-10 hours a day, but a little less in summer, when midday temperatures can rise as high as 45°C. As well as the heat, the two different extraction sites are another challenge of the project.

INR 40.2 million

SK Khetan Infra are saving INR 40.2 million by using KLEEMANN mobile EVO plants

Ease of transport eliminates the need for dozens of lorries

The material is extracted in Kaya and Dhakan Kotra, two towns located about 15km apart. It was hence key to select machines that were compact in design, easy to transport and ready to operate quickly. The EVO series from KLEEMANN meets these criteria to the letter, making it the perfect choice for this project. The plants were simply transported to the second extraction site, avoiding the time and expense involved in hauling some 800,000t of material from Dhakan Kotra to the plants in Kaya in multiple trips. This enabled the contractor to save around INR 40.2 million. The proprietor, S. K. Khetan, has every reason to feel happy with his choice of KLEEMANN machines. »»

Perfect for flexible applications: The EVO plants from KLEEMANN

EVO jaw crushers, cone crushers, impact crushers and screening plants are extremely versatile. Not only are they designed for natural stone processing, they can also handle recycling tasks. Their most practical feature is the fact that they can work directly at the relevant job site. Even confined job sites such as those in city centres pose no problem. And even if the location frequently changes, the machine can be easily transported to the next job site thanks to the compact design. In addition, many models can be transported in one piece with no need to dismantle individual components. Side discharge conveyors, for instance, can simply be folded in, and hopper walls lowered hydraulically. The machine can be quickly readied for transport or operation again in just a few swift moves. This rapid set-up means that the EVO plants are suitable for smaller volumes, too. The crushing plants also feature a particularly economical drive concept: the diesel-direct drive. The crusher is directly driven by the diesel engine via a fluid coupling; the belts, chutes and prescreen, on the other hand, are driven by electric motors. This innovative concept makes the machine up to 30% more economical than machines with fully hydraulic drives. All these aspects make the EVO plants perfect for crushing contractors. The plant does its job efficiently and precisely on one site before moving on to the next a few days or weeks later. ///

MOBICAT EVO

KLEEMANN EVO crushing and screening plants stand out with their compact design.

Highlights of the KLEEMANN EVO crushing and screening plants

- Versatile
- Easy to transport
- Short set-up times
- High machine availability

Smooth. Simple. Efficient.

The leading-edge VÖGELE Niveltronic Plus System for Automated Grade and Slope Control speeds up work on the job site while simplifying operation and processes.

When it comes to quality in road construction, the demand for maximum evenness has always been a top priority. Automated functions that control both grade and slope assist paving teams, enabling them to build paths, roads and squares as true to line and level as possible. Developed by VÖGELE's engineers, Niveltronic Plus equips paving teams with an effective, high-tech tool that reliably meets the highest demands on evenness. What is more, the VÖGELE System for Automated Grade and Slope Control offers convincing advantages: it is simple to handle using the ErgoPlus 3 operating consoles, it is a fully integrated system and it automatically detects sensors according to the "Plug & Play" principle. Ultimately, this means that Niveltronic Plus makes an active contribution to improving evenness and enhancing efficiency on any and all terrain. »»

Perfectly even down to the last millimetre: the fully integrated VÖGELE Niveltronic Plus System for Automated Grade and Slope Control is easy to handle using the ErgoPlus 3 operating system installed on the SUPER pavers.

Highlights of Niveltronic Plus:

- Wiring and connections are integrated into tractor unit and screed
- Wide and varied selection of sensors supports the flexible use of Niveltronic Plus in all fields of application
- Automatic detection of connected sensors according to the "Plug & Play" principle simplifies set-up
- Particularly easy and user-friendly operation and monitoring of all Niveltronic Plus functions via the ErgoPlus 3 screed consoles
- Logical, intuitive, language-neutral symbols support quick learning of all functions
- Integration in the paver's control system makes additional training unnecessary
- In addition to the Niveltronic Plus System for Automated Grade and Slope Control, VÖGELE also offer Niveltronic Basic – to go with the ErgoBasic operating system for the VÖGELE Mini Class pavers, as well as the SUPER 1400 and SUPER 1403

Advantage 1

SUPER compatible: Fully integrated system, perfectly tuned to the machine

The fruit of VÖGELE's decades of experience with this technology, Niveltronic Plus is a highly sophisticated and reliable automated grade and slope control system. A key factor here is the fact that Niveltronic Plus is integrated into both the SUPER road pavers and VÖGELE screeds, and tuned to their functions. In other words, all cabling and connections are installed in the tractor unit and screed, which virtually rules out any damage to these components. Niveltronic Plus is therefore ready to get to work at any time, wherever a SUPER paver is equipped with the VÖGELE System for Automated Grade and Slope Control. »»

Total concentration on the job site: the VÖGELE System for Automated Grade and Slope Control improves evenness and above all operating comfort for the screed operator.

Advantage 2

High-tech and intuitive: Integrated in the ErgoPlus 3 operating system

Another advantage that helps paving teams worldwide get ahead is the remarkably simple control of the VÖGELE System for Automated Grade and Slope Control via the ErgoPlus 3 screed consoles. In other words, there is no need to have a separate, external control unit just for the automated grade and slope control system, as is so often the case with other manufacturers. As a result, screed operators are in a position to quickly understand and safely operate Niveltronic Plus with all its critical functions. No additional instruction or training is required. Furthermore, all pavers in the "Dash 3" series, starting with the Compact Class, incorporate Niveltronic Plus – and all have the same range of functions.

Giving screed operators confidence: LED crosses on the screed console

The red LED crosses on the left and right indicate if there is any deviation from specified values.

Actual value = Specified value

Actual value < Specified value

Actual value > Specified value

The two yellow buttons on the left and right are used to activate or deactivate Niveltronic Plus on the respective side of the screed. When activated, the start page of the automated grade and slope control system is displayed as standard.

Total control in every paving situation

On the ErgoPlus 3 console, all push-buttons are easily identifiable by touch even when wearing work gloves. Once a button is pressed, off you go. That is due to the "Touch and Work" principle. In other words, a function is executed directly – without a need to confirm. On the high-contrast, clearly legible colour display, all functions relating to grade and slope control are shown on menu level 1 so they can be quickly read and changed.

When the ErgoPlus 3 screed console was developed, the aim was to make the work of screed operators as simple as possible. After pressing the F3 key, the following settings can easily be made: calibrate sensors, select sensor sensitivity and set display brightness. »»

Reliable operation: the pave width can be set sensitively and precisely using the SmartWheel on the ErgoPlus 3 screed consoles. Niveltronic Plus then automatically regulates the grade.

Whether we require on-site service or applications advice on grade and slope control or ErgoPlus 3, the WIRTGEN GROUP in India is right there for us.

Paving team in India

1. F2 F4

Connect sensor

Before commencing paving, position the sensor and plug it into the screed console. Niveltronic Plus automatically recognizes the type of sensor connected. Switch between connected sensor types using the F2 and F4 keys.

3. F1 F5

Quick Set-Up

By pushing the keys for Quick Set-Up for the right and left sides of the screed, the screed operator defines the entered values made for the screed's tow point rams as specified values.

2.

Adjust tow point rams

On his console, the screed operator sets the screed's tow point rams to the desired layer thickness.

4.

Activate Niveltronic Plus

All that remains to be done is to push the button that activates Niveltronic Plus, and paving can begin.

Advantage 3

Plug & Play: Connect sensor and adjust with push-buttons

When things get hectic at a job site, Niveltronic Plus helps out with yet another practical advantage: Quick Set-Up. Pushing the F1 key for the left side of the screed or F5 for the right activates the Quick Set-Up function. It defines the actual value currently picked up by the sensor as the new specified value for grade or slope control. When grade and slope control is activated, the specified value for the sensor for grade and slope control can be adjusted on the respective side using the arrow keys. Even setting up the grade and slope control sensors is easy and convenient – it takes only four, simple steps thanks to the "Plug & Play" principle. ///

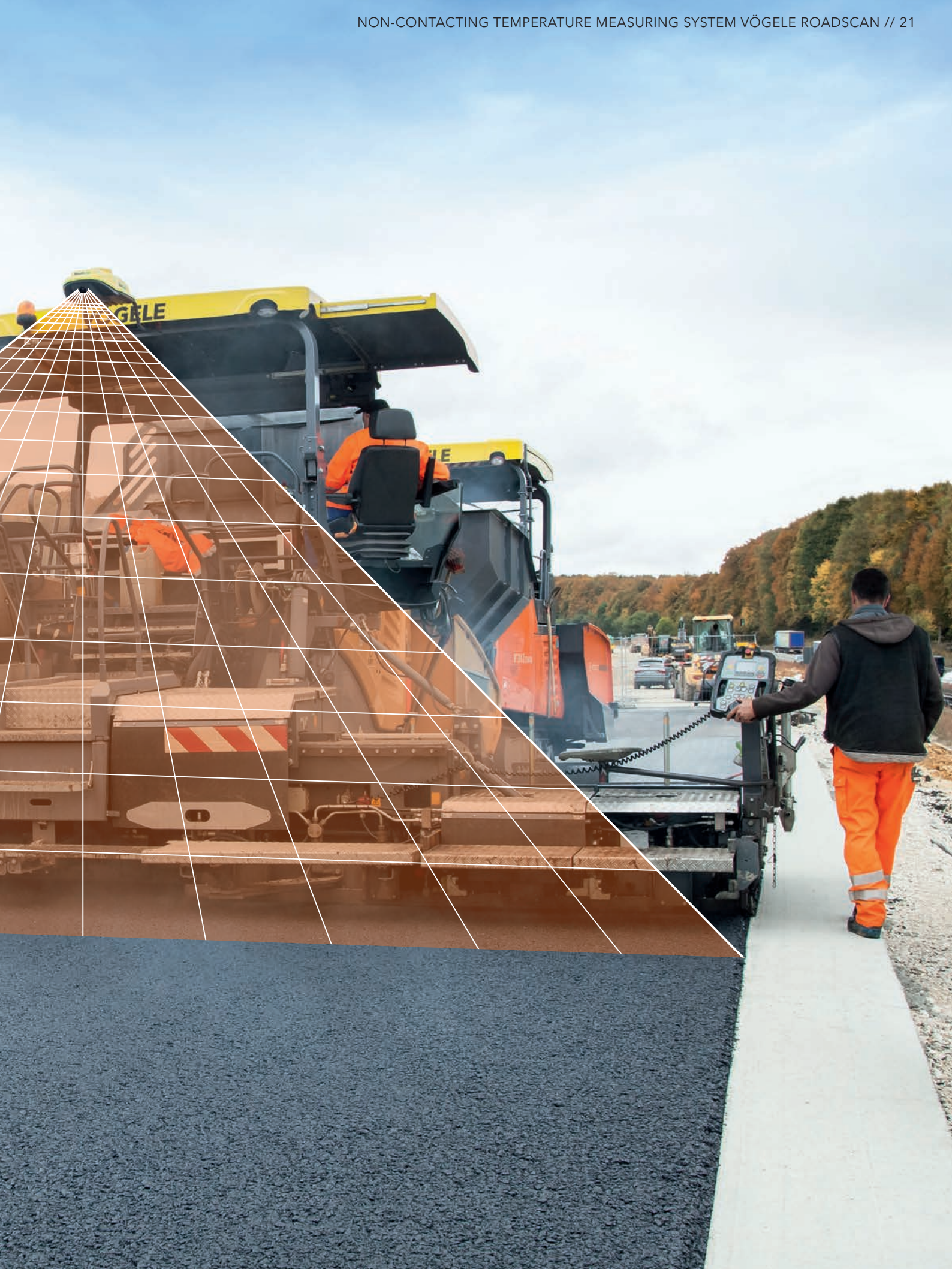
In the next edition of RoadNews: VÖGELE sensors for grade and slope control

For maximum precision, VÖGELE offer a number of different mechanical, acoustic and optical sensor systems for Niveltronic Plus and Niveltronic Basic to help road construction companies achieve absolute precision in every paving situation imaginable. Learn more in the next edition of RoadNews – in particular all you need to know about the new Big MultiPlex Ski for perfectly levelling extended irregularities.

Measurably better

The non-contacting temperature measuring system RoadScan, a pioneering innovation for documenting pavement quality.

The temperature at which the material is paved and compacted is one of the decisive criteria determining the quality of an asphalt pavement. Customers are therefore increasingly demanding documentation showing the temperature of the freshly paved asphalt. With RoadScan, VÖGELE have developed a genuine innovation. The non-contacting temperature measuring system can be used with all VÖGELE pavers of the "Dash 3" generation.



RoadScan, VÖGELE's temperature documentation system, optimally meets the requirements specified by authorities inviting tenders in terms of temperature range, measured width, measurement density and analysis.

Highlights of VÖGELE RoadScan

- Temperature measurement over 10m
- Real-time display on the paver operator's ErgoPlus 3 console to help the paving team produce a high-quality asphalt pavement
- Easy installation of the measuring system
- Calibration is not required (Plug & Play)
- Robust hardware without moving parts (e.g. infrared camera instead of a movable pyrometer)
- Measuring range 10m

Temperature measurement

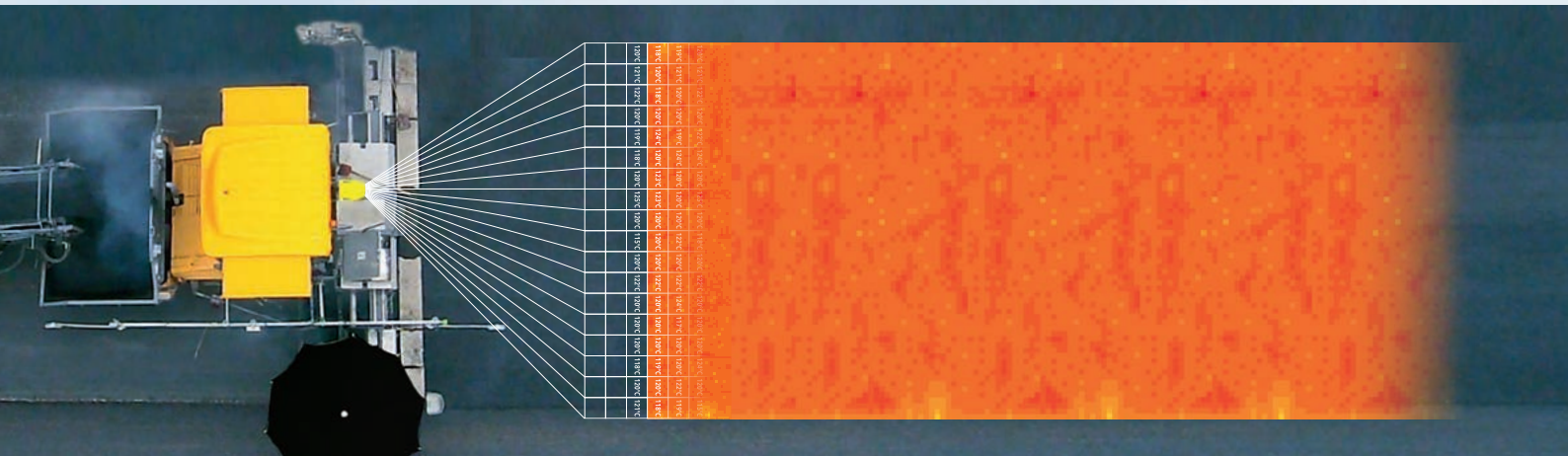
An infrared camera scans a measuring range of 10m behind the screed. The scan grid measures 25 x 25cm over the complete width. The temperatures measured range from 0 to 250°C with a tolerance of only ±2°C.

Temperature monitoring

The surface temperature measured during the paving process can be monitored in real time on the display of the paver operator's ErgoPlus 3 console. This allows the paving team to react swiftly to fluctuations in temperature – usually a sign of segregation.

Analysis of the data

The measured values are stored in the paver operator's ErgoPlus 3 console and can be conveniently downloaded from there. After uploading the data in the office, they are analysed using the web application RoadScan Analysis.



HAMM compaction solutions for all applications

Customized solutions for India

Engineers in India and Germany have joined forces to develop tandem rollers and compactors for the Indian market. With their engine and emissions technologies as well as their lighting systems, these machines meet all statutory requirements. What is more, the cooling systems were designed specifically to handle the country's occasionally very high temperatures. The successful combination of German compaction technology with local requirements has helped make WIRTGEN INDIA the current market leader for compaction technology in the road construction and earthworks industry. The HD 99 tandem roller and the 311 compactor are key representatives of the HAMM fleet in India. »»

The HAMM product range includes rollers and compactors varying in weight from 5 to 25t with smooth, padfoot or vibration crusher drums, and pneumatic-tyre rollers. For over five years now, HAMM have been manufacturing several models at their production facility in Pune.

HD 99 tandem roller: The all-rounder for India's premium segment

HAMM developed the HD 99 tandem roller based on the successful HD series specifically to serve India's premium segment. The articulated double vibrating drum roller in the 9t class is a powerful all-rounder for road construction. With a drum width of 1.68m, it is suitable for urban construction projects as well as for compacting motorway, airport and other large areas.

Simple and convenient operation

From the vibration-dampened, and spacious operator's platform on the HD 99, operators have an excellent view of the job site. The seat can be pivoted through 45° in either direction and the open design of the frame allows an unobstructed view of the drums, the water sprinkling system and the drum edges. The standard roof protects operators from sun and rain. Another remarkable feature is the machine's operation: It is intuitive, with universally comprehensible symbols instead of text. In other words, anyone can operate the roller without knowledge of a specific language. A powerful lighting system rounds out the range of premium features.

Efficient and productive

With its Cummins engine, the HD 99 meets all CEV BS III requirements. The drive system is fuel-efficient and low-noise. At the same time, the HD 99 has high-volume fuel and water tanks, which eliminate the need for frequent re-filling. The resultant long work intervals support high-level productivity.

Always the right frequency

The vibration frequency can easily be adapted to any work situation at the press of a button, meaning that a wide variety of different asphalt types can be compacted with the HD 99. It produces high-quality surfaces without unwanted "washboarding". »»

Even weight distribution, excellent on-centre feel, cornering stability, and good anti-tipping safety: the 3-point articulation also contributes to the high compaction quality of the HD 99.

Technical data
HAMM HD 99 tandem roller

› Weight class:	9t
› Drum width:	1.68m
› Engine output:	73kW/99hp

311 compactor: Outstanding climbing ability and high compaction power

Like the HD 99, the 311 compactor is a “truly Indian” machine with its 11.5t operating weight. Tailored to the local market, different versions of the machine are produced: the 311 with rear-axle drive and smooth drum, and the 311P with padfoot drum. The third version, the 311D, additionally has a driven drum, which enables the machine to compact on inclines of up to 54% with ease.

Top driving characteristics thanks to 3-point articulation

The 311 compactor built in Pune has 3-point articulation. This feature ensures an even weight distribution, but also supports an outstanding on-centre feel, good traction and high anti-tipping safety. With 3-point articulation, the compactor can be manœuvred easily and safely, even on uneven terrain. Operators appreciate the enhanced comfort, because the machine effectively absorbs jolts.

Easy operation

As soon as they start working with the machine, operators know: this compactor must be from HAMM since it’s so easy to operate. Operators can access all important information on the current machine status at any time on the modern display. From the large operator’s platform, equipped with a folding canopy as standard, they always have a clear view of the job site and all key points of the machine.

Technical data HAMM
311 / 311D / 311P tandem roller

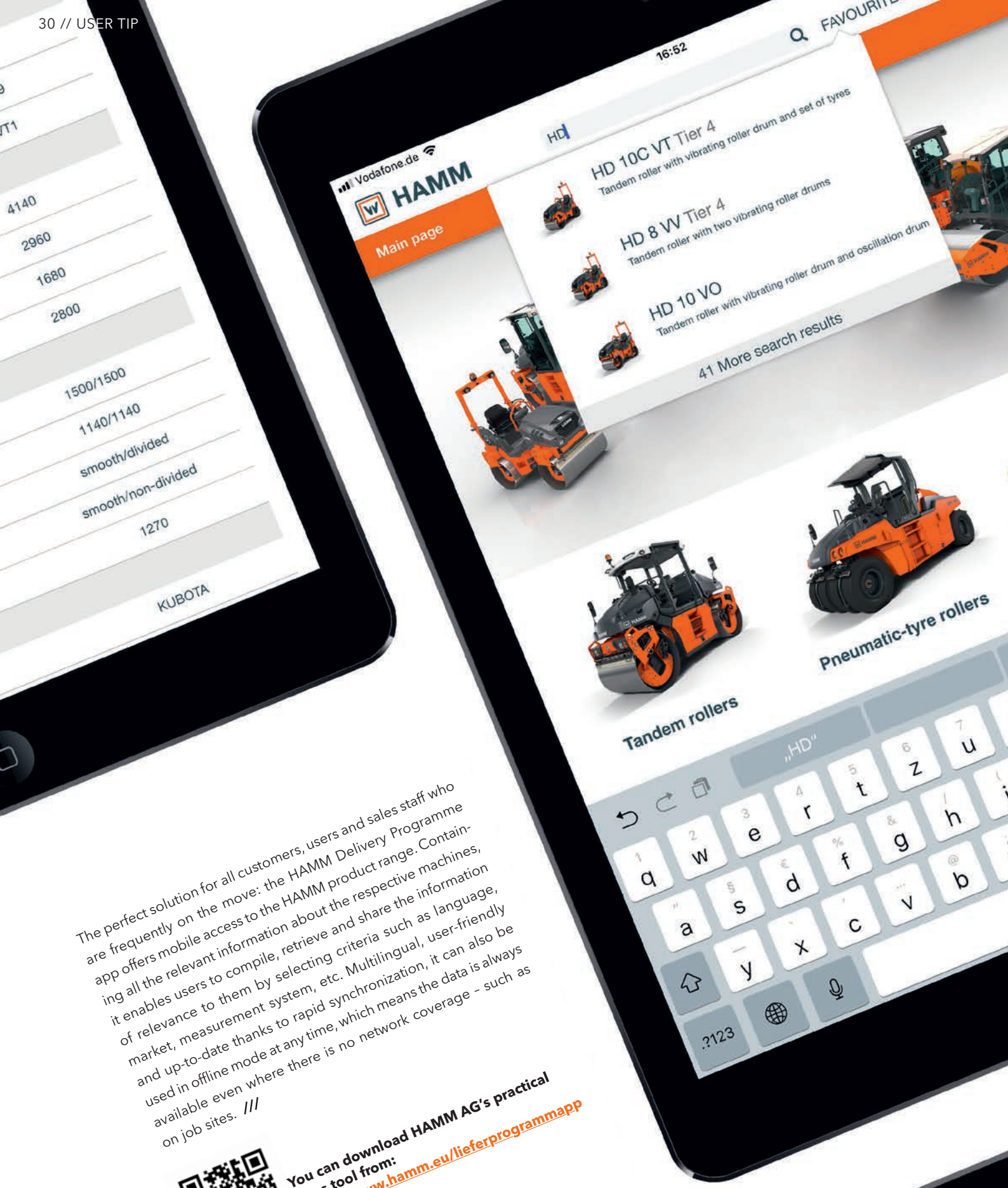
- Weight class: 11t
- Drum width: 2.14m
- Engine output: 74kW/100hp

Economical and maintenance-friendly

The economical Cummins diesel engine installed in the 311 compactor fulfils all CBV BS III requirements. It is easily accessible under the attractively designed GFRP bonnet – which has the edge over the commonly used heavier bonnets made of sheet steel.

In shape for hot days

In view of the high temperatures that often prevail in India, the cooling system was engineered to ensure that the engine can still operate reliably at 55°C. The air is routed in such a way that hot exhaust does not heat up the operator's platform. »»



The perfect solution for all customers, users and sales staff who are frequently on the move: the HAMM Delivery Programme app offers mobile access to the HAMM product range. Containing all the relevant information about the respective machines, it enables users to compile, retrieve and share the information of relevance to them by selecting criteria such as language, market, measurement system, etc. Multilingual, user-friendly and up-to-date thanks to rapid synchronization, it can also be used in offline mode at any time, which means the data is always available even where there is no network coverage – such as on job sites. ///

You can download HAMM AG's practical sales tool from:
https://www.hamm.eu/lieferprogrammapp

The HAMM Delivery Programme in your pocket

An indispensable tool for compaction professionals: in its Delivery Programme app, HAMM AG offer a practical sales tool that delivers a winning combination of intuitive navigation, faster access and updated data. The mobile application hits the mark with many practical features, is available in commercial app stores (iOS/Android) and has been optimized for both tablets and smartphones.

The key features at a glance:

- **Open for all languages and markets**
  The app is available in 31 languages and tailored to the product range of about 200 countries. The language and country are selected via the main menu. Selecting the country simultaneously defines the market, so users are only shown those machines that are actually available in their market.

- **The HAMM product world in quick and easy grasp**
  Tandem roller, pneumatic-tyre roller or compactor? Starting from the clearly laid out home page, the user navigates successively from the relevant roller type through the series selection to the specific product data sheet for the machine of his choice. All the information is well structured and always presented in a consistent format. The high-quality illustration of the machine is followed by a brief overview of the highlights. This is in turn followed by the configuration options, with a further distinction being made between standard and special equipment. Finally, the technical data such as the weight, dimensions and engine power of the machine are presented. Practical icons help with orientation, and the option to switch the unit of measurement from metric to imperial or vice versa is a handy feature for the Anglo-American user.

- **My Favourites – Always in view**
  Nothing is lost: the individual product data sheets of the machines can be selected using the Favourites function so that they can be accessed at any time via the Favourites button on the main menu bar.

- **Rapid sharing**
  The “Share” function allows the selected product data sheets to be shared easily with business partners or colleagues.

- **New data available?**
  In online mode, the latest data can be accessed at any time. If the app is launched in offline mode, the most recently updated data record is always available.

- **Download now for free**
  The HAMM Delivery Programme can be obtained free of charge for iOS in the App Store and for Android in the Google Play Store.

The cold recycling-express

Low cost and high quality are two of the most important criteria when it comes to rehabilitating roads. The WIRTGEN cold recycling train has yet another advantage: roads can be re-opened to traffic in no time. A WR 240 cold recycler and soil stabilizer demonstrated this advantage on a 22km-long job site near Hapur, where cars returned to the road after just 2.5 hours.

Traffic volumes in Uttar Pradesh, India's most populous state with 200 million residents, are extremely high. It was hence all the more important to keep at least one lane open during construction and finish the job as quickly as possible. The ability to meet these two requirements is a key advantage of the cold recycling process.

India // Hapur

The country road between Hapur and Kithore is one of the most important links in the Hapur district. It was in poor condition, with potholes, cracks and ruts, which were degrading the asphalt pavement. The decision was made to rehabilitate the road using the economical and resource-saving cold recycling method. In this process, a WIRTGEN pave train mills and granulates the damaged asphalt layers, binds the material again by adding binding agent, compacts it and then directly re-paves it. This is therefore referred to as an "in situ" method (performed in place). "We use all the milled material and process it specifically for this purpose, obtaining a high-quality construction material. We save a lot of time and money in this way, while minimizing the environmental impact," says Mr Ram Kumar, Site Manager for the contractor, Seema Construction, in praise of cold recycling, a proven process worldwide that offers an excellent alternative to traditional methods. And he should know: this job site alone extends over more than 22km.

Rehabilitation method proven worldwide

Another important advantage of the cold recycling method is the fast turnaround: in most cases there is no need for a complete closure of the road. This was the case in Uttar Pradesh, where traffic continued to flow in the second lane. Each rehabilitated section of the country road was re-opened to traffic after just 2.5 hours, despite the fact that the cold recycling pave train does not simply pave a temporary surface, but rather a sustainably durable, high-quality, cold recycled layer. Different pavement structures and combinations of machinery are possible when employing this method. At the job site near Hapur, cement was first spread onto the damaged asphalt by an SW 16 MC binding agent spreader from WIRTGEN systems partner STREUMASTER, which was followed by a tank truck that supplied the WIRTGEN WR 240 cold recycler and soil stabilizer with water. The WR 240 is equipped with the new DURAFORCE milling and mixing rotor, which thoroughly mixed the damaged layers – i.e. the asphalt surface course as well as the binder and base courses – together with the pre-spread cement and added water in a variable mixing chamber and then redeposited the material. A grader then took care of the profiling and various HAMM rollers – in this case a 311 D compactor and an HD 99 tandem roller – compacted the new cold recycled layer. With its new surfacing, the recycled road has a high bearing capacity and a long service life. In the final step, a conventional surface course is usually paved on top as a wearing course. »»

We save a significant amount of time and money, while minimizing the environmental impact.

Mr Ram Kumar, Site Manager
Seema Construction

The microprocessor-controlled injection bar injects the required quantity of water into the mixing chamber.

HAMM compaction technology for the final touches: the 311 D compactor and HD 99 tandem roller in operation.

Job site details

Rehabilitation of a major link between Hapur and Kithore, India, using the cold recycling method

Total length of section:	22km
Total area:	154,000m²
Total costs:	INR 300 million

Working parameters

Working width:	7m
Working depth:	10cm

Equipment

WIRTGEN WR 240 cold recycler and soil stabilizer
STREUMASTER SW 16 MC binding agent spreader
HAMM 311 D compactor
HAMM HD 99 tandem roller

Cold recycling saves money and speeds up jobs

Many road construction companies are unaccustomed to using cement when rehabilitating bituminous asphalt layers. But adding this binding agent is standard practice in cold recycling. Together with the bitumen contained in the damaged pavement, it helps to stabilize the cold recycled layer and make it durable in the long term. Other possible binding agents include bitumen emulsion and foamed bitumen. But one material can be dispensed with in all cold recycling applications: there is no need to add newly processed aggregate. The method hence conserves resources and is very cost-effective in many respects: mix lorries do not need to be provided to transport mix to the job site, reducing fuel consumption and CO_2 emissions. In addition, roads need not be blocked to traffic for extended periods and, more importantly, they need not be closed entirely. Traffic flows benefit and the cost to public budgets is reduced as well. These criteria were also deciding factors in the contract award for rehabilitation of the road between Hapur and Kithore by the cold recycling method – and the project was even completed sooner than planned. »»

Cold recycling in situ: In-place laydown of road pavements

Over time, increasing car and lorry traffic causes structural damage to the individual layers of asphalt carriageways and compromises their load-bearing capacity. As a recycler, the WR corrects these defects quickly, economically and without wasting resources, because it is equipped with a powerful DURAFORCE milling and mixing rotor as well as advanced injection systems. In a single pass, the cold recycler uses its milling and mixing rotor to remove the asphalt pavement, granulate it, inject precisely metered volumes of binding agent and water and then mix the material. The new base courses, which are paved in situ, boast a very high load-bearing capacity as a result.

Possible additives or binding agents include cement, water, bitumen emulsion and foamed bitumen. High-precision dosing, consistently high mix quality, simple, well-structured machine

operation and accurate levelling guarantee optimum results. The machines in the WR series are ideally suited to applications in all performance ranges, from recycling thin asphalt layers on quiet minor roads to recycling up to 250mm-thick asphalt layers on heavily travelled motorways.

The perfect addition to the WR series: the SW 16 MC binding agent spreader from WIRTGEN systems partner STREUMASTER is equipped with an electronically controlled spreading quantity control system that ensures precision application of the binding agent.

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

Cold recycling saves money and speeds up jobs

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

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

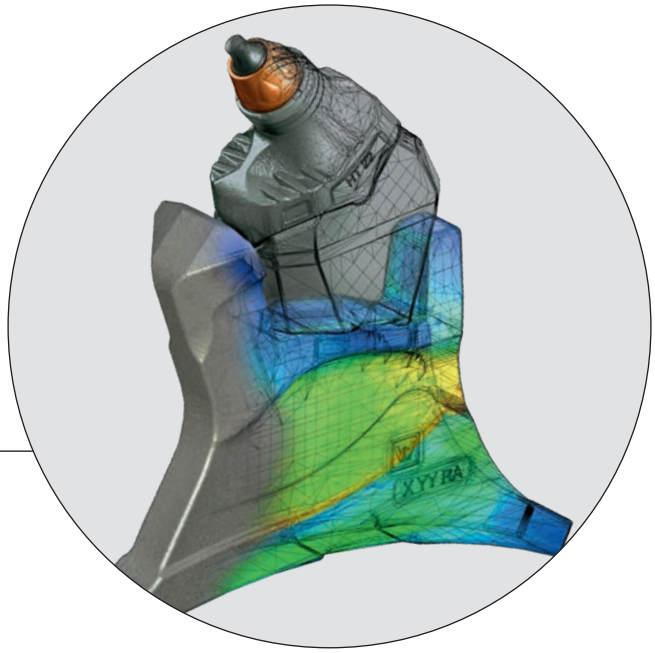
- Steady milling process to prevent oversized particles and to ensure high-quality results
- High milling performance and low wear even in hard, abrasive material to ensure high economic efficiency
- Compliance with the specified grading curve to ensure the lasting structural integrity of the new base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

Tried-and-tested forging process

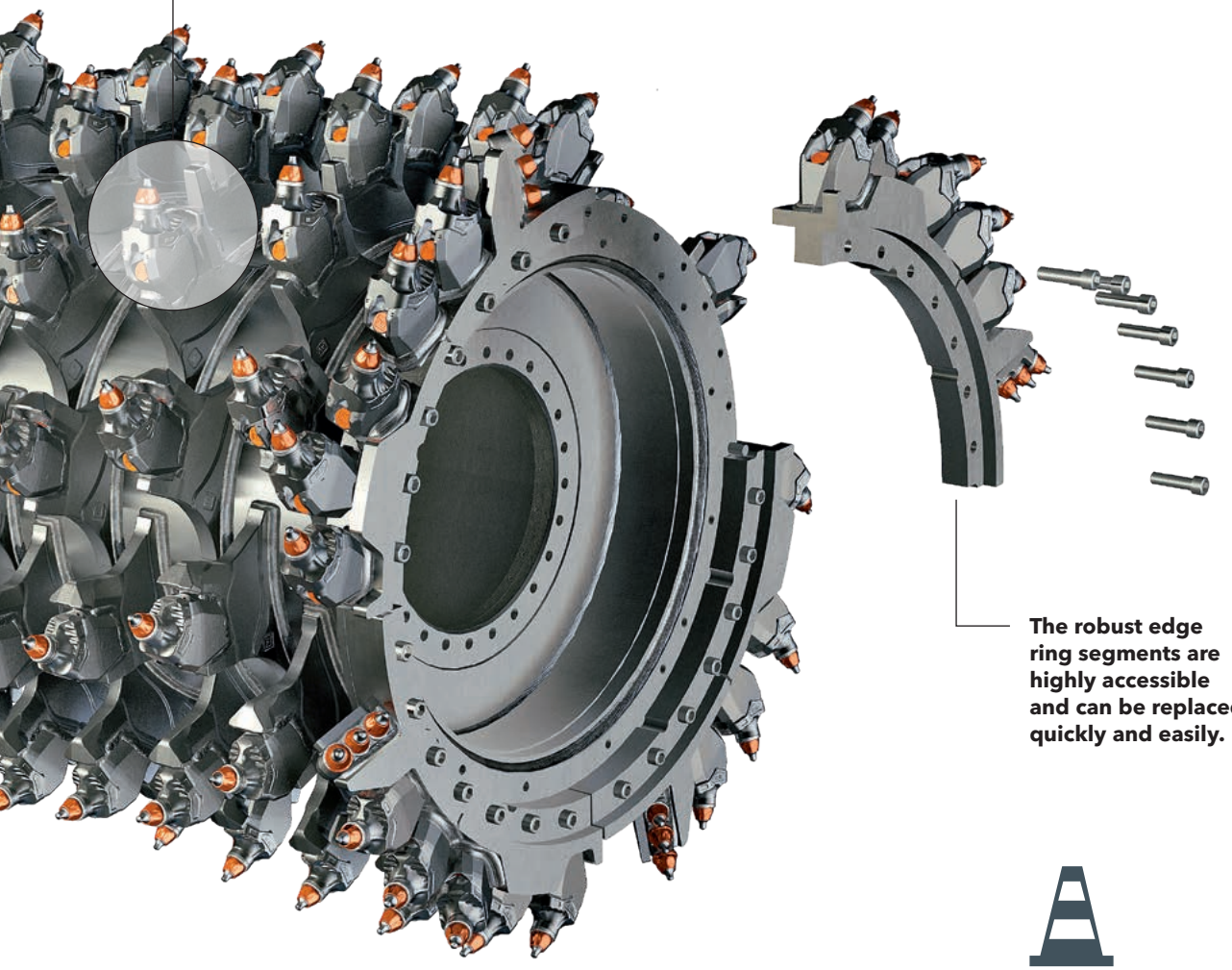
The holder bases of the DURAFORCE milling and mixing rotor are given an intelligently designed 3D geometry using the tried-and-tested forging process. In addition to even load distribution and thus maximum stability, this process results in an optimum flow of material and homogeneous mixing of construction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

With its centrepiece, the DURAFORCE milling and mixing rotor, the WR series guarantees success in cold recycling and soil stabilization. Soil stabilization is a process for improving the load-bearing capacity of soils by adding a binding agent, such as lime, cement or combinations of the two.

DURAFORCE



Combined with the intelligent distribution of material, the streamlined geometry of the holding bases supports an optimal distribution of forces, particularly the peak loads generated by transverse forces.



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

The Advanced

When removing the individual layers of the complete pavement selectively, the new W 195 was the first choice on National Highway 1 between Delhi and Panipat.

India // New Delhi

WIRTGEN's W 195 is the cold milling machine for economical applications thanks to high daily production rates and low diesel consumption and tool use. For these excellent reasons, Kanika Siya Construction, the company commissioned with the milling work, elected to use the large milling machine when extending the carriageway from four to six lanes along an 85km stretch of the NH 1. »»


WIRTGEN
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UltraTech
UltraTech

Milling layers separately, recycling economically

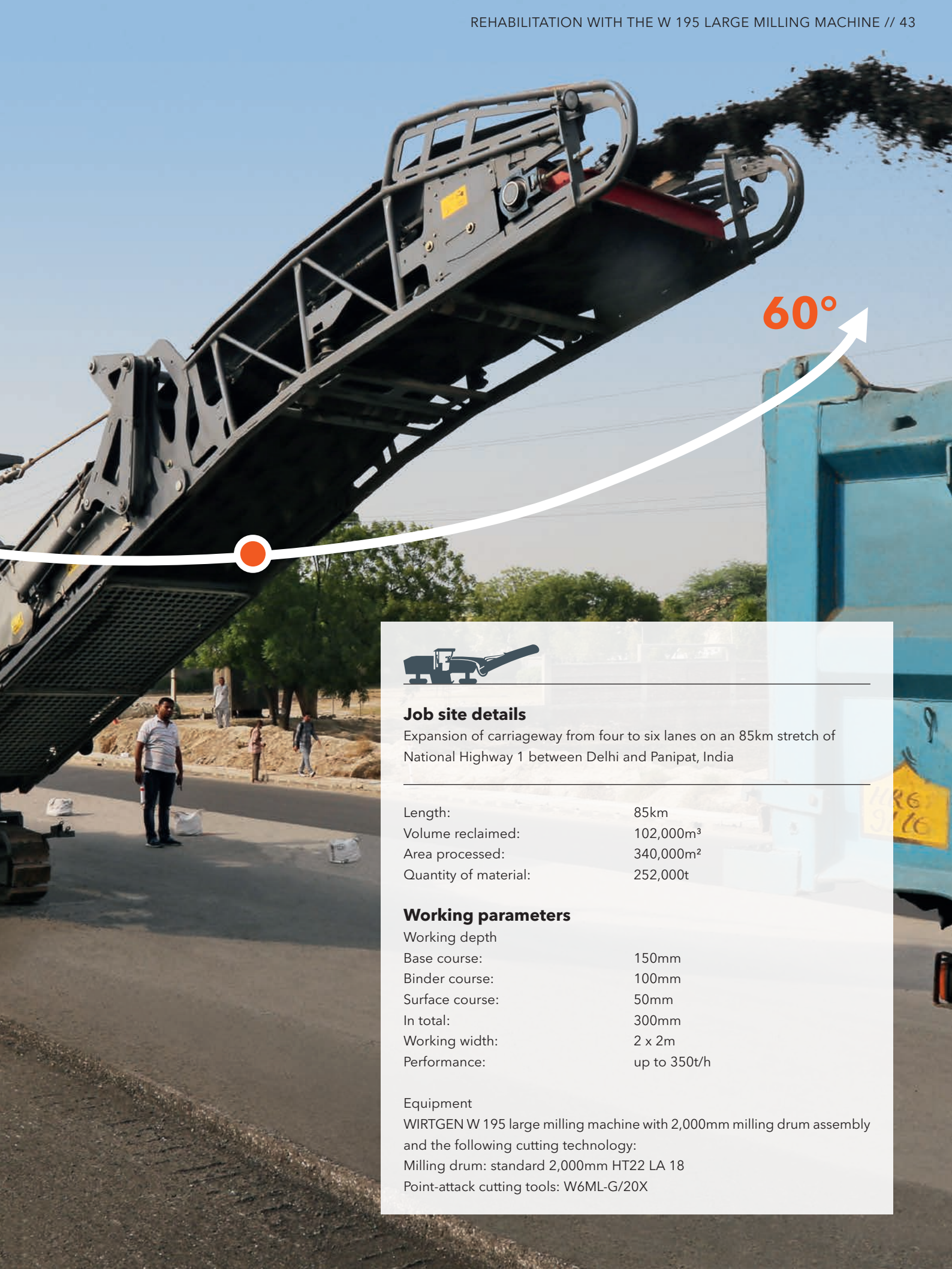
Another key reason was the fact that the W 195 was able to mill the 300mm-thick pavement selectively, as Site Manager Mr Sandeep Sharma explains: "Because we can remove the surface, binder and base courses individually, we can separate the RAP according to layer type for specific recycling purposes. This is good news for the environment, too." But milling offers an additional crucial advantage: unlike wheel loaders or excavators, the W 195 creates an even milled surface that is true to cross-section, line and level, in one single pass." This means that job-site lorries and other vehicles can drive over the milled surface without difficulty. Sometimes, traffic is even diverted onto the freshly milled road to minimize disruptions. The condition of the milled surface not only influences the quality of the new surface courses and their service properties, but also has a crucial impact on the economical and efficient implementation of subsequent operations. "This eliminates the need to pave level regulating layers later on, thus avoiding costly corrective measures. And that saves cash," says Sharma, highlighting the general virtues of cold milling and the specific advantages of reusing RAP. Operations also progressed correspondingly economically on the job site to the north of Delhi at temperatures of 44°C.

Productivity meets quality

The milling drum forcefully penetrates the 300mm-thick pavement. Moments later, the old pavement lies on the loading conveyor of the 2m high-performance milling machine, broken down into small-sized milled material. The lorry is ready and waiting. The site manager keeps a close eye on the process, his gaze fixed on the milling drum housing, behind which the milling drum is continually producing new milled material. A few seconds later, the W 195 moves on, revealing the freshly milled surface. "The milling result is excellent," Mr Sandeep Sharma summarizes.

Varying challenges

This morning, the milling machine advances along the main traffic route from Mukarwa Chowk to Panipat Toll Road. With a performance of up to max. 350t/h milled material the W 195 had to mill across a 4m width in two passes, each 2m wide. This meant that the work had to proceed quickly. Besides the selective milling, there was another key objective: the different road levels had to be raised at various bridge access points to allow a level access to the bridge. High productivity and quality – this is just what the new flagship on the Indian market was designed for. "With the W 195, we have the right solution for a broad scope of applications," says Sharma. »»



Job site details

Expansion of carriageway from four to six lanes on an 85km stretch of National Highway 1 between Delhi and Panipat, India

Length:	85km
Volume reclaimed:	102,000m³
Area processed:	340,000m²
Quantity of material:	252,000t

Working parameters

Working depth

Base course:	150mm
Binder course:	100mm
Surface course:	50mm
In total:	300mm
Working width:	2 x 2m
Performance:	up to 350t/h

Equipment

WIRTGEN W 195 large milling machine with 2,000mm milling drum assembly and the following cutting technology:
Milling drum: standard 2,000mm HT22 LA 18
Point-attack cutting tools: W6ML-G/20X

Smart machine management concept

The large milling machine has a high engine output of 410kW. Thanks to the intelligent interlinking of the most important machine functions – diesel engine, traction drive, milling drum drive, conveyor drive, water system and the LEVEL PRO PLUS levelling system – the WIDRIVE machine management system ensures a high milled area performance. As soon as the operator moves the drive lever, WIDRIVE is switched on and assumes the automatic speed control of the diesel engine and the traction drive. When milling work begins and the milling drum is lowered into working position, the machine management system switches to the engine's operating speed with no need for manual execution of the function. This automated function, along with the automatic adaptation of the idling speed when required, reduces noise levels. Milling Machine Operator Mr Prashant is thrilled with the smart machine management concept, as it eliminates around half of the manual interventions formerly required for him to control the machine and coordinate the individual work steps in the milling process: "The controls are clearly arranged, the W 195 can be operated easily and intuitively."

25% higher milling output – 20% lower tool costs – 15% less fuel

Besides ample horsepower, the milling performance is of crucial importance for a high daily performance on the job site. With this in mind, the 2m high-performance milling machine is equipped with "Delta18", a new milling drum technology, specially developed by WIRTGEN to cater to the high performance requirements to be met by large milling machines. The W 195 achieves an even higher milling output due to the optimized arrangement of the cutting tools in the outer ring and in the conveying and ejecting areas of the milling drum. Thanks to the additionally selectable milling drum speeds, the machine operator can also set the appropriate speed for the application directly from the operator's stand using a selector switch. This ensures that even when dealing with widely varying requirements, the ideal milling output can be achieved by means of a direct intervention in the milling process. For instance, in Mukarwa Chowk, Mr Prashant selected the medium milling drum speed of 1,600rpm, sufficient for the selective removal of the pavement. This speed guarantees a milled material in favourable particle sizes. The milling machine operator can also continually monitor just how economically the W 195 is working: "The current fuel consumption is constantly shown on the display." »»

Improved surface quality with LEVEL PRO PLUS

Newly developed by WIRTGEN and completely integrated in the machine management, the LEVEL PRO PLUS levelling system creates a particularly even milled surface. In this case, fewer interfaces mean shorter signal paths within the control systems and shorter response times between those interfaces. This makes for an efficient and precise levelling process. The preset target milling depth, which is accurately controlled by robust displacement sensors in the hydraulic rams on the side plates, is shown on a high-resolution colour display. This provides the operator with all the requisite information on the levelling process, enabling him to control the milling depth precisely from the operator's stand.

The controls are clearly arranged, the W 195 can be operated easily and intuitively.

Mr Prashant,
Milling Machine Operator

15% less fuel

20% lower tool costs

25% higher milling output

The milling result quality and economic efficiency of the W 195 are excellent.

Mr Sandeep Sharma,
Site Manager

Easy and economical operation

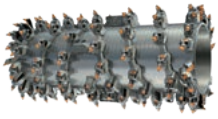
High daily production rates can be achieved thanks to an exceptionally simple and reliable operating concept. For example, the robust, easy-to-handle controls are arranged in a clear pattern and in line with application requirements. The weatherproof control screen provides clear information on all relevant data and operational parameters.

Optimized weight and advanced machine technology ensure high flexibility in operation. The reduced machine weight for ease of transport combined with high engine performance leads to an efficient weight-to-performance ratio of the W 195. Furthermore, the new WIRTGEN milling machine is exceptionally cost-effective thanks to low diesel consumption and tool use. ///

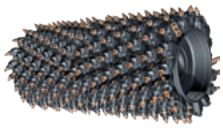
Optional milling drums in lieu of standard

The hydraulically operated milling drum turning device enables quick, convenient cutting tool replacement.

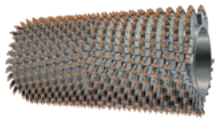
› Eco Cutter
Milling width: 2,000mm
Milling depth: 0–330mm
Tool spacing: 25mm



› Fine milling drum
Milling width: 2,000mm
Milling depth: 0–330mm
Tool spacing: 8mm



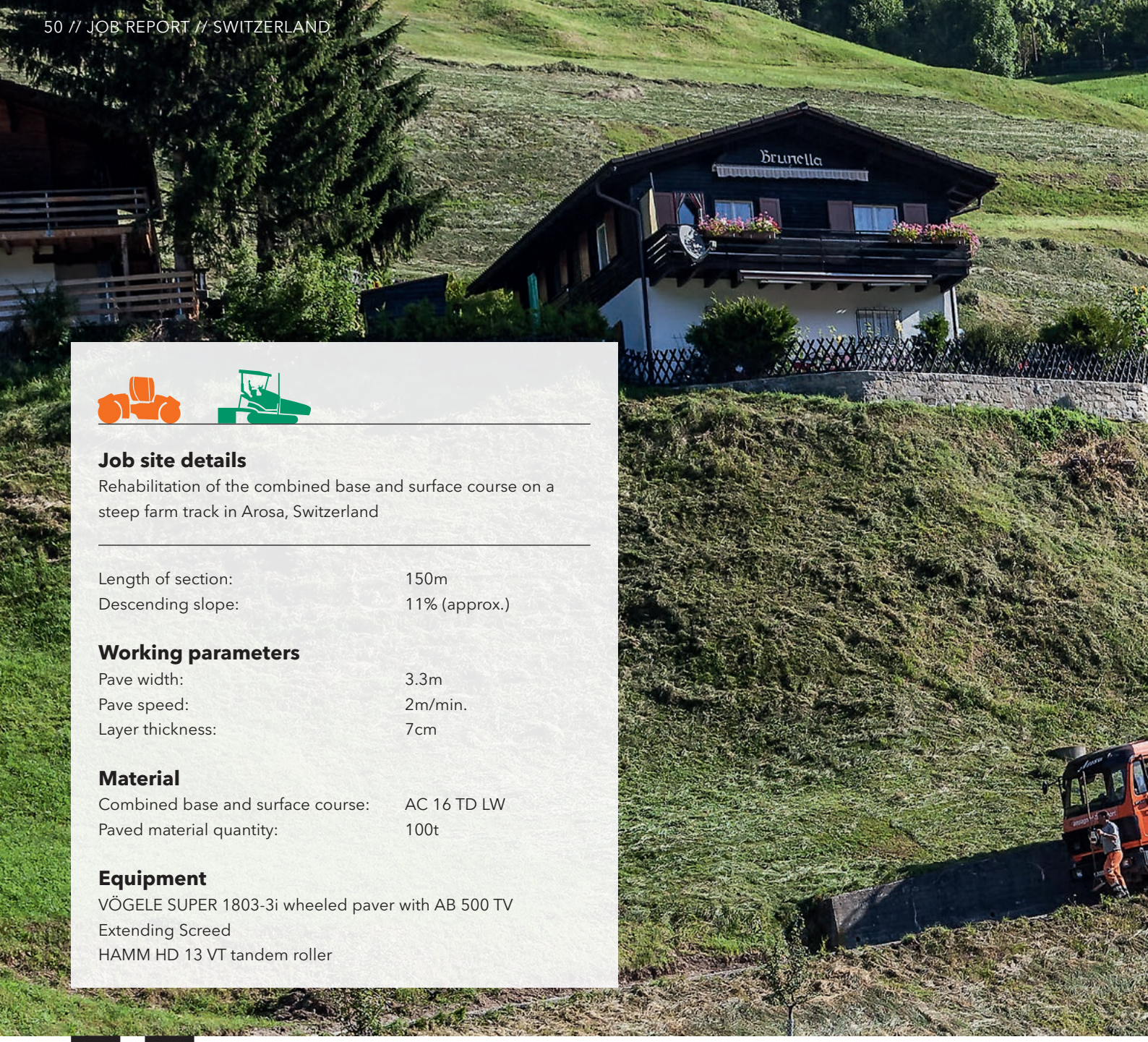
› Micro-fine milling drum
Milling width: 2,000mm
Milling depth: 0–330mm
Tool spacing: 6 x 2mm



Steep climb, great feat

In the Swiss Alps, the VÖGELE SUPER 1803-3i wheeled paver is proving its credentials on extreme slopes.


HEW
VÖGELE
SUPER 1803-3i



Job site details

Rehabilitation of the combined base and surface course on a steep farm track in Arosa, Switzerland

Length of section:	150m
Descending slope:	11% (approx.)

Working parameters

Pave width:	3.3m
Pave speed:	2m/min.
Layer thickness:	7cm

Material

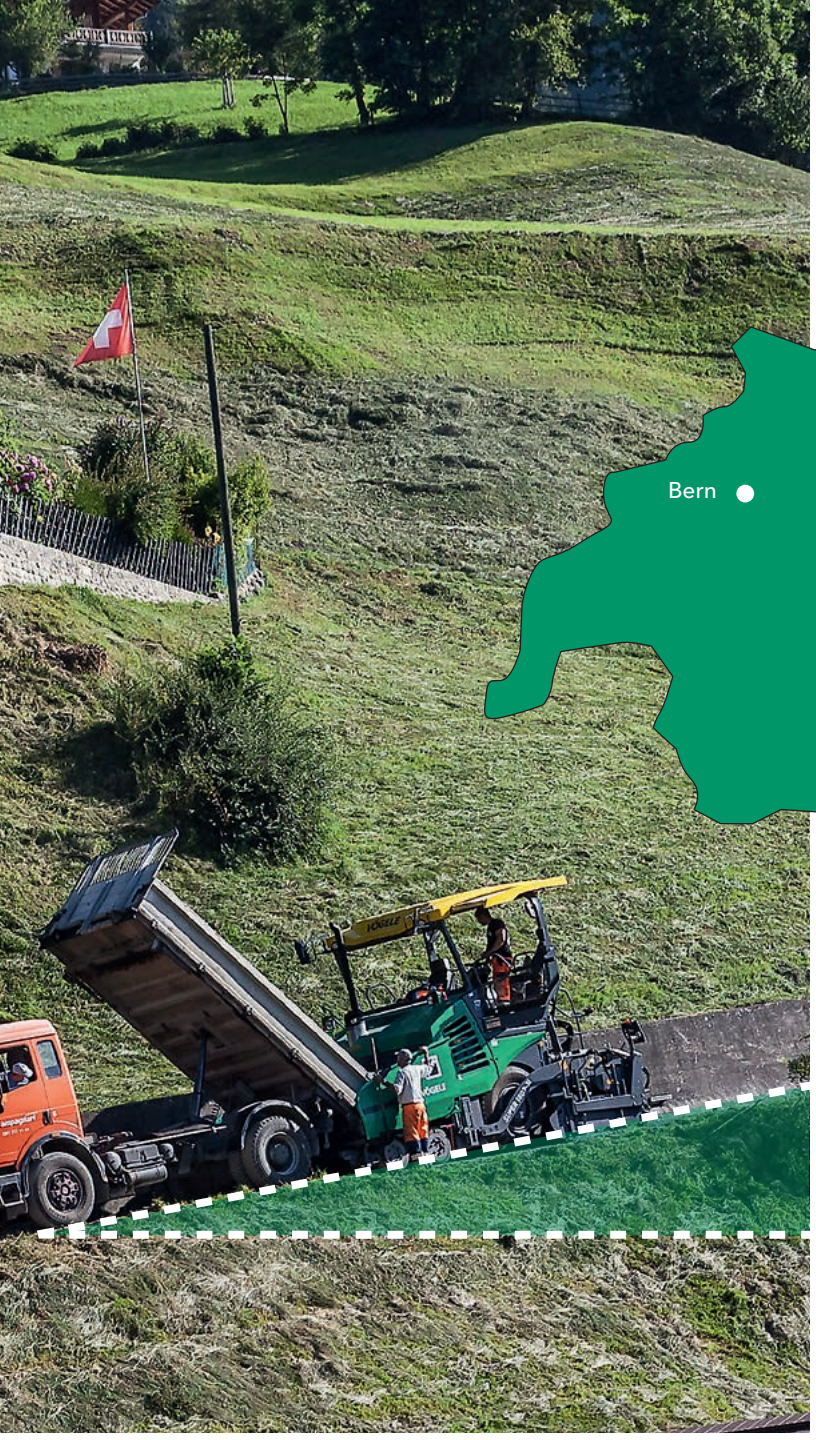
Combined base and surface course:	AC 16 TD LW
Paved material quantity:	100t

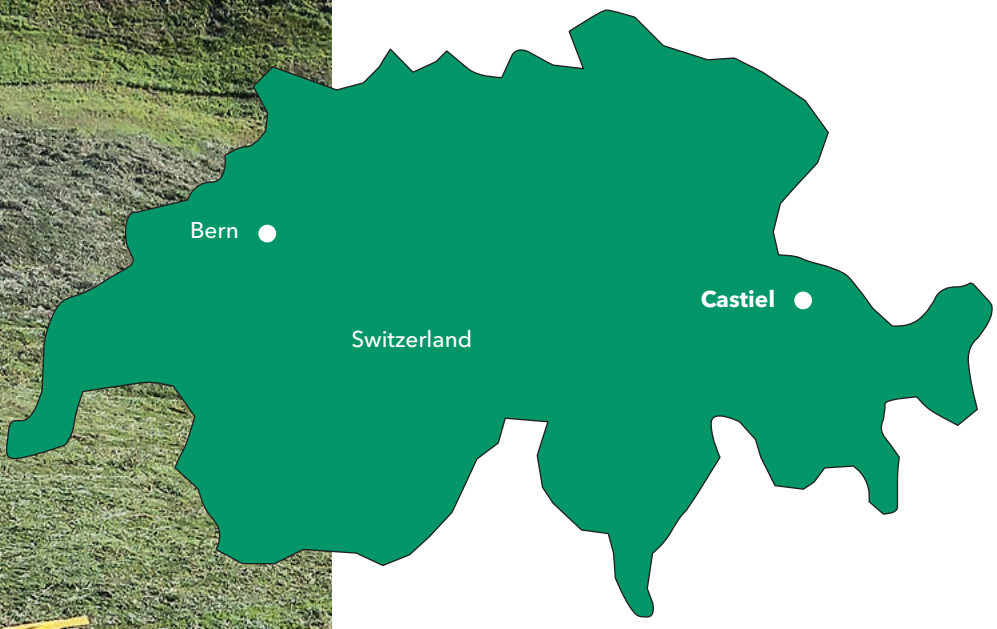
Equipment

VÖGELE SUPER 1803-3i wheeled paver with AB 500 TV Extending Screed
HAMM HD 13 VT tandem roller

Despite the difficult conditions, we managed to complete the paving job in one shift. The SUPER 1803-3i plays an immense part in the cost efficiency of such small construction projects – and it's fun to work with, too!

André Deflorin, Construction Manager
HWE Bauunternehmung AG





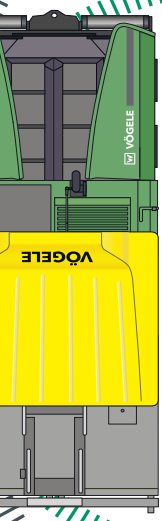
11%

Great feat: the robust VÖGELE wheeled paver of the Universal Class with 127kW Cummins diesel engine combines enormous power with high manœuvrability, mobility and traction.

Switzerland // Castiel

On geographically tough terrain such as in the Swiss Alps, asphalt paving is a challenge in itself. Extreme slopes, narrow roads and steep precipices place demands on the paving team and the machine technology alike. In the mountain village of Castiel, located in the Arosa district in the Swiss canton of Graubünden, HEW Bauunternehmung AG opted to use the SUPER 1803-3i wheeled paver for the rehabilitation of the combined base and surface course on a farm track. Located at an altitude of around 1,200m, the construction project featured an extreme slope of up to 11%. To make matters harder, the farm track was only designed for vehicles up to 18t in weight. This was just the job for the innovative wheeled paver of VÖGELE's "Dash 3" generation. »»

For a video of a comparable project in the town of Chur in Graubünden canton, Switzerland, see:
www.voegele.info/chur_en



For more about how Pivot Steer works, see:
www.voegele.info/pivotsteer_en

3.5m

Masters even tight radii: thanks to the Pivot Steer steering brake, the SUPER 1803-3i wheeled paver reduces its outside turning radius to a space-saving 3.5m.

SUPER 1803-3i handles one-day construction job efficiently

In Castiel, the high traction and manœuvrability of the SUPER 1803-3i were particularly impressive. "That makes working on extreme slopes almost as simple as on flat terrain," said Paver Operator Oliveira Rodrigues Hugo. With its powerful drive and material handling system, it was easy enough for the HEW paving team to complete the construction project in one shift. The short set-up times of the paver also contributed to this.

VÖGELE sensors for grade and slope control, for instance, can be connected according to the plug & play principle: the VÖGELE Niveltronic Plus System for Automated Grade and Slope Control detects the connected sensor automatically. The screed operator then just defines the specified values using the quick set-up function – and the work can begin. When its job is done, the paver also makes a quick exit: the SUPER 1803-3i can travel at up to 20km/h under its own power. ///

Intuitively designed paver operator's ErgoPlus 3 console: the SUPER 1803-3i wheeled paver can be controlled easily and precisely using the steering wheel.

Thanks to its high traction and manœuvrability, the SUPER 1803-3i makes paving on extreme slopes almost as easy as on flat terrain.

Oliveira Rodrigues Hugo, Paver Operator
HEW Bauunternehmung AG

Ensuring relaxed compaction: the HAMM HD 13 VT tandem roller with 3-point articulation for high driving comfort.

Highlights of the SUPER 1803-3i: The powerful wheeled paver

- Undercarriage with high tractive power thanks to separate hydraulic drives
- Optional Pivot Steer steering brake raises the already high manœuvrability
- Rapid transport under its own power at up to 20km/h

Surrounded by green landscape:
Shanti Path, the main road in the diplomatic enclave of Chanakyapuri, New Delhi.

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