Extreme Paving on a Steep Slope of 31°

SUPER 1800–2 slope paver lays asphalt lining for water reservoir in China.
Dear Friends,

The new 2007 WIRTGEN CHINA NEWS is covering a really unique story. The slope paver version of the VÖGELE SUPER 1800-2 on a mission in Henan province. Have a look at this water reservoir job site by yourself and witness WIRTGEN Group’s ability to adapt to even the toughest job site situations.

Recycling of asphalt roads is an issue which becomes ever more popular also in China now. In this issue we will report about the introduction of the biggest cold recycler, the WIRTGEN WR 4200, to the Chinese market. On the Jingshen expressway you can see this “giant” recycling existing asphalt layers. The province of Shaanxi will report about the introduction of the biggest cold recycler, the WIRTGEN WR 4200, to the Chinese market.

The reservoir holds an impressive 3 million cubic metres of water. The reservoir’s walls with a slope angle of 31° are being sealed with asphalt for waterproofness. Placing the asphalt seal is a complex challenge, taken by a special slope paver made by VÖGELE and fulfilled impeccably.

Thank you for sharing your time with us!

Ulrich Reichert
Managing Director
WIRTGEN (China) Machinery Co., Ltd.
WR 4200 LAUNCHED IN TIANJIN

On Section K96-K98 of the Jingshen Expressway (Beijing – Shenyang), a “giant” is working with perfect efficiency; the complete process of “cold in-place recycling”, including milling, mixing, paving and pre-compaction, is all done by a single giant-sized machine, the WIRTGEN WR 4200.

The well proven cold in-place recycling process, in combination with state-of-the-art foamed bitumen technology, is the key to the success of large-scale projects with the highest quality standards. Thanks to its large working width up to 4.2 metres, the flexible high-performance WIRTGEN WR 4200 recycler is capable of recycling full traffic lane widths in a single pass. Traffic disruption is minimized as only one lane is temporarily blocked by the WR 4200. The result is a structurally rehabilitated road pavement that is precisely designed to carry the expected heavy traffic over its design life. In addition, it is the fastest and most economical solution for the rehabilitation of heavily trafficked roads and expressways.

According to Mr. Wang, Chairman of Tianjin Goldway Co. (the owner of this, the very first WR 4200 in China), they have investigated the possibilities of the renowned cold recycling technology since the year 2005. During this period, they have bought several WIRTGEN recyclers and other ancillary plant such as the WM 1000. His company was the first in China to purchase a WIRTGEN KMA 200. Since purchasing the KMA 200 last year, they used this equipment to carry out rehabilitation work on the Jinghu (Beijing – Shanghai) Expressway (Tianjin Section) and JinCang Expressway (Tianjin – Cangzhou), using foamed bitumen. So, when they needed to rehabilitate the Jingshen Expressway this year, it was no surprise that they decided to purchase a WR 4200.

The Jingshen Expressway, which links Beijing and Shenyang, is the only expressway from Beijing to Northeast of China. It comprises a very long expressway, with a total length of 658 km. It leaves Beijing heading east and crosses the jurisdictions of Beijing municipality, Hebei province, Tianjin municipality and Liaoning province. The expressway opened to the general motoring public on September 15, 1999, after four years of work on different sections. There has been a dramatic increase in heavy traffic and severe damage has been caused by the overloading of vehicles transporting raw material, mostly steel and cement.

In view of the advantages of cold recycling with foamed bitumen in terms of cost-effectiveness, environmental friendliness, least disruption to traffic and short construction time, this technology was chosen by the project owner, Tianjin Municipal Bureau and Tianjin Expressway Development Inc.

TECHNOLOGY

On Section K96-K98 of the Jingshen Expressway, after the WR 4200 Recycler, a 25-tonne HAMMR roller compacts the recycled layers.

On Section K96-K98 of the Jinshen Expressway, after the WR 4200 Recycler, a 25-tonne HAMMR roller compacts the recycled layers.

The WM 1000 Mixer blends cement and water into a homogenous slurry. The slurry is sprayed directly into the mixing chamber of the WR 4200.

Top: New base of high bearing capacity: the existing base is cold recycled in place, adding foamed bitumen and cement, and laid by the WR 4200.

Bottom Right: The existing pavement structure is shown below.

Asphalt, 19cm
Cement treated base, 20cm
Lime and fly ash mixture, 15cm
Lime stabilized soil, 15cm
Tianjin Goldway Co., with their practical experience in cold recycling with foamed bitumen during the past two years, together with advanced machines from the WIRTGEN Group, which include the WR 4200, KMA 200, W 2000, 3625 HT, HD O 120 V and VÖGELE Pavers, are well suited as the Contractors for this rehabilitation project.

The rehabilitation project is to be carried out in several stages, Stage 1 having a length of approximately 2km with a working width of 12.4 metres. A total area of 28,000m² will be rehabilitated.

“The existing material has been 100% reused. The traffic can continue to flow alongside the traffic lane being recycled. The recycled layer is ready for use immediately after compaction. The cost of labor is considerably reduced due to smaller labor force required” said Mr. Zhang, Deputy the General Manager of Tianjin Goldway Co., when talking about the advantages of WR 4200. “The WR 4200 can recycle complete traffic lanes in a single pass. Also the high rate of production is very convincing: The WR 4200 produces 400t/h. These production quantities speak for themselves. Another important point is that it can even work perfectly at night, thanks to its optimized illumination system.” Furthermore he added, “Our past experience with machines from WIRTGEN Group is that it is not only the machine but also the after sales service, repair, maintenance, training and application support which is offered by WIRTGEN.”

A series of high-class seminars have been organized by WIRTGEN, with the aim of sharing WIRTGEN’s internationally renowned expertise with the customers in Tianjin. Invited by WIRTGEN China, Professor Kim Jenkins from Stellenbosch University, South Africa and Professor André A. A. Molenaar from Delft University, Netherlands, have given personnel from Tianjin Goldway Co. as well as from the major design institutes in Tianjin a professional training in cold recycling technology using foamed bitumen.

Ergonomic design: from the platform of the giant Cold Recycler, the operator has an excellent view of the whole recycling train.

Controls to adjust the recycling depth and additional operating panels for the main functions of the machines are provided in all vital places of the WR 4200.

The recycling process consists of:

1. Milling off 24cm of the existing pavement structure using a WIRTGEN W 2000, and transporting the milled material back to the yard.
2. Cold in-place recycling 18cm of the underlying pavement structure using the WIRTGEN WR 4200, with 3% foamed bitumen, and 2% cement.
3. After the cold in-place recycled pavement has been cured for 3 days, the RAP, which has been recycled in the KMA 200 using 2.3% foamed bitumen and 1.5% cement, is paved 20cm thick on top of the in-place recycled layer.
4. After this layer has cured for 3 days the prime coat consisting of bitumen emulsion is applied, followed by a temporary application of crusher dust as a wearing course.
5. The road is then re-opened to traffic.
6. After the full carriageway width has been completed a 4cm polymer modified asphalt is paved as the final wearing course.

WIRTGEN CHINA NEWS
WIRTGEN COLD RECYCLING

KMA 200: Foamed bitumen and cement recycling in mobile mixing plant (Xibao, Xiyu, Xihu, Xitong expressway/Shanxi province, China)

Background

Cold recycling technology is widely used for road maintenance in China. In 1998, WIRTGEN Group introduced the first cold recycling machine to China. After 10 years of population, cold recycling technology is widely used for the maintenance of national roads, provincial roads and expressways. Shanxi province locates in inland of China; road transportation is the main transportation method. Since early 1980s, expressway construction of Shanxi province was started. After 20 years, they have been developed rapidly. With the completion of Xitong, Xibao, Xiyu, Tonghuang, Yujing, Xihan, airport expressway and round city expressway, the total expressway mileage of Shanxi province has reached 1300 kilometres, and this is very important for economic development of Shanxi province. After many highways were constructed, the transportation volume is increasing fast. At the same time, large, overloading vehicles are the new challenge for expressways. Now, many roads, which were built many years ago, need urgent maintenance. All kinds of road maintenance produce lots of RAP, which will cost a lot of time and money of Road Administration Department to prevent the air pollution. It is necessary to find an economic method to reuse these RAP. With WIRTGEN foamed bitumen cold recycling technology and WIRTGEN mobile cold recycling mixing plant KMA 200, new binding agent can be added to RAP. The recycled material can be paved by conventional asphalt paver to serve as new flexible base course. The shortage of raw material and resources are the problem of the world. So the reuse of existing material is the first to be considered.

In April of 2005, with the help of Shanxi Transportation Department and Shanxi Highway Incorporation, WIRTGEN Group, Changan University and Shanxi Highway Mechanization Co., Ltd conducted a cold recycling project together using foamed bitumen and locally reclaimed asphalt. Xibao expressway is one of the main expressways in China. It was constructed in 1992, with total length of 156 kilometres, 4 lanes in 2 directions, design speed of 120km/h. Now, traffic volume per day is 15000 vehicles, among which, 30% is heavy loading vehicles. To rehabilitate the failed road and increase the safety, rebuilt of expressways was started since 2004, and 2 kilometres of foamed bitumen recycled trial section was designed to serve as a substitute method for expressway maintenance. After 2 years of opening to traffic, the trial section is still in good condition, which totally fulfils the traffic volume requirement. Cold recycling method has more advantages than conventional method does.

Adopting conventional method, contractors would pay a lot of money to reuse the waste material. Flexible base course recycled with foamed bitumen is more stable, which allows thinner asphalt surface layer and make the expressway life longer. According to relevant statistics, 20% of road maintenance cost can be saved with cold recycling method.

The approach ramps for filling the batching unit can easily and quickly be put in place on the job site.
The foamed bitumen stabilised material shall be evaluated by ITS, otherwise, the ratio between the remaining ITS and dry ITS can evaluate the mixture performance for water failure.

**Construction process**

The milling of existing asphalt pavement is finished by WIRTGEN large milling machines. The large milling machine can mill the complete asphalt surface in one pass, and this can save a lot of time and money. RAP is transported to the mixing plant of KMA 200. WIRTGEN mobile mixing plant can be transported by means of standard tactor vehicle, with high performance. The plant is assembled and disassembled easily in next to no time at all. Special tools are not required. Working performance can exceed 200t/h easily. The mixed material can be transferred to truck by conveyor to transport to the jobsite.

Recycled mixture, using foamed bitumen, produced by WIRTGEN mobile mixing plant KMA 200

The recycled mixture can be paved by VÖGELE SUPER 2100-2 paver. VÖGELE is a member of WIRTGEN Group, with more than 75 years of road paver manufacturing history. A lot of technology innovation, reliable quality and the commitment to customers reinforce the leadership of VÖGELE in the world.

The required compaction degree is very important for the performance of the road. The material with bad compaction is prone to rutting, water failure and asphalt binding agent aging. To achieve the required compaction degree (88%-102%), we choose HAMM compactor 3625 and HD 130 tandem roller to complete the task. The compaction process is as follows:

- HAMM HD 130: compact the stabilized material statically.

The compaction degree no less than 98%; the practical compaction degree in job site is satisfying.
10-YEAR EMPLOYMENT

Edwin Cai, Gary Wang, Michael Kwan and Benjamin Feng hold different posts and work at different locations – but they all have been employed in the WIRTGEN Group for 10 years now. WIRTGEN CHINA NEWS congratulates and thanks these colleagues for 10 years of pleasure in their work, loyalty with the company and passionate engagement.

Edwin Cai: To the Best of My Ability

Since April 1997, Edwin Cai’s employment by WIRTGEN in Guangzhou has been 10 years – first as a sales manager to be responsible for spare parts sales all over China, and to assist the complete machine sales in Guangzhou Area (namely Guangdong, Guangxi, Fujian, Sichuan etc.). Now, Edwin Cai has become the General Manager of WIRTGEN (China) Machinery Co. Ltd., Guangzhou Branch, responsible for all the business operation in Guangzhou Area.

“When making decision to join WIRTGEN in April 1997, I was greatly encouraged by its philosophy – ‘We are one family’, I was told, as I have experienced at first hand in these past 10 years, that in this family, every member is very important and indispensable. Everybody may have your own preferred orientation as long as you fit well in the company structure, you will find as big space for your later self-promotion as your own capacity. We are one team to work together to offer our customers with ‘first-class construction machinery and top-ranking after-sale service’.”

When he was asked, “During the past 10 years, what event has stirred you most deeply?”, Edwin’s answer is: “I couldn’t have imagined that WIRTGEN China, within 10 years, has become a leading company in road construction and rehabilitation machinery industry in China with such a big market share.”

Talking about his career in WIRTGEN, Edwin said, “In these years, I have been working in different posts. In spite of the great changes and the responsibilities of each individual post, I’m sure I have kept one aspect unchanged, i.e. I have done my endeavor to my own responsibilities, as well as to do the coordination for a perfect cooperation with the whole team.”

“WIRTGEN, with its high quality machines, is undoubtedly the absolute market leader especially in the fields of cold milling and recycling etc. in China. My perspective at present of WIRTGEN China 10 years later is that we should maintain ‘first-class construction machinery and top-ranking after-sale service’, as well as our corporate culture – ‘We are one family’. Sticking to the principle of market orientation, as a pioneer in developing leading technologies for road construction and road rehabilitation, we shall continue to develop advanced machines to meet the growing market demands. Last but not least, I would like to express my hearty thanks to our dear customers as well as my dear colleagues for your backing to me as you always did, and my very best wish for your good health and happiness!”

Gary Wang: No Regret for Joining WIRTGEN

Being very straightforward, superhonest, and always knowing what he was doing and talking about, Gary Wang is always a welcome friend for all of our customers. He has been respected by the customers as an experienced service engineer, always ready to offer any possible assistance. According to Gary, even 2 years before he “officially” joined WIRTGEN on July 1st, 1997, he had been “working” for WIRTGEN for some commissioning job (mainly WIRTGEN milling machines at that time).

When he was asked, “What has made you decide to work for WIRTGEN in China under Mr. Reichert’s administration?”

Like his working style, his answer is plain but always right to the point: “I got to know Mr. Reichert in 1995. Due to my poor English, our communication was very much limited, which still could be sufficient enough for me to realize that he is a real gentleman, a good boss. As every time he met me, he would shake hands with me, with one simple English sentence, ‘Thank you, Gary’, the sincerity of which I could always feel! The more machines I have commissioned, the more confidence I got in our products. I have always been so proud and happy with the reliability of our high-standard products, as I always tell our customers, ‘Once you choose WIRTGEN Group, we will never let you down, because we are in the same boat!’

Thinking about his 10-year employment in WIRTGEN China, Gary spoke feelingly of the happy days after he joined WIRTGEN Family.

“For me, ‘in the same boat’ always means a lot more, even from the first day I joined WIRTGEN Family. I have been working in WIRTGEN China as a service engineer for more than 10 full years, most of the time I myself worked on the site offering service, but I never felt being left alone, because whenever and whenever in need, I could seek for help both from WIRTGEN China team and even from...
When Michael Kwan started his career in our company, WIRTGEN Hong Kong counted no more than 16 staff. After many years as a service engineer, he now is in charge of customer training throughout China. The international team based in our German headquarter, as “We are one family”. After our China headquarter has been established, especially after we have built up a spare parts service centre in Langfang, we could expect even quicker and better support. With the backing from our professional team and the modern facilities in WIRTGEN China headquarter, I feel steady and sure even when I’m working alone on the site. Years ago, when I received a “Happy-Birthday” fax message with the signature of all my colleagues, I suddenly understood what “WIRTGEN Family” means. So, how can I deny the fact that I’m working in a good company, among good team fellows, and even with a very nice boss!

When asked, “Is there anything you felt proud of in your 10-year employment in WIRTGEN? Is there anything you felt regretful?”, his answer is:

“I enjoyed a lot and really felt proud when I could manage to answer all the questions, and solve the problems for the customers on the site. For the later part of your question, my answer is absolutely clear- how can I feel regret for been a member of this big family!”

Michael Kwan: WIRTGEN Offering an Excellent Environment for Technical Training and Application

Michael Kwan remembered so clearly when he started to join WIRTGEN on Jan. 25th 1997, WIRTGEN Hong Kong was only a small office with six seats, and around ten staffs working in China mainland. Even though it was the transition period for its business operation in China from dealership to direct sales (manufacturer – customers), Michael was greatly impressed by the “big” capacity of this “small” team – every member, in light of “We are one family”, supports each other in such a high efficiency.

In WIRTGEN, Michael has been a service engineer, service supervisor, and now is "Head of Training" in WIRTGEN China, responsible for the training offered to customers both on the site and in the classroom based in Langfang. His department is also responsible for the translation and updating of all the “Operation Manual” of the machines.

“In my first days as service engineer in WIRTGEN, I had chances of face-to-face communication with the customers. All the colleagues, from service department in both Hong Kong and China Mainland, work together to solve technical problems, learn from each other and share the happiness of success. I learned how to build Machine Record, the processing of claim etc. under the instruction of Mr. Norbert Uckerath, Service Manager of WIRTGEN Asia. What is more important is that from him, I came to know the real meaning of ‘service’ in WIRTGEN Family. Also from him, I learned that training means to share knowledge, know-how and your experience with others, which you should start from self-teaching, always be ready to help the others. I have been deeply touched by his sincerity, his politeness, personal integrity, his ability and patience. No matter when and what problem, simple or complicated, he has been always ready to offer assistance till the final settlement. I have tried to be as helpful since my transferring to Training Department 4 years ago.

In the past 10 years, I have witnessed the growth of service team from 3-4 engineers to over 30 engineers. Being a trainer, I’m very proud if I could offer them any assistance. Now with the open administration by Mr. Reichert, mutual support and coordination from all departments, technical promotion and training by WIRTGEN China, we can say that WIRTGEN is offering an excellent environment for technical training and application. The only regret I have sometimes is that some of our colleagues, for some reason, have left the company, but I’m sure they will always remember the happy laughter in WIRTGEN Family.

Benjamin Feng: Proud and happy to have witnessed WIRTGEN’s development in China at such a high speed

Used to be one of the WIRTGEN milling machine users (WIRTGEN 1900 VC) in China, Benjamin Feng was aware of the name of WIRTGEN and its products in 1991. About 6 years late, he made decision to join, and became a member of “WIRTGEN Family”.

“Since I joined WIRTGEN 10 years ago, I have been a sales engineer for spare parts. I’m very proud of having been in this position for over 10 years, as I have strong confidence on WIRTGEN and its products. I’m so proud and happy to have witnessed, during the past 10 years, WIRTGEN’s development in China at such a high speed. Thanks to its wider and wider range of products, along with the increase of its team in China, WIRTGEN Group has become the market leader for road construction and maintenance machinery both in the world and in China, with ever-growing market share and the turnover of complete machine sales as well as parts sales. For Shanghai Office only, the parts sales has increased to over RMB20 million from the total amount of RMB 3.6 million 10 years ago. Thinking about this, I’m even more confident of the future of WIRTGEN China, in the firm belief that every WIRTGEN Family member, old or new, would do more contribution to make our Family even bigger and stronger!”
The first job was carried out by a W 2100. It was equipped with a 2.10m wide microfine milling drum with over 700 cutting tools and milled off the asphalt pavement of the touchdown area at a depth of 3 mm. The rubber abrasion of the aircraft tyres, which had to be disposed off separately, was thus removed quickly and economically. Shortly thereafter, two high-performance milling machine models W 2200 commenced their work, one of them equipped with a 3.80m wide milling unit. They produced a precise edge for the pavers to use later when commencing the paving operation and also levelled the peripheral areas to optimize water drainage. Everything had been prepared very efficiently, and transport of the milled material from the site had been organized perfectly so that the milling machine operators never had to wait for trucks.

The milling operation was completed by a W 35 DC. The small milling machine with a working width of 35cm removed the asphalt pavement in the peripheral areas that had not been milled by the large machines. Their operation was completed in no more than a few minutes, the two W 2200s had done an excellent job.

The standard model of the high-performance milling machine W 2200 works with a 2.20m wide milling drum. Its powerful engine (671 kW / 900 HP) enables the machine to operate economically even at larger working widths. If the machine is equipped with the Flexible Cutter System (FCS), milling drums can be exchanged to vary the milling width or the tool spacing. Milling widths ranging from 2.20m to 4.40m can be realized using the elements of the FCS modular system. The W 2200 with an XXL-size drum unit is particularly economical when working on large construction sites. Labour requirements are very low, the job is completed fairly fast due to the machine’s enormous area performance, and only one machine needs to be transported to and from the site.

It demonstrated what’s in it for six long nights: The W 2200 equipped with a 3.80m wide drum assembly impressed with reliability, precision and power. Transport of the milled material from site was perfectly organized, enabling the tremendous potential of the large machine to be utilized to full capacity.
would have incurred considerable costs but the milling machines, pavers and rollers lived up to their good reputation, and there was no cause for complaints. “I spent six nights on the job site, but none of the machines had a malfunction”, smiles Christophe Verheyden, WIRTGEN Belgium’s service engineer.

One final remark: Meticulous planning, reliable machines and a highly professional team helped to make sure that the time limit was adhered to. Air traffic was resumed according to schedule at 6 AM.

Bottom: Work in the peripheral areas is completed by the well-lit W 35 DC. The milled material was deposited on the asphalt surface via the small loading conveyor to be disposed of by a sweeper.

Perfection in asphalt paving: Two sonic sensors, combined with the new automatic grade and slope control system NIVELTRONIC® Plus, ensure that the SUPER 2100-2 places the asphalt true to grade and slope.

Grade & slope control made even more easy with NIVELTRONIC® Plus

It is very important to precisely adhere to the specified paving height. All the better, therefore, if the automatic grade and slope control system can be set correctly with minimal effort. NIVELTRONIC® Plus, the new system from VÖGELE, offers all that is needed to do just that. Learning how to operate it is easy thanks to its language-neutral symbols. All important functions of the NIVELTRONIC® Plus system are within direct reach at the first menu level. The sensors can be mounted with a few simple flicks of the wrist at the permanently installed mounting points. The automatic sensor recognition is a particularly convenient feature. Monitoring and actuating the sensors during the paving operation is effected conveniently via the two ErgoPlus operating consoles at the screed.

Perfection in asphalt paving: Two sonic sensors, combined with the new automatic grade and slope control system NIVELTRONIC® Plus, ensure that the SUPER 2100-2 places the asphalt true to grade and slope.

The concept of the tandem rollers belonging to the DV series offers special advantages, in particular on night sites: The main frame is open, the cabin is glazed in the area of the drum, and 16 halogen headlamps illuminate the drum surface across the full width. The driver has a good view of the well-illuminated drum edge, the lit kerbstone and the nozzles of the drum spray system. In addition to that, the innovative driving and operating concept HI DRIVE enables the roller driver to change the direction of travel quickly but smoothly. If desired, the driver can also activate the automatic seat rotation. When changing the direction of travel, the driver’s seat including all operating elements in the armrests is then turned into the new direction automatically.

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Think forward – the extra in safety and ergonomics even at night

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VÖGELE DEVELOP NEW MACHINE TECHNOLOGY FOR “HOT ON HOT” PAVING

“INLINE PAVE”: LOWER COSTS, HIGHER QUALITY

"Hot on hot" paving is in the offing! For this paving method interesting from both the economical and quality point of view, VÖGELE offer a newly developed machine technology.

The VÖGELE concept named “InLine Pave” allows to place binder course and surface course “hot on hot” in a single go. Thanks to VÖGELE High Compaction Technology, specially developed further for this paving technique, no rollers are required to compact the binder course. Meanwhile, more than 500,000 m² of area have been paved "hot on hot" in Germany and the Netherlands, in close co-operation with German building contractor Matthäi. On all projects, excellent results were achieved.

VÖGELE Machine Technology

VÖGELE “InLine Pave” uses a paving train for pavement construction. The unit is made up of a MT 1000-1 IP Mobile Feeder based on a modified VÖGELE feeder of standard design, a SUPER 2100-2 IP for placing binder course and a paver placing wearing course. For placing wearing course, a SUPER 1600-2 paver or SUPER 1800-2 can be used.

Feed with Mix: MT 1000-1 IP Mobile Feeder

The MT 1000-1 IP Mobile Feeder (IP stands for “InLine Pave”) is equipped with a long, heated conveyor unit to alternately feed pavers with binder and surface course mixes. Red and green lights provided on the machine signal to feed lorry drivers their turn to approach the feeder (green light for binder and red light for surface course mix).

SUPER 2100-2 IP

for Paving Binder Course

The core of the “InLine Pave” train is SUPER 2100-2 IP, a SUPER 2100-2 of standard design which has undergone modification. SUPER 2100-2 IP comes with a special transfer module for surface course mix and an AB 600 IP Extending Screed of advanced design, with 2 pressure bars. This screed based on the unique VÖGELE pulsed flow hydraulics is the technological gem of the “InLine Pave” technology.

SUPER 1600-2 or SUPER 1800-2

for Paving Surface Course

For paving surface course, as the third in the trio, a SUPER 1600-2 or SUPER 1800-2 paver, both of standard design, can be used.

MT 1000-1 IP Mobile Feeder

The MT 1000-1 IP Mobile Feeder has a conveying capacity of 900 tonnes/h. It comes with a powerful engine developing 106 kW and is equipped with a long conveyor unit, thus permitting to alternately feed the SUPER 2100-2 IP paver with binder and SUPER 1600-2 or SUPER 1800-2 with surface course mix. In order to properly reach the two pavers’ material hoppers located at different heights, the conveyor kinks hydraulically to serve the lower hopper.

Professional job site logistics as a crucial factor for success

A vital condition for successful implementation of “InLine Pave” is optimal job site logistics, as large quantities of mix have to be placed within a short period of time. Utmost importance must be attached to perfect co-ordination of the mixing plant on the one hand and haul vehicles for transport of the paving materials on the other, so that sufficient mix consistent in quality is available on site at all times. On the job site itself, the feeder operator pulls the strings. He directs the feed vehicles to their positions by green or red lights. At the push of a button on his console, he switches to “green” for binder or “red” for surface course mix, thus signalling to lorry drivers their turn to approach the feeder. With the feeder operator changing from binder to
The crucial component and technological gem, when looking at the “InLine Pave” machine technology, is the High Compaction Screed’s pulsed flow hydraulics. This special technology has been offered by VÖGELE exclusively since 1962. For “InLine Pave”, the AB 600 High Compaction Screed achieves highest density already at the stage of binder paving.

The paver placing surface course comes with a water spraying system for crawler tracks to prevent the tracks from sticking to the hot binder material.

Overhead transfer of mix

The extra conveyors, part of the special transfer module, transfer the surface course mix received through the bin over the SUPER 2100-2 IP into the material hopper of the second paver following behind to pave surface course. The conveyors are heated to prevent mix from sticking. For a safe clearance between the paver placing binder and the one paving surface course, too, electronic distance control and collision protection are installed. For the storage of binder, an extra hopper holding 20 tonnes and insulated against loss of heat is available to be placed into the paver’s material hopper should further capacity be needed.

A SUPER 1600-2 or SUPER 1800-2, the last “InLine Pave” machine in the group of three, comes with an AB 500-2 TV Extending Screed of standard design to place surface course onto the still hot binder layer. The paver’s crawler unit is fitted with extra wide track shoes and a water spraying system is installed preventing the tracks from sticking to the hot binder material.

Large material hopper for storage of mix

For a large storage capacity, an extra hopper holding 25 tonnes is placed into the paver’s material hopper to ensure that a sufficient quantity of surface course mix is available always. The hopper is insulated against loss of heat and in part heated electrically to maintain a constant temperature of the mix even for a prolonged period of time and to prevent the mix from sticking. SUPER 1600-2 or SUPER 1800-2 can be used for conventional paving tasks without conversion at any time. All that needs to be done is removing the large extra hopper.

The paver placing surface course comes with a water spraying system for crawler tracks to prevent the tracks from sticking to the hot binder material.

Surface course mix, for instance, the conveyor automatically adjusts in height and distance. So no need for the operator to focus on that, he can devote his attention to other essentials. There are further smart functions installed as well for ease of operation, thus ensuring a correct and reliable flow of operations on site.

Safe and smart distance control for the “InLine Pave” train

The distance between the Mobile Feeder and the paver for binder course is picked up by laser sensors in non-contacting operation and kept constant by automatic control. It is the paver placing the binder mix which takes the lead and sets the pace for the whole paving train. Should, for instance, the distance between feeder and paver decrease due to the feed lorry slowing down for some unintentional reason, the following machines are stopped. A process-related change in distance between feeder and paver, however, as it occurs when swapping between mixes, is recognized automatically by the control system and action taken.

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VÖGELE now present the SUPER 1800-2 with a cutting-edge machine ideal not only for paving thin layers on spray seal or tack coat, hot on hot, but also highly interesting for many non-specialized road building companies. The VÖGELE SprayJet Module offers an economical and clean alternative wherever spraying bitumen emulsion and subsequent paving are required.

**CONVENTIONAL SUPER 1800-2 WITH NEW SPRAYJET MODULE**

The Conventional VÖGELE Paver with Spraying Capability. Rehabilitating roads by replacing wearing course is very popular in numerous countries. No wonder contractors prefer this technique as it fulfills in an excellent manner the requirements of high cost-effectiveness and eco-friendliness.

SprayJet technology meets highest standards in terms of eco-friendliness

The concept of the “Paver with SprayJet” is based on a SUPER 1800-2 of standard design which, after minor modification and addition of a newly developed spray module, can be used as a spray paver. The motif behind this concept was development of a machine which, in a very short time, can be converted back to a standard paver for conventional paving as usual. This goal has been excellently achieved and the economic efficiency of the SprayJet Module is outstanding.

The SprayJet Module offers a host of technological advantages. For instance, the rate of spread can be set from 0.2kg/m², allowing the bitumen emulsion to be finely metered and applied in small volumes at slow pave speeds. Thanks to an extremely low and constant spraying pressure of just 3 bar prevailing in the system, the spraying work can be performed with a minimum of spray mist and pollution. As this was not possible with previous systems, the SprayJet Module is a trailblazer in both economical and ecological terms.

Use as a spray paver or conventional paver boosts productive utilization

When it comes to new developments, VÖGELE always focus on designing machines featuring economical and versatile utilization. SUPER 1800-2 with SprayJet Module is a brilliant example. The machine is suited to use both as a conventional paver or as a spray paver. The spray module can be fitted or removed in just a short time. Easy for contractors to make money out of this advantage: if there are currently no jobs requiring the use of the SprayJet Module, contractors can employ their SUPER 1800-2 for conventional paving tasks at any time, thus boosting the machine’s productive utilization.
**SUPER 1800-2 as a Conventional Paver without SprayJet Module**

- Maximum pave width 10m
- Laydown rate up to 700 tonnes/h
- Maximum layer thickness 30cm
- Transport width 2.55m
- Pave speed up to 24m/min.
- Travel speed up to 4.5km/h
- Powerful PERKINS engine rated at 129.6 kW
- ErgoPlus, the concept for easy paver handling
- Hardtop with wide sunshades

**SUPER 1800-2 as a Spray Paver with SprayJet Module**

- Uniform rate of spread across the entire pave width up to 5m.
- Spray volume from 0.2kg/m² allows smallest quantities to be applied highly economically.
- Very low and constant spraying pressure (3 bar) reduces spray mist to a minimum and achieves uniform spraying.
- Rate of spread can be selected between 0.2 and 1.0kg/m², independent of the pave speed (2m/min. to 15m/min.).
- Optimal spray pattern due to double-slotted spray nozzles.
- Easy handling.
- Practical automatic function to set “Start” and “Stop” of spraying.
- Closed circuit for constant circulation of the emulsion, no splitting, no foam.

The SprayJet Module

The SprayJet Module includes an emulsion tank holding 2,000 litres. Handling the SprayJet system is very easy. All the operator needs to do is enter the desired rate of spread on his touch screen. No other input is required for standard spraying operation.

As a matter of principle, the tank should be filled with hot emulsion. But of course, the tank nevertheless comes with an integrated heating unit (2 x 7 kW) to keep the emulsion at the desired temperature. Temperature sensors are fitted in order to prevent the emulsion from burning and automatically switch off the heating process if the emulsion level becomes too low. The heating limit can be set via controller to a value between 0 and 80 °C.

In order to maintain the bitumen emulsion in a highly homogenous state, the SprayJet Module comes with a heated emulsion pump driven by a hydraulic motor with rpm sensor. This pump ensures that the emulsion is kept in constant circulation. The SprayJet Module is controlled with the help of an on-board computer. A control panel, easily accessible, is provided on the spray module. Just like the ErgoPlus operating concept for the paver, handling is extremely easy as self-explanatory symbols are provided. The special technical design of the nozzles and the constant spraying pressure of 3 bar allow absolutely uniform spraying. Spraying does not take place continuously but in pulsed operation. The formation of spray mist is also reduced substantially by the new VÖGELE system, as the spraying pressure is very low and the spray droplets are larger. VÖGELE SprayJet thus represents a major advantage for the job site team, too, as emulsion fumes are reduced to a minimum. The accurate technique makes it possible to even spray along road curbs without getting emulsion on the curb.

The spray technology

In the paver’s engine compartment, compressed air tanks with a total capacity of 60 litres are installed for supplying the pneumatically operated spray nozzles with compressed air. In the system a pressure of 8 bar prevails.

The SUPER 1800-2 is fitted with five spray bars with a total of 20 self-sealing spray nozzles. The spray bars are so positioned on the paver that the emulsion film spread on the base cannot be damaged by the paver’s tracks.

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having to heat the screed. An additional gas heating system can be used to quickly heat up cold emulsion.

On the two ErgoPlus operating consoles for the screwmen, all vital information concerning the AB 500-2 is displayed. Thanks to self-explanatory symbols, set-up and adjustments can easily be made.

Wide field of applications for SUPER 1800-2 with SprayJet Module

The SUPER 1800-2 with SprayJet Module combines with the AB 500-2 Extending Screed. The screed allows pave widths up to 5m. AB 500-2 is available in the versions TV (with tamper and vibrators) or TP1 (with tamper and 1 pressure bar) for high compaction.

Like all VÖGELE screeds, AB 500-2 features electric heating. Screed and emulsion tank are heated independently, so that heating of the emulsion can take place without

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The Highlights of the SprayJet Module

- Emulsion tank holding 2,000 litres, heated electrically and insulated against loss of heat.
- Sensor controlled safety shutdown of heating unit to prevent the emulsion from burning.
- Emulsion tank filled by internal pump at up to 120 litres/min. or, alternatively, via external pump (e.g. tanker).
- Cleaning of pump system and spray bars by compressed air and rinsing.
- Control panel on the SprayJet Module to select operating mode of the emulsion pump and activate/deactivate single spray nozzles.
- SprayJet Module can be tilted though 15° for easy access to perform maintenance services.

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AB 500-2 Extending Screed for perfect pavement quality

The rate of spread can be selected between 0.2 and 1.0kg/m², independent of the pave speed (2 - 15m/min.).

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As a technical innovation, the Spray Module allows very small emulsion quantities to be applied. The rate of spread can be selected having to heat the screed. An additional gas heating system can be used to quickly heat up cold emulsion.

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Wide field of applications for SUPER 1800-2 with SprayJet Module

The SUPER 1800-2 with SprayJet Module is a sophisticated piece of equipment perfectly suited not only to placing thin layers, but also for conventional paving jobs wherever emulsion spraying is desired. With the emulsion tank installed on the pave, sufficient emulsion is available at all times. This allows job site times to be reduced substantially. Due to the equipment’s design, asphalt is paved immediately after spreading tack coat. As a result, vehicles never pass over the emulsion, so that pollution and soiling of surrounding roads is effectively avoided.

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Bottom Left: Clearly arranged – the ErgoPlus operating console.

Bottom Right: On the ErgoPlus display, the practical functions of “Start” and “Stop” of spraying can be selected.
SUPER 1800-2 SLOPE PAVER LAYS ASPHALT LINING FOR WATER RESERVOIR IN CHINA

EXTREME PAVING ON A STEEP SLOPE OF 31°

The project of a hydro power station in the Chinese province of Henan is extreme from every point of view: a giant 3 million cubic metres of water will turn turbine generators achieving a combined output of 1,200MW of electricity. Two water reservoirs are needed to operate the pumped storage power facility, one of them located in the valley and one in the mountains. They are surrounded by retaining walls 31° steep. The main reservoir lying higher up needs lining with an asphalt seal.

electricity in Henan Province is concerned, home to 96 million people and one of China's most populated regions, the Baoquan Power Station Project is an important investment.

Reservoirs hold 3 million cubic metres of water

The upper reservoir, with a holding capacity of 3 million cubic metres, will be flooded with water from sources in the surrounding mountains during the rainy season between July and August. The water flows downhill in massive pipes to turn four powerful turbines and is then collected in the lower reservoir. Each of these turbines generates 306MW of electricity, satisfying the region's needs primarily during the day and at times of peak usage. At night when less power is needed across the province, water is pumped back up from the lower reservoir to the higher one to let the cycle begin anew on the next day. This way, the region will overcome bottlenecks in energy supply.

166,000 m² of asphalt seal to be paved

For sealing the water reservoir, asphalt is paved. When selecting machinery for the job, contractor IWHR (China Institute of Water Resources and Hydropower Research), headed by Dr. Hao Jutao, relied on the know-how of WIRTGEN China. WIRTGEN China together with VÖGELE and IWHR modified a SUPER 1800-2 to meet the project's particular requirements. After undergoing technical modification, the slope paver was up to its task of laying asphalt on the huge area. For the wall of the reservoir alone, 166,000 square metres need to be lined with asphalt to provide a waterproof seal.

FOCUS STORY

This challenge is taken by a modified SUPER 1800-2 paver. In close co-operation with the contractor, WIRTGEN China and VÖGELE got the paver ready to face the steep uphill task.

After undergoing modification into a slope paver, the SUPER 1800-2 is on the scene in Henan Province situated some 750km from Beijing, to tackle the huge job. Work on site is progressing steadily and will be completed by the end of 2007. Even for the booming Chinese building industry, this project is a kind of special challenge. And as far as local supply of asphalt is concerned, home to 96 million people and one of China’s most populated regions, the Baoquan Power Station Project is an important investment.

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Job Site Details

Paving asphalt seal on the wall of a water reservoir (gradient of slope 31°) for the Baoquan Hydro Power Station in Henan Province, China.

Area to be sealed: 166,000 m²

Gradient of slope: 31°

Pave width: 2.5m to 4m

Pave speed: 1.5m/min.

Screed Assist: 25 bar

Layers paved:
- 10cm binder course of asphalt (0/19) with 4% of bitumen
- 10cm surface course of asphalt (0/12) with 7% of bitumen

Equipment:
- SUPER 1800-2 Slope Paver with AB 500-2 Extending Screed in TP2 Version
- HAMM HD 13 Roller
- Transfer Station with Rope Winch

Feed with mix under difficult conditions: the shuttle vehicle is anchored to a winch by safety cables.
On the Baoquan Hydro Power Station Project, an articulated HAMM tandem roller type HD, linked to a cable winch for safety, handles the compacting job. A transfer station positions the paver in place.

The conditions on site are extreme not only from the engineering point of view. Paving is carried out in two layers with a thickness of 10cm each. For the binder course, asphalt (0/19) is used with a bitumen content of 4% and for the surface course asphalt (0/12) with 7% of bitumen. The relatively high content of bitumen is required to achieve water-proofness. The SUPER 1800-2 paves 80m wide strips, from bottom to top. After completion, a liquid seal 2cm thick will be sprayed on the finished lining.

High Compaction Technology performs great on the slope of 31°

It is the steep slope angle of 31° that poses a particular challenge on site. The SUPER 1800-2’s capability of acting under these extreme conditions is due to a number of technical modifications. Combined with an AB 500-2 Extending Screed in TP2 version, the SUPER 1800-2 paves vertical strips varying in width between 2.5m and 4m. On the slope, the machine operates at a speed of 1.5m per minute. A small roller is sufficient to bring about the pavement’s final density.

Dr. Hao Jutao (left) of the China Institute of Water Resources and Hydropower Research thanks Andy Klingels from the WIRTGEN China Sales Team for the excellent support.

The Best Seller Among VÖGELE Pavers

SUPER 1800-2 is the best seller among the VÖGELE road pavers. The powerful machine of the upper mid range comes with a host of features construction companies value on the machines made by VÖGELE. SUPER 1800-2 is unrivalled especially in terms of versatility. Configured with an Extending Screed or Fixed-Width Screed, the paver handles jobs in conventional road construction. When combined with the SprayJet Module, SUPER 1800-2 does an excellent job as a spray paver and is ideal primarily for placing thin layers.

Another example of the SUPER 1800-2’s high versatility is its latest appearance on the stage as a slope paver. In this version, the machine is capable of paving asphalt in vertical strips on slopes with gradients up to 32°. Challenges like this are found on landfill projects, canals, dams or, as shown in China, for water reservoirs.

### TRACKED PAVER SUPER 1800–2

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
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<tbody>
<tr>
<td>User-Friendly ErgoPlus Concept</td>
<td></td>
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<tr>
<td>Hardtop of Glass-Fibre Material</td>
<td>Hardtop of Glass-Fibre Reinforced Polymer Material</td>
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<tr>
<td>Maximum Pave Width</td>
<td>10m</td>
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<td>Laydown Rate</td>
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<td>Maximum Layer Thickness</td>
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<td>Transport Width</td>
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<tr>
<td>Engine</td>
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<td></td>
<td>complies with exhaust standards COM 3a</td>
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<td>complies with exhaust standards EPA</td>
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<tr>
<td>Screeds</td>
<td>AB 500-2 and AB 600-2 Extending Screeds</td>
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<td>SB 250 Fixed-Width Screed, each of</td>
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The Chinese Province of Henan

With roughly 96 million inhabitants, Henan is China’s most populated province situated in the Eastern part of the Central Kingdom. The capital of Zhengzhou alone, a booming industrial city, is home to more than 6.8 million people. Henan Province is regarded as the cradle of the Chinese nation and culture. 19 dynasties had their imperial residences there. Furthermore, the region is the home of many historical personalities and renowned writers, among them Laotzi, a famous philosopher, generally better known under* the name of Lao-Tse.

[Image of the Baoquan Hydro Power Station Project]

The paving team does a great job on the steep slope.

[Image of Dr. Hao Jutao and Andy Klingels]

The conditions on site are extreme not only from the engineering point of view.
but also for the paving team headed by Dr. Hao Jutao. The team paves asphalt, strip after strip, from bottom to top. When arrived at the top, a transfer station positions the paver in place for the next strip. Attached to safety cables, the paver moves back down the slope to get ready there for its new climb. Safety first is the motto for feed of the paver with mix, too. A special shuttle vehicle driven electrically and provided with a sheeted, insulated dump body supplies the paver with hot mix on the steep slope, several times for each strip.

This method of construction made high demands on machine technology, which a conventional paver would not have been able to meet. Therefore, a team of engineers at the VÖGELE headquarters in Mannheim, Germany, subjected the SUPER 1800-2 to a number of modifications in order to allow paving under the extreme conditions to the usual, high standards of quality.

Adapted to job site requirements: the operator’s seat inclined forth by 31 degrees allows ergonomical working.

Perfect conveyance of mix under difficult conditions

A flow gate, hydraulically adjustable in height, is installed inside the machine behind the material hopper’s rear wall. The gate serves to reduce the conveyor tunnel’s cross section in order to control the flow of mix on the conveyors while working on the slope. The flow gate prevents mix in the conveyor tunnel from slipping rearwards to the screed. In addition, the material hopper’s rear wall is higher to avoid spills of mix on the engine cowling during feed of the paver with mix.

ErgoPlus masters every situation

The SUPER 1800-2 slope paver, too, comes with ErgoPlus, the concept focussed on easy paver operation and perfect ergonomics. This way, handling the machine is light work for the paving team. In contrast to the standard version of ErgoPlus, the one installed in the slope paver has two extra buttons to operate the flow gate. In order to offer ergonomic working conditions for the paver operator also when working on the slope, his two seats are adjustable in inclination to four different positions. This allows a horizontal seated posture at all times, also on the job in Henan, for relaxed and safe working.

Technical Features of the VÖGELE SUPER 1800-2 Slope Paver

Extra weights fitted to the front of the paver’s chassis relocate its centre of gravity to prevent the paver from tilting over when working on the incline.

The paver on the slope

Several components of the SUPER 1800-2 needed modifying for use on the slope from two points of view: operational safety of the machine on the one hand and safety of the paving team on the other. It began with extra weights fitted to the front of the paver’s chassis for relocating its centre of gravity, a measure which prevents the paver from tilting over when working on the incline. The extra weights are provided with two cable anchor points 3m apart from each other. To these points, pull cables can be attached to support the paver’s climb. In order to ensure safe access of the paver operator to his platform, the footboard attached to the rear of the screed is fitted at an angle of 30 degrees, and so are the extra step on the screed and the steps on the rear of the tractor unit.

Left: The operator’s ErgoPlus console with separate push-buttons for the flow gate. Above: Infinitely variable control of the flow gate to adjust the conveyor tunnel’s cross section.
25 HAMM SINGLE DRUM ROLLERS ON THE HUNAN SHAO-YONG EXPRESSWAY

Hunan Province, located in the heart of central China is one of the strong developing Provinces beside the well-known Regions in the East and South. With a size of 210,000 km² and a population of 67 Mio residents, it is to become a signification position in the economy of central China.

In 2004 Hunan squashed into the top ten longest road mileage lists of China with a road mileage of 1,218 KKM. This network is going to be extended year by year and of the new project is the new Hunan Shao-Yong Expressway from Shaoyang to Yongzhou.

For the construction of this important 4.5 Billion RMB investment, Shantou Daho Municipal Construction Co. was awarded. With his long experience and excellent work force Shantou Daho is able to complete this fastidious task. The Expressway will have a total length of 111.8 Kkm and a widths of 26 m with 4 lanes for each direction. The construction starts in May 2006 and is scheduled for completion till End of 2008.

To build this Expressway, almost 30 Mio m³ have to be moved and till April 2007, 50 % of the earthmoving work was finished.

For this huge job of earth moving and compaction, heavy equipment was needed.

In the comfortable cabin of the HAMM compactor, the operator can adjust his seat and the steering column to meet his personal needs. This way, an optimal view of the job site is guaranteed.

After Shantou Daho Municipal Construction Co. was awarded for this contract, the companies General Manager for Machinery, Mr. Luo Gan Lai, started to contact all well-known manufacturers. Beside of Excavators, Dozers and Wheel Loaders, Mr. Luo was looking of course for Single Drum Rollers. As high quality standards for Expressways are requested and the quality of an Expressway starts from the foundation and the base course, it was clear, that only the best equipment is good enough.

The compactor’s pads can be removed, so that it can also be used as smooth compactor.

For the evaluation of different brands, 3 major manufactures have been invited for the first talks. One of this manufacturers was the well-known HAMM AG, a member of the world leading WIRTGEN Group. The project was handled with Guangzhou based Estrong Trading Co. Ltd., which is a long term partner of WIRTGEN (China) Machinery Co. Ltd.

This job requires unique and reliable technology says Mr. Xia, Vice Project Manager. To fulfill all requirements incl. economical and environmental friendly aspects, so we decided to make deep investigations and also several test. At the end, Shantou Daho Municipal Construction Co. to the decision for 13 units 20t HAMM 3520 with Hammtronic and 12 units 25t HAMM 3625 with Hammtronic. This was the biggest single order from a customer for HAMM single drum rollers in China, and we are very proud about it says Andy Klingels, Sales Director for VÖGELE and HAMM Products of WIRTGEN (China) Machinery Co.Ltd.

The HAMM 3520 HT has a max weight of 22.500 kg, a drum width of 2.22m and is powered by a water cooled DEUTZ 6 cylinder engine with 147 kW. The flagship, HAMM 3625 HT has a max weight of 25.000 kg, a drum width of 2.22m and is powered by a water cooled DEUTZ 6 cylinder engine with 174 kW. Both machines have a compaction drum with a 1.600mm in diameter and a steel thickness of 45mm.

To use the machines for different applications, Shantou Daho Municipal Construction Co. choose also the unique HAMM pad foot shells which allow using the machine also for heavy soil compaction incl. the effect to de-hydrate the soil. The advantage of these shells is that they are easy to assemble and disassemble. All over all it means, two different applications with one machine.

The innovative Hammtronic design is a...
unique system for construction machine operation. The system supports the driver and improves the working quality and performance of the machine. As a result, unit operating costs drop significantly and job profit increases. The system is a network of four modules. The drive control commands the starting, braking and driving speed while the engine is protected by the load limit control. The antislip control guarantees an excellent slope climbing ability of the compactor and an exceptional driving performance on difficult terrain.

The vibration control regulates the hydrostatic vibration drive and optimizes the compaction performance and compaction quality. The intelligent electronic system adjusts the engine speed to the performance demands of different terrains, and achieves significant fuel economy. Working on full power with low cost and low noise the machine is just perfect for this kind of jobs.

Mr. Luo, GM of the machinery Dept. of Shantou Daho Municipal Construction Co explains why he also count on a WIRTGEN Group Product like the HAMM Compactors, it is not the machine only but also the after sales service, repair, training and application support which is offered by WIRTGEN. With the assembling, repair and service centre in Langfang (Hebei) and additional service centres in Guangzhou, Shanghai and Xian, WIRTGEN is always close to us. As usual WIRTGEN supported this jobs with their 24h service. Parts and Service Engineers how are on site, gives us the great confidence which we are used to have from WIRTGEN.

The Province of Hunan and Shaoyang

Shaoyang, the gateway of the southwest, situated in the centre of Hunan province, consists of eight counties, one county-level city and three urban districts, with an area of 21000 square kilometres ranking the second in Hunan and with a population of 7.3 million ranking the first in Hunan. It has always been the important city of Hunan for 2500 years. Yongzhou is in the south of Hunan Province on the upper reaches of the Xiangjiang River, where it meets Xiaoshui River. Therefore, Yongzhou is sometimes called XiaoXiang. It is a famous historical and cultural city of Hunan Province, attracting many distinguished persons since the Tang and Song dynasties.

Hammtronic controls all major machine functions and adjusts performance to meet the requirements. This enhances economical operating efficiency while reducing fuel consumption.
Higher performance, more ergonomical and more efficient to operate - the W 100 F from WIRTGEN.

Higher performance, more ergonomical and more efficient to operate - the W 100 F from WIRTGEN.

The W 100 F has a maximum milling width of 1m and mills down to a depth of 32cm. Wheels are standard equipment for the new milling machine and tracks are optionally available.

The W 100 F is fitted with a standard working width of between 1m and 1.30m and a front loading system. The W 100 F has been nominated for the bauma Innovation Award conferred by the German Construction Industry in the “new development machine” category.

The new W 100 F is to supersede the popular W 1000 F - comprising a total of 35 models - in WIRTGEN’s cold milling machine sector. The entire new 1-m class will be on view at the Bauma 2007 fair.

The tried and tested WIRTGEN Flexible Cutter (FCS) drum system is the tried and tested WIRTGEN Flexible Cutter Drums (FCS) system. The milling machine and tracks are optionally available for the W 100 F.

The engine of the W 100 F offers a more efficient transmission of power, yet it is also more economical with fuel. The powerful engine of the new WIRTGEN cold milling machine is a 6-cylinder turbo diesel engine of the new WIRTGEN cold milling machine. The engine is constant and high.

The LEVEL PRO operating panel. The machine operator can instantly recognise all the main values.

WIRTGEN GmbH is setting out in a totally new direction, when it comes to ergonomic design: The man/machine interfaces have been redesigned and arranged in line with the latest findings in the field of workplace ergonomics. The functional design focuses on the driver and makes operation of the milling machine faster and simpler.

"Less is more" was one of the objectives in this development and functions were further developed or grouped together with this in mind. On the operator interfaces, the functions have been optimized in such a way that the number of switches was reduced by some 20%. The driver has all the most important functions directly in view on the clearly arranged main operating console. From a seated position, he can safely and comfortably operate all the control elements. In addition, all central control elements, such as the operation of the side plate, are also integrated in the right-hand armrest.

The engine speed is also controlled automatically for the milling drum. Both components can either be fixed or set to a floating position at the push of a button. Additionally, the conveyor speed is also automated for the milling drums. The levelling control beam have now been combined at the milling drum. Both components can either be fixed or set to a floating position at the push of a button. Additionally, the conveyor speed is also automated for the milling drums. The levelling control beam have now been combined at the milling drum. Both components can either be fixed or set to a floating position at the push of a button. Additionally, the conveyor speed is also automated for the milling drums. The levelling control beam have now been combined at the milling drum. The driver can instantly recognise all the main values.

The new levelling system can be operated simply and intuitively. LEVEL PRO has been extensively tested by customers under tough on-the-job conditions and the response has been extremely positive. The system is installed at an easy-to-reach location on the right-hand side of the operator's platform, next to the main operating console.
EACH MILLIMETRE COUNTS

Different states of wear or different tool head lengths will result in different cutting depths. A difference of just a few millimetres can have dramatic effects on the milling result: Often, the consequences are higher material costs of the new pavement, costly reworking or even refusal of acceptance of the construction project.

When using the WIRTGEN-Betek road cutting tools, you will have perfect work conditions right from the start:

- All our cutting tools have a head length of 48 mm (with a maximum tolerance of ±0.5 mm) – which, by the way, is the optimum length for the WIRTGEN milling drums.
- Our practical tip for the user:
  - To produce a high-quality milling texture, make sure throughout the operation that all cutting tools and toolholders used are in a uniform state of wear.
  - Replace cutting tools that are too short or show one-sided signs of wear as quickly as possible.

The optimum relationship between milling performance and milling depth

In addition to the material to be milled, the milling depth and advance speed are crucial factors influencing the milling performance. An important detail which is, however, often overlooked: The cutting profile of the tools and, consequently, the chip size of the milled material vary considerably at different milling depths.

At a milling depth of 100 to 150 mm, WIRTGEN large milling machines achieve the highest volume output of milled material at the lowest costs of wear and tear.

Our practical tip for the user:
- If the specified milling depth exceeds 200 mm, it may indeed be worthwhile to mill in several machine passes.

The use of picks and toolholders with uniform wear produces a high-quality milled surface.

Different wear patterns on the picks and toolholders cause irregular surfaces.

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维特根集团

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