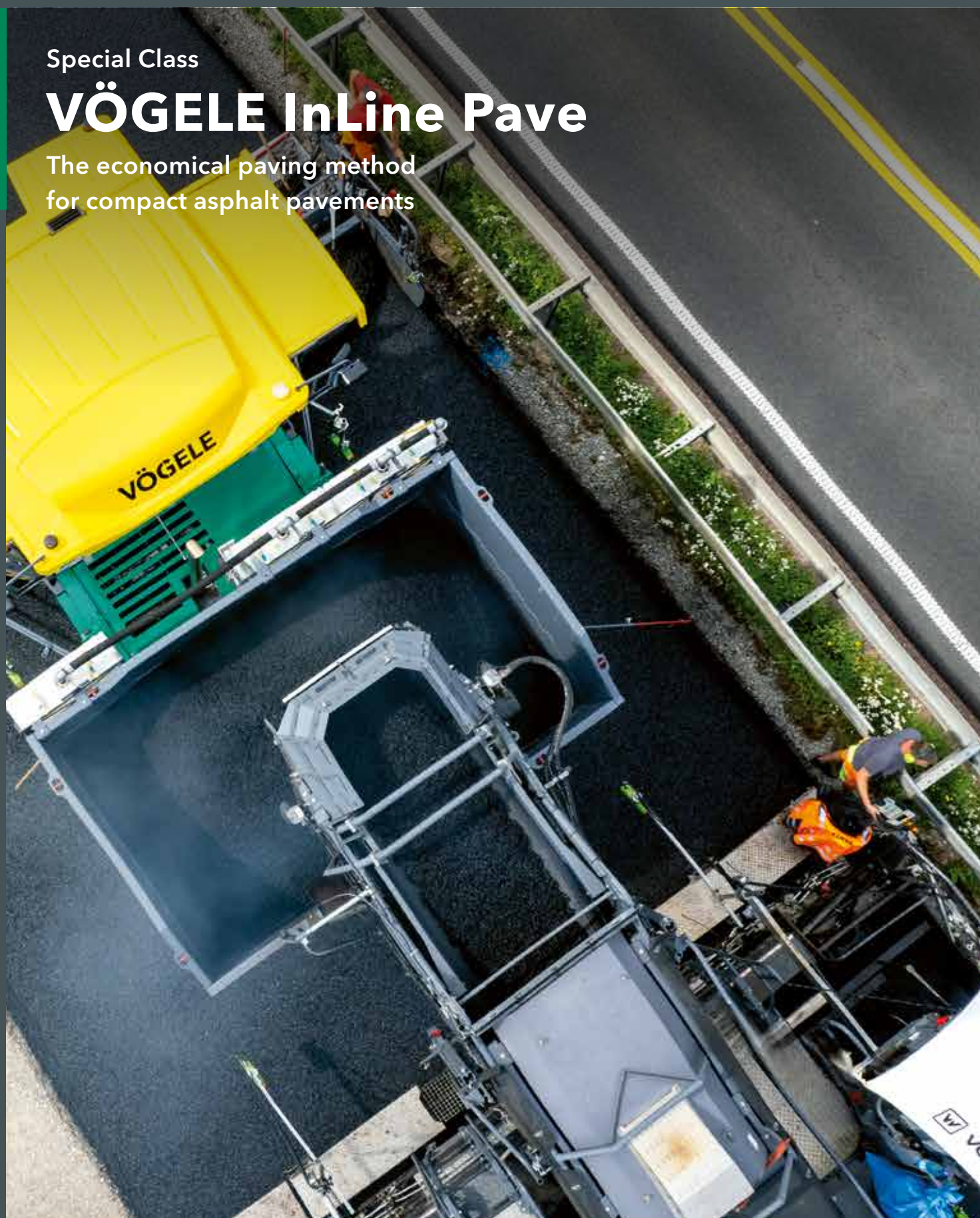


Special Class

VÖGELE InLine Pave

The economical paving method
for compact asphalt pavements



PERFECT IN ALL CLASSES

The right paver for every job

VÖGELE's seamless product range is considered unique in the industry. Whether a service road or a motorway, an airfield or a race track, a new construction or a rehabilitation job, thick or thin, hot or cold – customers will find the right machine in our paver range for every paving task.

VÖGELE PRODUCT RANGE

MINI CLASS

- > Maximum pave width 3.5 m
- > Maximum laydown rate 300 t/h

COMPACT CLASS

- > Maximum pave width 5 m
- > Maximum laydown rate 350 t/h

UNIVERSAL CLASS

- > Maximum pave width 10 m
- > Maximum laydown rate 1000 t/h

HIGHWAY CLASS

- > Maximum pave width 18 m
- > Maximum laydown rate 1800 t/h

SPECIAL CLASS

- > SprayJet
- > InLine Pave

POWERFEEDER

- > MT 3000-3(i) Standard
- > MT 3000-3(i) Offset



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VÖGELE INLINE PAVE

The economical paving method for compact asphalt pavements

With the InLine Pave concept, VÖGELE offer a particularly innovative paving technique specially suited for “hot on hot” paving when building compact asphalt pavements. Yet conventional road construction jobs, too, can be carried out in high quality and very economically with the VÖGELE InLine Pave machine technology.

InLine Pave places the binder course and surface course in a single pass, which not only yields a perfect bond between layers but also ensures strong interlocking of the layers. This is a fundamental requirement for the durability of roads.

InLine Pave is based on the use of series produced machinery that undergoes just slight modification for “hot on hot” paving. For contractors, this means that every single machine in the InLine Pave train can also be used for conventional road construction jobs at any time. This substantially increases

the productive utilization of the contractor’s machine pool and enhances the return on investment.

Thus, the InLine Pave technology is tailored not only to large road building contractors. VÖGELE InLine Pave also offers to small and medium-sized companies the possibility of submitting tenders, based on innovative machine technology, for two-layer construction of asphalt pavements.



WIDE RANGE OF APPLICATIONS

The InLine Pave machinery covers a wide range of road construction jobs. Whether rehabilitation of existing pavements or construction of new ones, VÖGELE InLine Pave always offers innovative and highly cost-efficient machine technology for building long-lasting roads.

Already when it comes to transport, the VÖGELE technology shows its particular advantages. As InLine Pave only uses machinery which is very close in design to series produced VÖGELE pavers, its size and weight are dimensioned so that transport is mere routine.

Today, rehabilitation of road pavements in single-lane width is a big challenge in many countries all over the world. Job sites taking long to complete and traffic piling up for kilometres due to roadworks place a burden on the countries' national economies.

InLine Pave not only allows to substantially cut times required for paving jobs. Thanks to the compact design of InLine Pave machinery, paving jobs can be carried out while traffic keeps flowing, a circumstance reducing the potential of pile-ups considerably.



InLine Pave is capable of handling pave widths from 3 m to 8.5 m. This allows for pavement rehabilitation or new construction of cross-town links, rural roads, highways and even motorways to be carried out to the highest standards of quality, within the shortest period of time and at low costs.

- 01 New construction of a federal highway, pave width 7.5 m:**
Resurfacing two lanes in one pass. The SUPER 1800-5i tracked paver with the new AB 600 Extending Screed was used as paver for the first time. VÖGELE Big MultiPlex Ski used for grade and slope control.
- 02 Pavement rehabilitation of a motorway, pave width 4m:**
Rehabilitation of lorry lane. Traffic kept flowing on the adjacent lane.
- 03 Pavement rehabilitation of a federal highway, pave width 7.5 m:**
Thanks to its large pave width and high pave speed the InLine Pave train was supplied with material from two PowerFeeders simultaneously.

THE ADVANTAGES OF VÖGELE INLINE PAVE TECHNOLOGY AT A GLANCE

In the majority of countries all over the world, roads are constructed in the conventional manner by building up asphalt pavements in layers. After the anti-freeze layer gravel and crushed-stone base courses are placed as well as an asphalt base, followed by asphalt binder and finally by surface courses.

Today's massively growing traffic volume and above all the rise in heavy vehicle figures and axle loads lead to an increasingly higher stress on the roadway as a structure. In the wake, conventional road construction is facing new challenges.

Maximum evenness

The high compaction technology from VÖGELE in the screed means the binder course can be compacted at values of over 98%.

The surface course is "hot-paved"

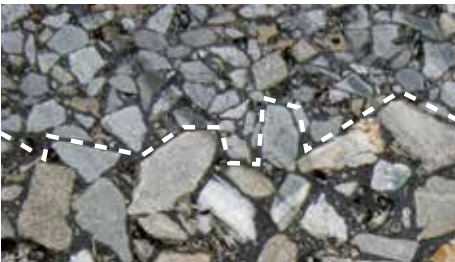
over a binder course with evenness and compaction corresponding to those of conventional paving.

The two-layer construction of asphalt pavements by "hot on hot" paving constitutes a particularly efficient method of building long-lasting roads. When using this method, binder and surface courses of hot rolled asphalt are laid "hot on hot". This offers a number of advantages.



Use of conventional rollers

- > Medium-weight rollers can follow right behind the paver for placing surface course to produce the final density.
- > VÖGELE high compaction technology applied for InLine Pave attains such a high degree of precompaction that the number of roller passes required for the final density is reduced substantially. The gentle compactive action of rollers with oscillation is ideal for thin surface layers like the ones placed with InLine Pave.



Clear separation of layers

- > InLine Pave achieves excellent monolithic interlocking of binder and surface courses.
- > At the same time, VÖGELE high compaction allows for a clear separation of the layers.



High productive utilization through use of machines close to standard design

- > The material feeder and the paver for surface course can be used for conventional paving jobs at any time, without a need for conversion.
- > The transfer module of the SUPER 2100-3i IP can be mounted or demounted in just a few hours. As a result, every machine of the InLine Pave train is available for conventional paving applications at all times.



Easy operation for high process reliability

- > The operation of all InLine Pave machines is to a large extent identical with ordinary paving jobs.
- > Also as far as grade and slope control is concerned, the paving teams can fall back on their knowledge gained from jobs with conventional VÖGELE equipment.

VÖGELE SUSTAINABILITY

Sustainable paving method

- > Save on expensive, binder-rich surface course material in favour of low-cost, stiffer binder material.
- > Dispensing with the bitumen emulsion tack coat reduces both the amount of material required and working time.
- > A higher proportion of binder course with good resistance to deformation increases the stability of the pavement.
- > Up to 13% CO₂ can be saved using InLine Pave if the paving process is considered in isolation.



THE METHOD OF “HOT ON HOT” PAVING

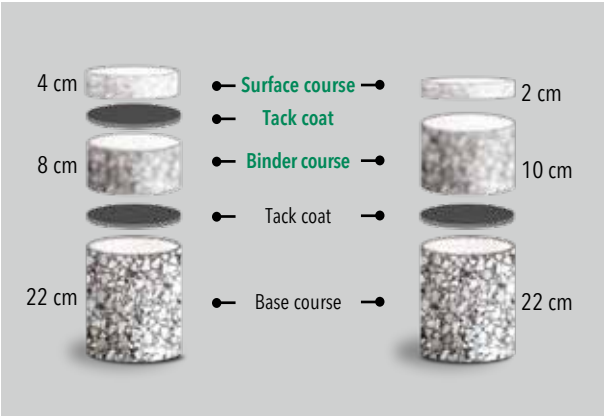
Characteristics and advantages

When paving two layers “hot on hot”, the usual ratio of 8 cm binder course and 4cm surface course can be abandoned and another ratio be selected. This is due to the fact that, when paving “hot on hot”, the still hot binder course prevents rapid cooling of the surface course. A higher temperature prevails, which allows for a thinner surface course of just 2 to 2.5 cm to be paved.

Also on account of the high temperature inside the surface course, a higher degree of density is achieved during subsequent compaction by rolling, along with a low voids content. When planning the surface course and especially when paving stone mastic asphalt (SMA), selecting a correct amount of binder is of utmost importance. The aim is to minimize the voids in the finished surface course to a content of no more than 2.5 – 3.5 percent by volume.



Excellent bond and interlocking of binder and surface courses



Conventional Paving
Construction Class SV according to RStO (German Directives for the Standardization of Traffic Area Surfaces)

Two-Layer Paving
Construction Class SV according to MKA (Information for the Construction of Compact Asphalt Pavements)



This kind of surface is waterproof, thus protecting the binder course from adverse influences. The high degree of density in conjunction with the layer thickness of 2 to 2.5 cm increases the pavement’s resistance to deformation under the influence of heat to such an extent that rutting is massively counteracted, particularly during the summer months.

For the paving process itself, the “hot on hot” method also reveals a valuable advantage. Due to the improved heat storage capacity, this kind of paving can be carried out in cold or wet weather without problems. The time available to building contractors for roadworks thus becomes considerably longer, a fact adding substantially to cost-effectiveness and reliable planning.

THE ADVANTAGES OF “HOT ON HOT” PAVING AT A GLANCE

Cost savings

- > Economy of expensive surface course mix, rich in bitumen, in favour of low-cost binder material featuring higher stiffness and resistance to deformation cuts costs.
- > There is no need to spray bitumen emulsion, which saves time and material.

Longer service lives of road pavements

- > Optimal interlocking of binder and surface courses guarantees an excellent bond between layers. Furthermore, compaction of the surface course with a low but sufficient voids content is supported, thus prolonging the pavement’s service life considerably.
- > A higher share of binder course, resistant to deformation, and a lower share of surface course, rich in bitumen, increases the pavement’s stability. Deformation and rutting are reduced substantially.

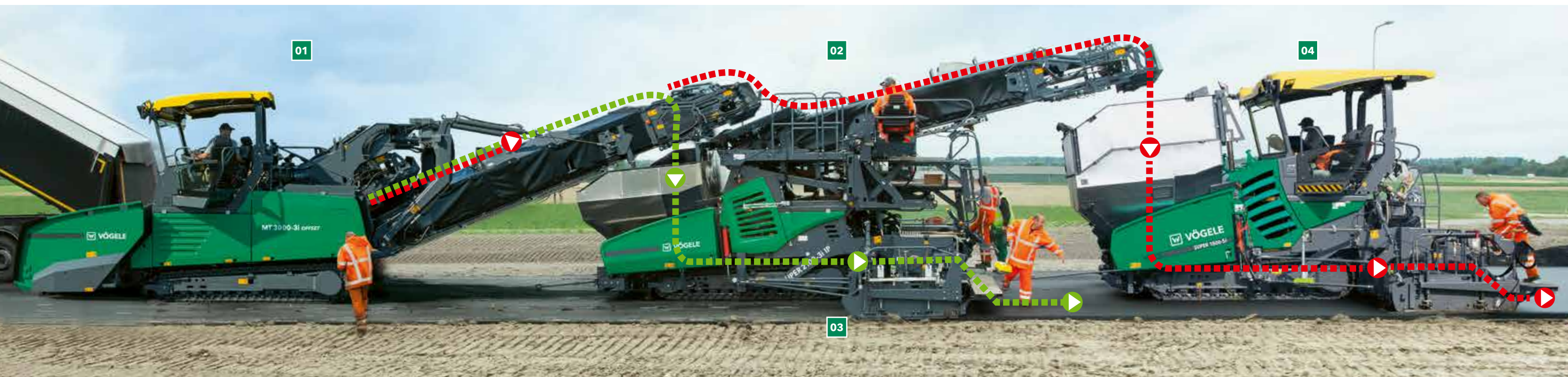
Easy paving in low-temperature regions or during the cold season

- > Two-layer paving increases the pavement’s heat storage capacity. The period of time available for compaction is prolonged, so that paving work can be carried out to a high standard of quality even in cold weather.

VÖGELE INLINE PAVE MACHINE TECHNOLOGY

InLine Pave means that the process of paving takes place by machinery working in a line, one immediately after the other. All machines feature a very compact design. The InLine Pave train comprises three machines.

A MT 3000-3(i) Offset material feeder, a SUPER 2100-3i IP paver for binder course and an 1800-class paver for surface course.



PowerFeeder MT 3000-3(i) Offset

The material feeder is the first machine involved in the paving process. It receives binder or surface course mixes supplied by feed vehicles and transfers the mix, by turns, either directly into the large extra material hopper of the paver for binder course or – via a transfer module – into the material hopper of the paver for surface course.



SUPER 2100-3i IP for paving binder course

The SUPER 2100-3i IP for placing binder course is a modified machine of standard design, fitted with a special transfer module for the surface course mix. The transfer module conveys the mix directly into the material hopper of the paver placing surface course. The SUPER 2100-3i IP builds a binder course of high density and, as a result, of high resistance to deformation.



AB 600 High Compaction Screed in the TP2 Plus version

The AB 600 High Compaction Screed in the TP2 Plus version, based on the unique VÖGELE pulsed-flow hydraulics, is equipped with two pressure bars. The screed is the technological gem of the InLine Pave machine technology. The binder placed and compacted by the AB 600 TP2 Plus features such a high density that the paver for surface course, following behind, can travel on the binder layer.



SUPER 1800-3(i) or SUPER 1800-5(i) paver for surface course

An 1800-class paver for surface course is used to pave the surface course. Only slight modifications are required for the paver to be used in the InLinePave train. It is fitted with crawler tracks with wider track shoes and a water spray system as well as a particularly generous, heat-insulated extra material hopper with a total material capacity of 25 t.

POWERFEEDER MT 3000-3(i) OFFSET

The PowerFeeder MT 3000-3(i) Offset with a conveying capacity of 1,200t/h is available to feed the pavers in the InLine Pave train. The MT 3000-3(i) Offset is equipped with a particularly long conveyor allowing to alternately supply the SUPER 2100-3i IP with binder material on the one hand and with surface course mix, to be transferred to the second paver, on the other.

The material hopper of the paver and the transfer module are located at different heights. The height of the hydraulic conveyor and the material feeder's distance from the paver are automatically adjusted when the operator switches back and forth between binder and surface course mixes.

Optimum job site logistics are vital when working on an InLine Pave contract, as very large quantities of mix have to be paved within a short space of time. Utmost importance must be attached to perfect co-ordination of the mixing plant and the vehicles for transport of the paving materials, 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. The green signal light stands for binder, the red light for surface course mix.

Automatic distance control makes the feeder operator's work easier and ensures safe, reliable operation on site. The distance between the material feeder and the paver for binder material is measured without direct contact using laser sensors and maintained constant by an automatic controller. The pace is set by the paver placing binder course mix which dictates the pave speed of the entire InLine Pave train. If the distance between the two machines decreases, for instance because the feed lorry inadvertently slows down, all other machines are automatically halted.

Two different distances can be set for alternately feeding the paver with binder and surface course mixes.



VÖGELE > GOOD TO KNOW



01

The pivoting conveyor is controlled via a joystick in the armrest of the operator's seat.



02

For automatic distance control the operator can select between two different distances.



03

By way of the transfer module on the paver placing binder, surface course mix is conveyed to the second paver following behind.



04

The feeder operator has an unimpeded view of the feed vehicles and the SUPER 2100-3i IP.

SUPER 2100-3i IP FOR PLACING BINDER COURSE WITH TRANSFER MODULE

The core of the InLine Pave train is the SUPER 2100-3i IP, a paver of standard design which undergoes just slight modification to get ready for an InLine Pave job. It can be used for conventional paving jobs at any time.

For application on an InLine Pave job site, the SUPER 2100-3i IP comes with a special transfer module. The module transfers the surface course mix received from the material feeder – over the paver for binder course – directly into the surface course paver's material hopper.

The transfer module can be mounted or demounted within a very short time. In addition to the conveyor, the module also includes two additional, height-adjustable operator's stands which allow a higher operator position for an unobstructed view of all processes on the job site.

- 01** The conveyor of the transfer module is heated in order to prevent mix from sticking.
- 02** Two height-adjustable operator's stands give the operator an optimum view of the entire workflow on the job site.



The extra conveyor unit is heated to prevent mix from sticking. For a safe clearance between pavers placing binder and surface course mixes, electronic distance control and an anti-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.

AB 600 HIGH COMPACTION SCREED IN THE TP2 PLUS VERSION

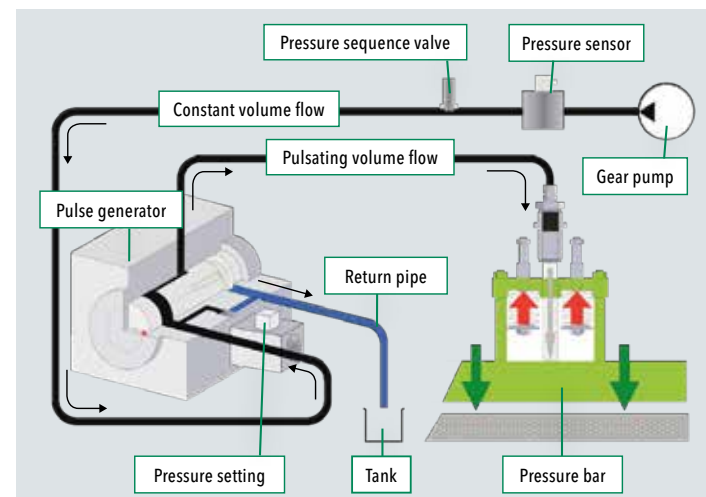
The AB 600 High Compaction Screed in the TP2 Plus version is ideally suited to meet the special requirements of “hot on hot” paving.

On an InLine Pave contract, it achieves an extraordinarily high degree of precompaction. As a function of the paving material used, a density of more than 98% is attained for the binder layer. Without rolling, of course.

On this layer then travels the paver placing surface course. Weighing some 40 tonnes (including mix and extra material hopper), this paver places the surface course onto the freshly paved and still hot binder layer.

In terms of mix composition, the binder layer must be designed so as to be capable of transferring the traffic loads downwards, without deformation.

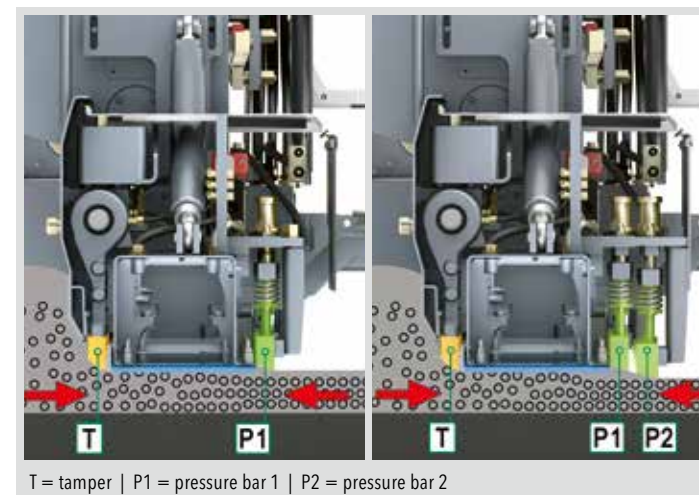
If this is ensured, the tracks of the paver placing surface course leave no more than negligible impressions in the hot, precompacted binder layer avoiding adverse effects on the quality of either the binder course or the surface course.



- > The VÖGELE high compaction process begins with the pulse generator. It generates high-frequency pressure pulses. As a result, the pressure bars remain in permanent contact with the mix, forcing it down until it cannot be compacted any more.
- > Due to the resultant high level of precompaction, distinctly fewer passes are required for subsequent compaction by rolling.

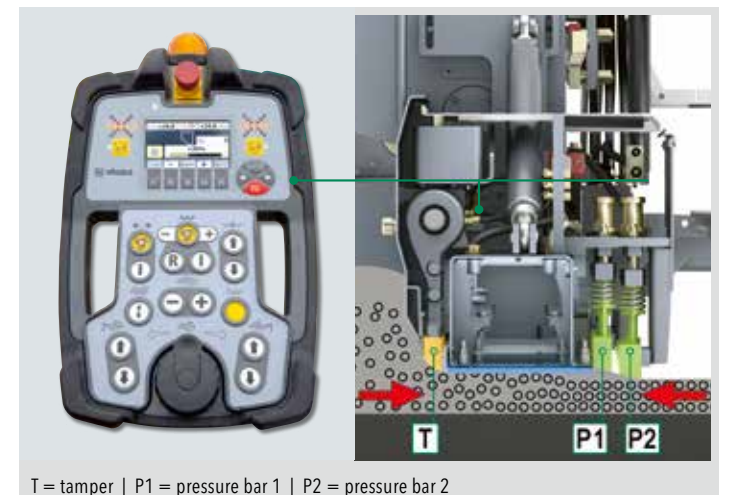


- > The pressure bar(s) driven by pulsed flow hydraulics are the core of VÖGELE high compaction technology.
- > Thanks to this unique technology, VÖGELE High Compaction Screeds in the TP1, TP2 or TP2 Plus versions bring about the highest degree of density a road paver can achieve.



T = tamper | P1 = pressure bar 1 | P2 = pressure bar 2

- > The pressure bars P1 and P2 are the last elements in the process of compaction as a whole. Logically, they are located in the rear area of VÖGELE High Compaction Screeds. Only in this location can the highest possible compacting effort be achieved, as the mix is prevented from yielding to the front. Nor can it yield to the sides, where it is constricted by the screed's side plates.
- > A change from high compaction to conventional compaction and vice versa can easily be made from the ErgoPlus 3 operating consoles. This allows the screed to be used for highly varied applications.



T = tamper | P1 = pressure bar 1 | P2 = pressure bar 2

- > A separate control is provided for each compacting system installed in a VÖGELE High Compaction Screed.
- > Infinitely fine control of the pressure for the pressure bar(s) allows VÖGELE high compaction technology to be used for paving surface courses as well.

THE 1800-CLASS PAVER FOR SURFACE COURSE

The third machine completing the InLine Pave train is a SUPER 1800-3(i) or a SUPER 1800-5(i) with a standard AB 500 TV or AB 600 TV Extending Screed; it paves the surface course over the binder course while the latter is still hot.

The paver's crawler unit is fitted with extra wide track shoes and comes with a water spraying system to prevent the tracks from sticking to the hot binder material.

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 mix is available at all times.



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- 01 An extra material hopper holding 25 tonnes stores a large quantity of surface course mix.
- 02 Due to the two pavers' auto-levelling properties, InLine Pave achieves evenness at the highest level.



The extra material hopper is insulated against loss of heat and heated electrically in critical places to maintain a constant temperature of the mix even for a prolonged period of time and to prevent mix sticking to it.

Both the SUPER 1800-3(i) and the SUPER 1800-5(i) can be used for conventional asphalt paving at any time; no other conversion steps are required. All that needs to be done is remove the large extra material hopper.

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