



PAVE-TM LAYER THICKNESS MEASUREMENT

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MOBILE AUTOMATION

With more than 40 years' experience in road construction and the development of market leading systems like MOBA-matic and Big Sonic-Ski, MOBA Mobile Automation AG is a driver of innovation in the worldwide market. As the first patented layer thickness measuring system, PAVE-TM represents the next revolution in asphalt paving.



PAVE-TM – THE WORLDWIDE FIRST PATENTED AND AUTOMATIC SYSTEM FOR CONTINUOUS MEASUREMENT OF LAYER THICKNESS

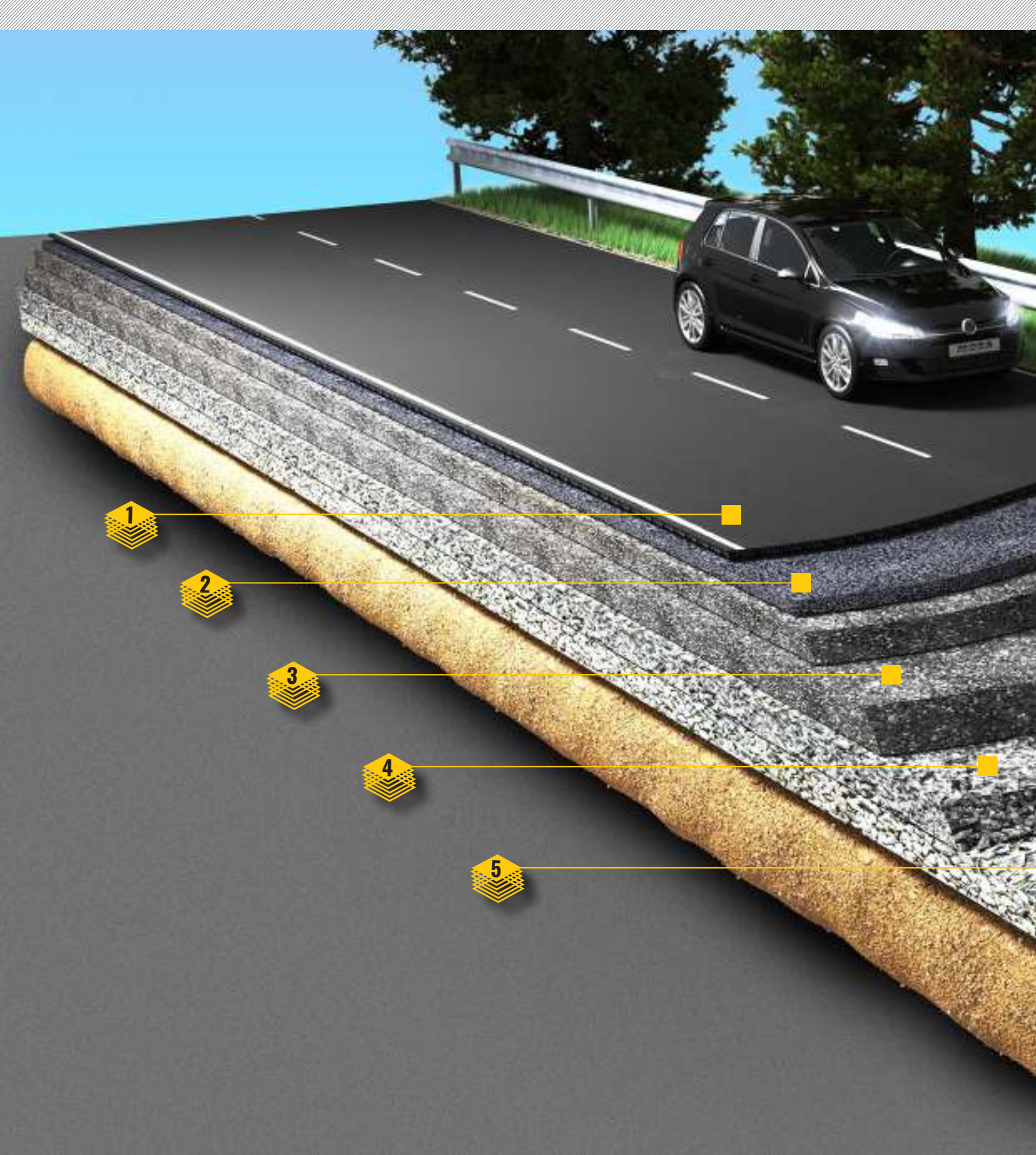
KEEP TRACK OF LAYER THICKNESS AT ALL TIMES

PAVE-TM, the worldwide first system for the measurement of layer thickness is an absolute must in road construction in order to save costs! After one initial adjustment, the system continuously displays the current thickness of the paving. The system saves you manual re-measuring of the layer thickness and thereby saves time and material. Minimisation of the expensive layer material and exact operation at the tolerance limits reduces your costs to a minimum, thereby increasing your profit. The system amortises itself within the shortest period of time, so that you will turn a profit after only a few projects!

The worldwide novelty performs the highly complex determination of layer thickness by taking into consideration irregularities of the base. In conjunction with four high-accuracy, proven ultrasound sensors, **Sonic-Ski PLUS**, the thickness of the layer is detected contact-free and is displayed in real-time on the robust, clear **GDC-320** colour display. The layer thickness display is already integrated into some of the pavers. The minimisation of error sources due to manual measurement of layer thickness and the accurate control of laid material ensure a uniform, stable layer of the highest quality – a decisive factor for the service life of the road.

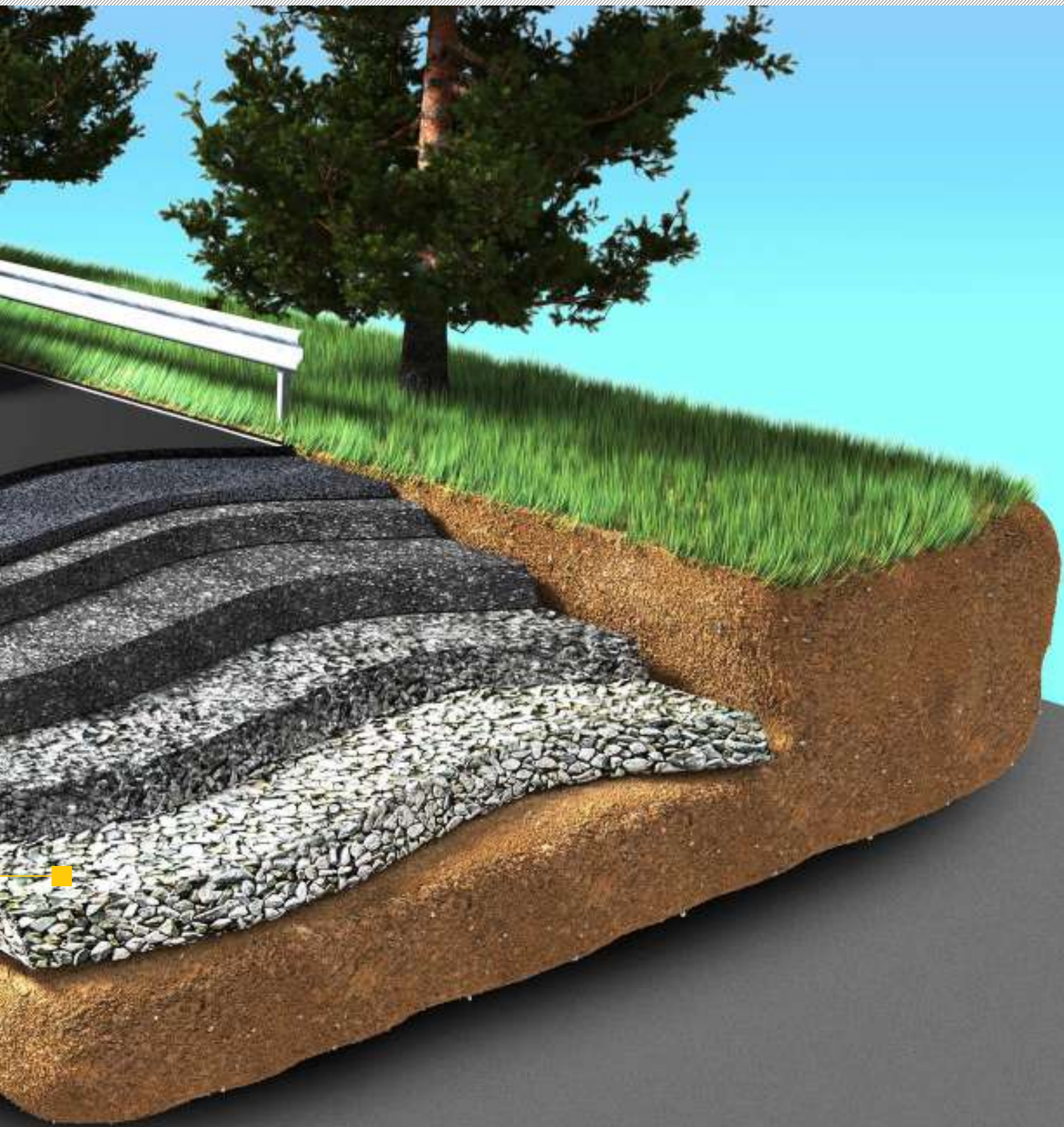
We offer OEM customers tailor-made solutions for the integration of layer thickness. Dynapac pavers are already **PAVE-TM**- and **PAVE-IR**-ready and can therefore be upgraded at any time with systems for the measurement of layer thickness and for temperature visualisation. Thanks to this upgrade, your paver is ready for road construction of the future in the shortest period of time. Combined with the solution for rollers, the compaction assistant **MCA-3000**, you can elevate the quality of your construction to a new level.





ASPHALT PAVING

- | | |
|---------------------------------------|------------|
| 1. Asphalt layer thickness: | [4-5 cm] |
| 2. Asphalt binder course: | [4-8 cm] |
| 3. 2 x Asphalt base course: | [15+15 cm] |
| 4. Crushed stone, gravel base course: | [15-30 cm] |
| 5. Frost protection course: | [14-50 cm] |



PAVE-TM SYSTEM OVERVIEW OF ROAD LAYERS

DISPLAY GDC-320 THICKNESS AT A GLANCE

The thickness of the layer is displayed continuously and in real-time on both sides of the screed on the two ergonomic **GDC-320** displays. Instead of manual re-measurement, a glance at the display suffices to know whether the laid thickness complies with the specification. Other values like material temperature above the screw, screed width or distance, offer more detailed information for the optimisation of paving.

SYSTEM PROPERTIES

- » CAN technology
- » Precision ultrasound technology
- » Ergonomic displays
- » Robust hardware
- » Proven Sonic PLUS technology

SYSTEM ADVANTAGES

- » Reduction of manual re-measurement
- » Elimination of measuring errors
- » Avoidance of penalties for insufficient material thickness
- » Real-time data during the paving process
- » Enormous cost saving potentials

1. LAYER THICKNESS

The laid layer thickness is displayed continuously in cm. Therefore, the operator can fully concentrate on controlling the screed.

2. MATERIAL TEMPERATURE

Helps the operator to detect temperature variations, so that he can communicate with the roller drivers to ensure optimal compaction.



3. SCREED WIDTH

Displays screed width with an accuracy of one millimetre, which is required for the calculation of area and volume. No manual measurement required.

4. DISTANCE

Can be read from the machine bus or calculated via GPS data. It is also required for the calculation of area and volume. No manual measurement required.

LAYER THICKNESS AS COST AND QUALITY FACTOR INCREASE YOUR PROCESS RELIABILITY

Topics such as the rising costs of paving material and an increasing awareness of environmentally friendly, resource-saving asphalt paving are of growing importance in road construction. Therefore, the identification and utilisation of material and resource saving potentials plays an increasingly important role.

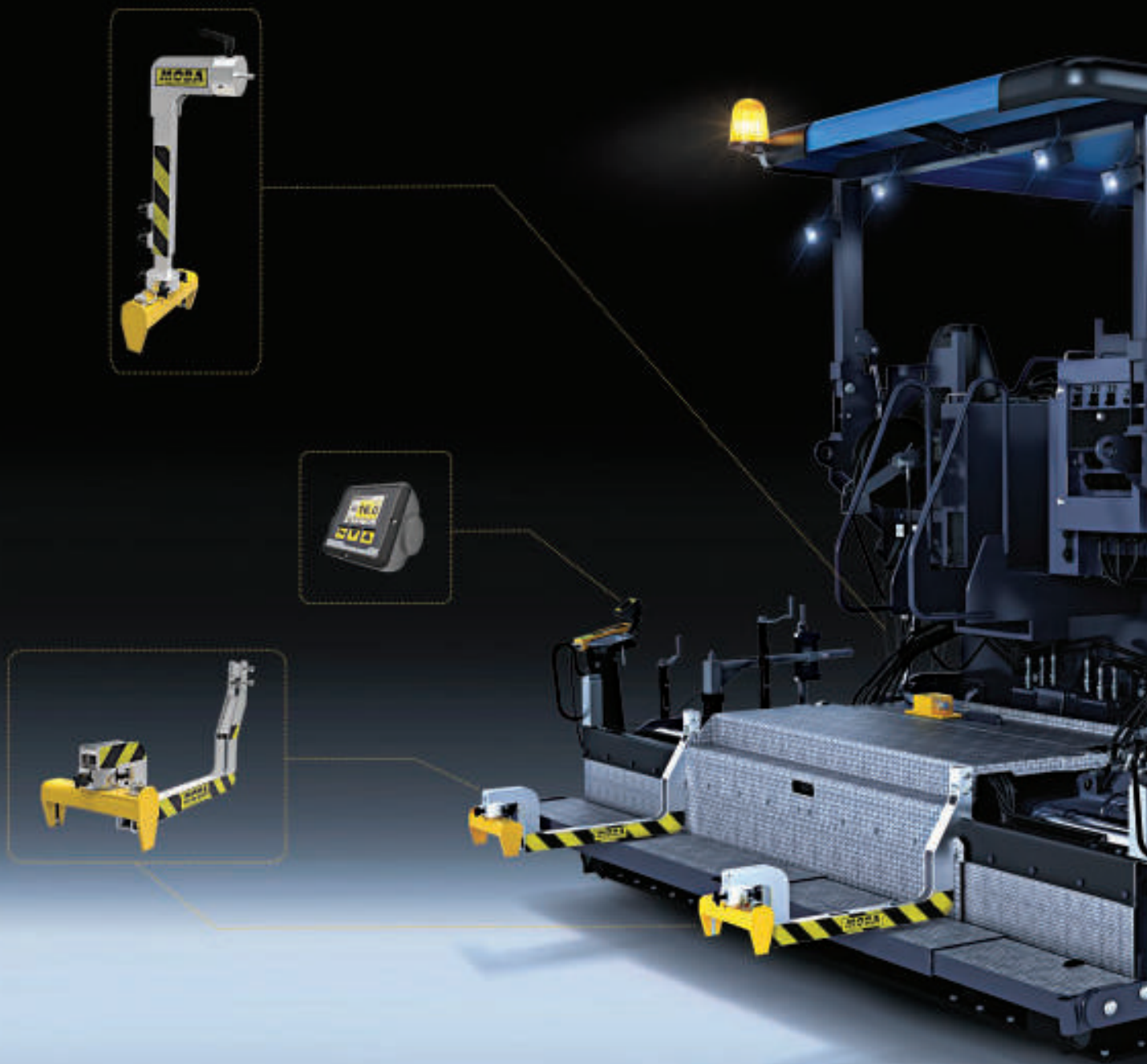
A difference of layer thickness between 4.0cm, 4.1cm or 4.2cm appears insignificant at first glance. However, if one compares the laid volume of every individual thickness projected over one or more products, an increasing trend quickly becomes apparent.

“ If one considers that with a material price of **80.00 EUR** per ton, a paving scope of 100km with an average screed width of 6m can result in a saving of **80,000.00 EUR** for every saving of 0.1cm layer thickness, the cost savings for a year can easily be calculated.

PAVE-TM DISCOVER NEW SAVING POTENTIALS

Paving width: 6 m	Specified layer thickness: 4 cm		Material cost: 80,00 €/t	
Deviation	4,1 cm		4,2 cm	
Paving distance	Excess material			
10 km	108 t	8.640,00 €	216 t	17.280,00 €
50 km	540 t	43.200,00 €	1.080 t	86.400,00 €
200 km	2.160 t	172.800,00 €	4.320 t	345.600,00 €
500 km	5.400 t	432.000,00 €	10.800 t	864.000,00 €

INNOVATION. PRECISION.



PROFIT MAXIMISATION IN ROAD CONSTRUCTION 2.0

Thanks to the modular structure, the system is compatible with every paver type and can therefore be adapted flexibly to the requirements of the construction site. Additional functions like material calculation with the aid of a GNSS antenna and cable sensors, or precise temperature measurement by means of additionally fitted IR spots, can easily be added. With the **MPC-120** as computing centre and brain, we have an absolutely reliable and future-proof component in the system.

1. **MPC-120 CONTROLLER** computing centre and brain of the system
2. **SONIC SKI PLUS** height sensor for non-contact scanning
3. **GDC-320** displays the current layer thickness and other measurement values
4. **IR-SPOT** temperature sensor additionally measures the temperature of the material



1



2

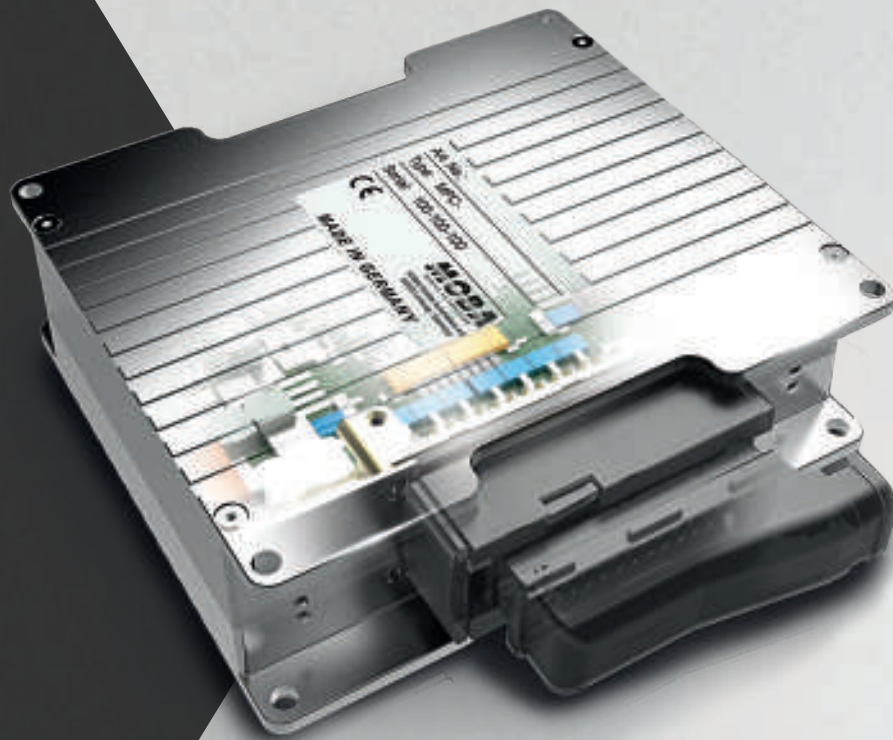


3



4

PAVE-TM SYSTEM INNOVATION STARTS TODAY



CONTROLLER MPC-120 THE “BRAIN” OF THE SYSTEM



PROVEN AND ROBUST COMPONENTS

INDIVIDUAL HIGHLIGHTS – A UNITY IN THE SYSTEM

CONTROLLER MPC-120

- » The “brain” of the system
- » Control and linking of all components
- » Application
- » Data processing and calculation



01

HEIGHT SENSOR “MOBA SONIC SKI PLUS”

- » Fivefold non-contact scanning
- » High-precision distance measurement by means of averaging
- » CAN interface



02

DISPLAY GDC-320

- » Compact graphic display / control panel for the display of layer thickness
- » 320x240 px, 16-bit colour, 3.5” FTF
- » Connector 8-pin / M12



03

TEMPERATURE SENSOR IR-SPOT

- » Additional material temperature measurement
- » Flexible installation on the machine
- » Temperature information in real-time
- » Up to two individual sensors can be used



04

LAYER THICKNESS AS COST AND **QUALITY FACTOR**- EFFECTIVE PROCESS OPTIMISATION



LAYER THICKNESS MEASUREMENT

Asphalt paving at the tolerance limits, without the risk of paving too thin. Save material at the same time by not paving too thick. With our colour displays on both sides of the screed, you can keep an eye on all values and can intervene and directly apply corrective action in case of deviations. Thanks to the display of layer thickness, you can utilise the saved time for the core process and concentrate on the control stations.



OPTIONAL: MATERIAL CALCULATION

Both the paving area and the total volume can be calculated from the values layer thickness, screed width and distance. By adding material-specific density, the laid tonnage can be calculated directly and shown on the display. The team thereby always maintains an overview of current material consumption. If necessary, the team can intervene in the process at any time. The additional function of material calculation optimises material flow and reduces costs and time. This feature will be available as an upgrade in the near future.



OPTIONAL: TEMPERATURE MEASURING

Additional high-precision sensors, our IR spots, can easily be integrated into the modular PAVE-TM system. In this way, the asphalt temperature is determined during the laying process at freely selectable points like, for instance, at the bin or screw, and is transmitted to the user-friendly display. There you always have an overview of all measured values and are thereby in a position to react immediately in order to ensure the highest degree of paving quality.

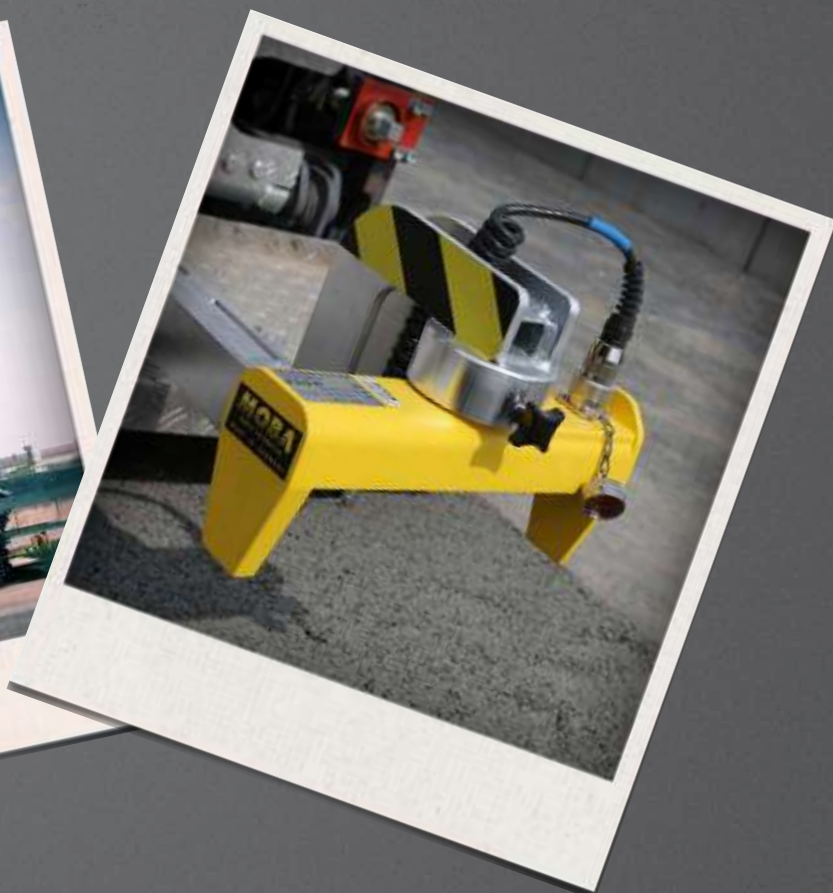


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Did you know? Our PAVE-IR offers you a comprehensive temperature profile of the constructed road. Everything from visualisation during the paving process to documentation is therefore at your disposal for further analysis.

PAVE-TM READY PRACTICALLY ORIENTATED AND ALREADY INTEGRATED



PAVE-TM - READY FOR INTELLIGENT PAVING

Thanks to close cooperation with Dynapac during the development phase, all new paver models of the manufacturer have already been furnished with the „PAVE-TM ready“ set-up. The system can therefore be fully integrated at any time. In live deployment this clearly demonstrates the direction of future road construction. The layer thickness values can be implemented in the exterior control station of the Dynapac paver at any time. Upon customer request, the additional **GDC-320** can therefore be dispensed with.

DYNAPAC

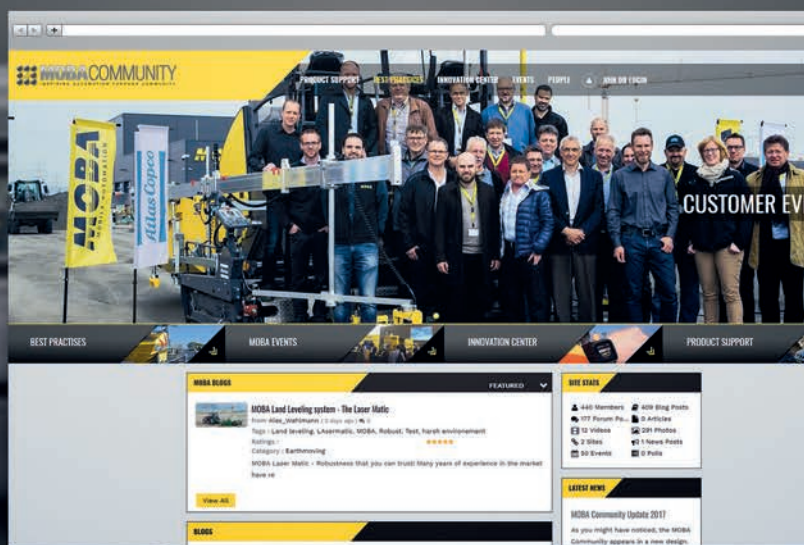
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Would you like to know how the system has already been successfully deployed by our customers? In the online expert blog, **MOBA Community**, you will find everything from job stories, feature releases, discussion forums to field reports to inform you in detail about our technologies.

Besides blog contributions regarding automation solutions of MOBA Mobile Automation AG, the Community offers numerous forums, discussions, event announcements or expert contributions about various topics of automation of construction machines. The **MOBA Community** acts as an interactive, international exchange platform for everybody who would like to participate actively in the development of this industry.

Contribute your own know-how and perspectives to interesting dialogues, post important questions regarding the (r)evolution of the industry and exchange opinions and experiences with other experts.

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