

Slurry Micro Surfacing



Slurries Micro Surfacing have been in constant progression for the last 30 years.

They meet a need that is both economic and environmental and are an essential part of the maintenance of a country's road assets.

BREINING, pioneer and world leader in the manufacture of Slurry Micro Surfacing machines proposes, via the maintenance department of the FAYAT group, a complete and innovating line of application machines - Slurry Pavers.



Slurries Micro Surfacing: a modern solution to road maintenance.

Emulsion techniques, and especially slurries Micro Surfacing, are destined to be increasingly used throughout the world. They are not only more respectful of the environment, but they also guarantee operator safety.

The - SLURRY PAVER - application equipment for Micro Surfacing is highly productive because it groups together the on-location production of the final product and the spreading of the materials.

The SLURRY PAVERS are fitted with a control system that makes it possible to accurately comply with the different formulas.

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Slurries Micro Surfacing, reasonable maintenance

Today, road asset managers expect solutions that are both economic and environmentally friendly for the maintenance of the network. Slurries Micro Surfacing perfectly combine both criteria because they are applied in a thin coat, therefore using little material, and are laid at surrounding temperatures, and are therefore low energy consumers.

"What is needed where it is needed"

The conservation of road assets must be the subject of a careful study in order to intervene at the right time and to privilege correctly priced solutions.

Thin layers such as microsurfacing can considerably lengthen the life of a road. This is why they should be used systematically in the life cycle of roads.

Less materials

When only the road surface is deteriorated (cracks, ruts, loss of adherence) there is no need to reinforce the structure with large quantities of materials. Slurries Micro Surfacing reconstitute, the road surface and return the road to its initial characteristics.

Less energy consumed

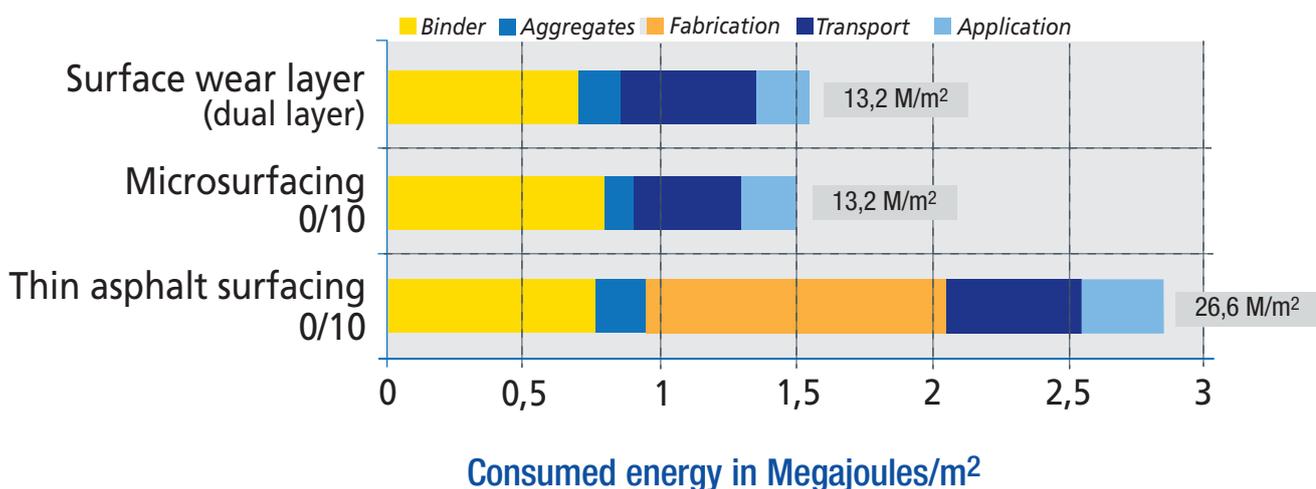
Slurries Micro Surfacing have the particularity of being laid at surrounding temperature. Thus energy costs and polluting emissions are significantly reduced.

Greater surface area treated

Slurries Micro Surfacing are the low cost maintenance solution which makes it possible to increase the surface area covered for a given budget.

Consumed energy

Source ISSA



Technical choices

There are two major techniques: microsurfacing and bitumen slurry. BREINING Slurry Pavers have the advantage of being able to apply both techniques.

Microsurfacing

Microsurfacing is composed of a modified bitumen emulsion (polymers) and crushed aggregates. The grain size of the aggregates is greater than 4 mm and the percentage of fines is between 6 and 12%. The applied quantity is around 10 Kg/m² by layer.

Bitumen slurry

Slurry is a mix of a pure bituminous emulsion and rolled aggregates. The grain size is less than 4 mm for a percentage of fines greater than 12%.

The recommended application is of 8 Kg/m².

Two techniques meeting different goals

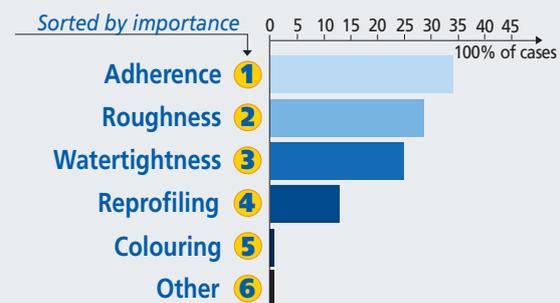
In both cases the surface seal is ensured. Micro Surfacing also meets roughness and adherence criteria.

Other application examples

Slurries Micro Surfacing can also be applied to other functions such a light re-profiling, hard shoulders, accident prone zones, cycle paths, etc.



Objectives sought after



Advantages of Slurries Micro Surfacing

Slurries Micro Surfacing offer a large number of advantages both for users and operators.



A technique without waste materials

Because microsurfacing is a mix, there are no "free" aggregates and therefore no need to sweep after application. Compacting is carried out by the traffic itself. There is therefore no need to bring a specific compactor onto the works.

The Slurry Micro Surfacing technique is therefore without doubt the most appropriate for urban works.

Immediate opening of the road

As the rupture of the mix is very quick, the road can be re-opened in less than one hour.

Works without road closures

Thanks to the highly compact nature of Slurry Micro Surfacing works, they are often carried out in half road widths.

Operator safety and hygiene

- damp aggregates without emission of dust,
- a surrounding temperature emulsion,
- no emulsion spraying.



Slurry Paver, a Slurry Micro Surfacing plant

The Slurry Paver simultaneously produces and applies the final mix. It is a mobile production plant that perfectly controls the entire process.

Component storage

All the required materials for the technique are united in the same machine:

- An emulsion tank,
- A sand hopper,
- A water tank,
- An additive tank,
- A cement hopper,
- A colour hopper (option),
- A fibre cutting solution (option).

Production of the final mix

The components are transported to a mixer which ensures the evenness of the mix.

Application

The Spreader attached to the rear of the vehicle can spread and distribute the mix on a working width of up to 4 metres.



Slurry Paver operation

The formulation of a Slurry Micro Surfacing by a laboratory is an essential step in the success of the technology. The production and application are the two pillars of a quality Slurry Micro Surfacing.

Liquid tanks

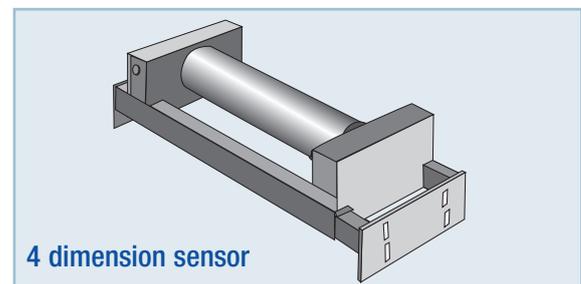
The BREINING monoblock unites the emulsion, water and additive tanks making the Slurry Paver the most compact machine on the market. The flow of the different fluids is ensured by lobe pumps for the water and additives and by a gear pump for the emulsion.

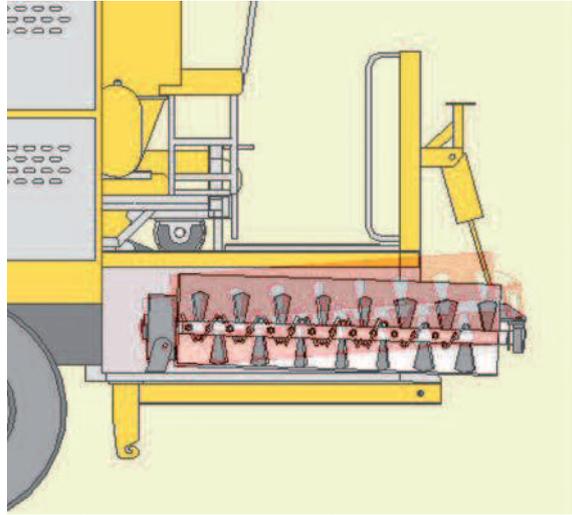
The aggregate hopper

- The hopper can stock from 6 to 12 m² of aggregates. A weighing belt ensures the flow of materials to the mixer.
- A 4 dimension weight sensor under the belt ensures continuous dosage whatever the machine position.

The cement hopper

- The capacity (600 litres) of the hopper guarantees one day's production.
- Cement dosage and distribution is carried out by an extractor screw.
- A load-lifter is offered as an option for the loading of bags of cement without the operators having to handle heavy loads.



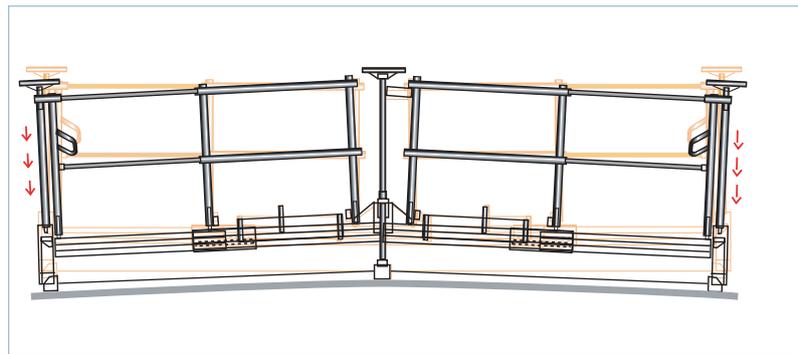


Mixer

- 2 shaft mixer,
- Slope compensation by a hydraulic jack,
- Mixer tank in 2 parts avoiding clogging problems.

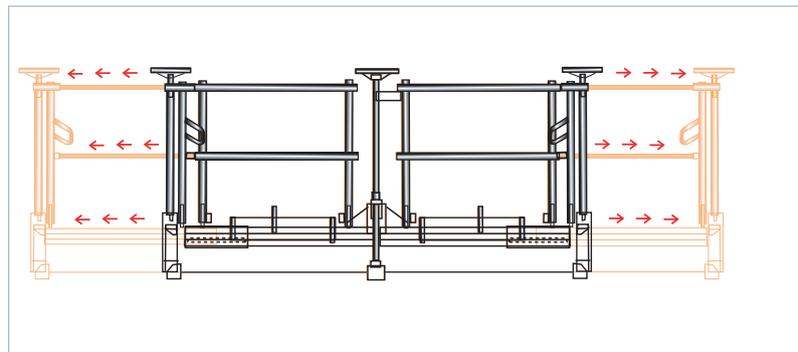
Application table

- Variable width from 2.50 m to 4.00 m,
- Completed adaptation to the geometry of roads,
- Multi-plug quick connections.



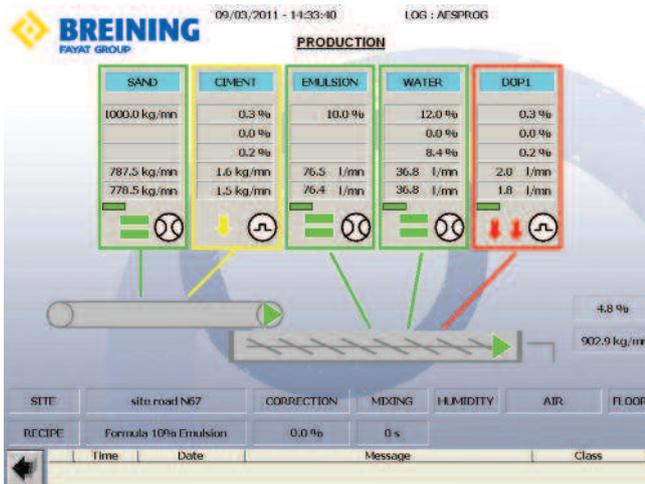
The driving station

- Rear bridge giving a perfect view of the works and the mix,
- An ergonomic console groups together all the functions required to manage dosage and handle the application table,
- Regulation of the flow of fluids and aggregates using potentiometers or automatic (see NOVASYSTEM).



Computerised dosing management: NOVASYSTEM

The success of microsurfacing works is especially based on the capacity of the operators of applying the correct formula to obtain the required mix. Computerisation is the guarantee of correct dosing throughout the works.



The control of each component of the mix

- Aggregates,
- Emulsion,
- Added water,
- Dope,
- Cement.

NOVASYSTEM functions

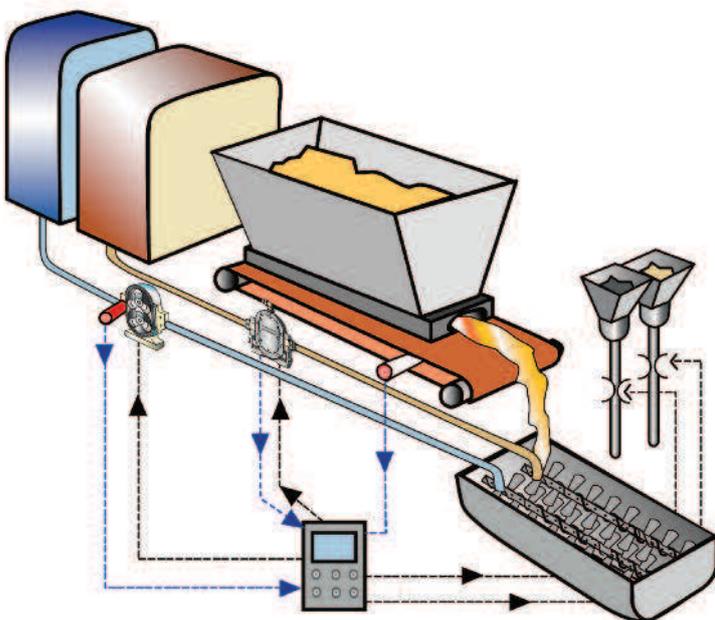
- A formulation mode makes it possible to record all the formulae used by a team,
- A production mode with display and continuous access to the data for the operator,
- A maintenance mode making it possible to calibrate the components and access the machine maintenance meters. (draining...),
- An alarm zone displaying possible malfunctions.

Factory calibration

Thanks to NOVASYSTEM, it is now possible to calibrate the machine in the factory thus allowing the immediate start of works.

Emergency mode

The driving console gives access to a manual operating mode by simply rotating it 180°.



A new application table: NOVABOX

The final finish of a Slurry Micro Surfacing is most often measured via the properties of the application table. Thank to its experience, BREINING has developed a table that brings together the quality of the work and the ergonomics of the user.

A heavier table

NOVABOX is 45% heavier than the other tables on the market, thus eliminating all undulation phenomena.

Assisted raising

The adjustment, which is the most often mechanical, of traditional tables does not allow the operators to accurately adjust the working height. NOVABOX is fitted with a hydraulic lifting system that can be driven from a remote control.

Jointless smoothing

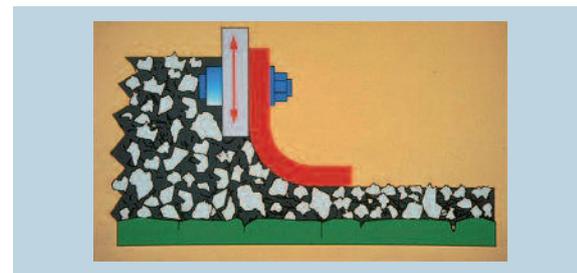
The NOVABOX flap automatically adjusts, guaranteeing a continuous spread without leaving any traces at the

junction with the application table.

The smoothing and a remarkable finish are carried out thanks to a rubber flap specially designed to BREINING specifications.

A greater working width

The maximum application width is 4.00 metres.

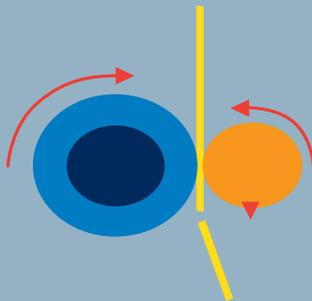


A new concept in Slurries Micro Surfacing: NOVASURFACING

NOVASURFACING is a new technology of which the purpose is to increase the life span of Slurries Micro Surfacing while guaranteeing their strength and ease of application.



Principle of the fibre cutter



The tack coat

In the same way as hot asphalt binders, it is possible to apply a tack coat as the interface with the Slurry Micro Surfacing. This link layer can be spread simultaneously with the Slurry Micro Surfacing. BREINING has developed a new Slurry Paver (NOVASEALER), which unites a binder spreading machine and a Slurry Micro Surfacing. Besides the fact that the life span of the road surface is extended, the bitumen glue layer is used to prevent peeling phenomena, especially on scraped roads.

The introduction of glass fibre

NOVASURFACING also consists in adding glass fibres to the mix.

These fibres ensure several functions. First the reduction of road noise and a significant increase in adherence and durability. Finally, the fibre assures the cohesion of the mix and also avoids segregation, which makes it possible to apply it easily and without drips.



Traceability

The EC marking of microsurfacing applicable since January 1st 2011 implies not only the precise regulation of doses, but also the traceability of the quantities applied and their application conditions. The MALAXITU database meets these requirements, it also gives information on productivity and yield.

The 7 advantages of a traceability system

- Make the production control system reliable,
- Improve communications,
- Make a difference in a competitive environment,
- Share a line of existing management tools (SIG type),
- Prove to the order giver that the investment is profitable,
- Optimise movements and thus reduce polluting emissions,
- Benefit from a privileged relationship with the materials supplier.

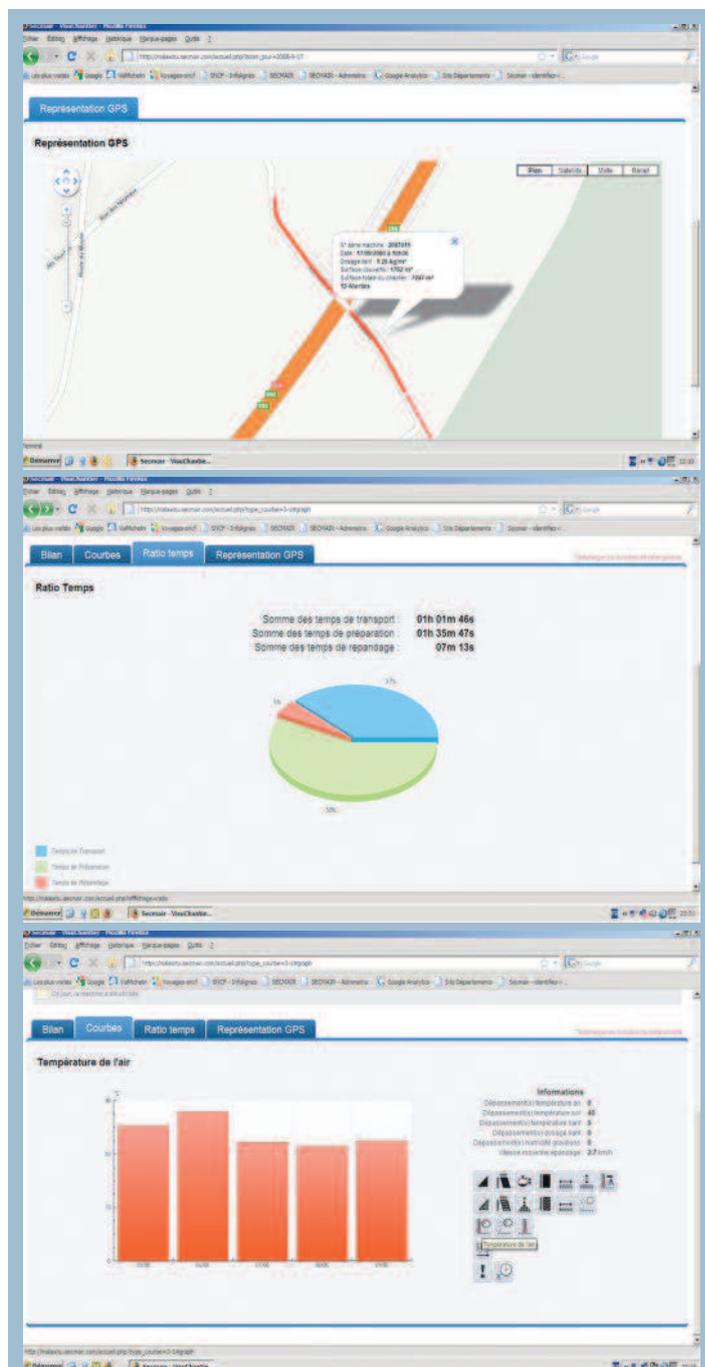
Examples of provided data

- Site cartography,
- GPS position, date and time,
- Transport , waiting and spreading time,
- Instant dosing,
- Surfaces and quantities,
- Temperatures,
- Humidity.

Data transfer

There are several types of data transfer depending on the needs:

- Retrieval of an Excel file (using a USB stick),
- Retrieval of an Excel file and integration into operating software,
- Transfer by GSM with access to a web platform, associated to the sending of an email summarising the works.

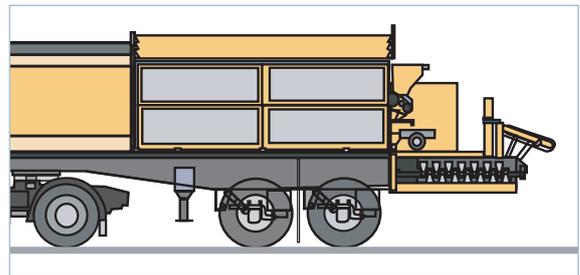


Productivity

The choice of a Slurry Paver will determine the productivity of the works to be carried out. It must be a compromise between the necessary polyvalence on certain structures and the daily estimated production.

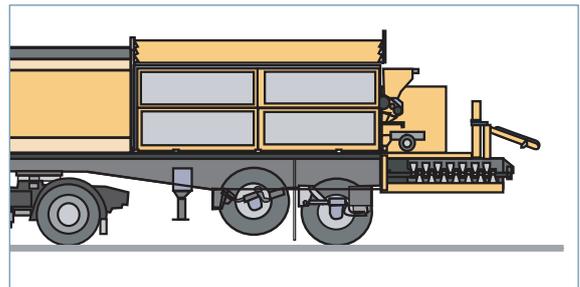
Slurry Pavers on carrier trucks

When polyvalence, and especially the need for compactness are needed, the carrying truck is the best adapted. It makes it possible to move in restricted spaces (city centres).



Slurry Pavers on articulated trailers

The articulated trailer is especially recommended on linear road works requiring a high daily production. Its capacities make it possible to limit the number of loads.



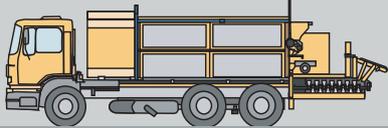
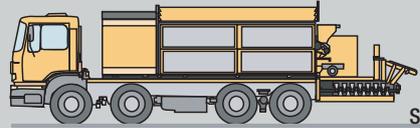
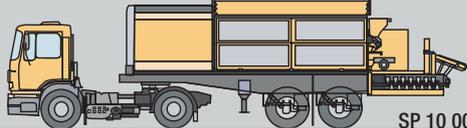
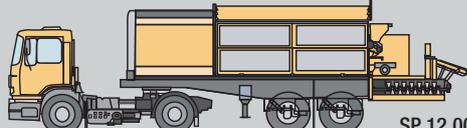
Raised axles on articulated trailers

The raised axle system makes it possible to propose a "works" configuration with 1 raised axle giving better manoeuvrability and limiting the risk of skidding.

During transfer the two axles are on the ground to guarantee a maximum load.



The BREINING line

SLURRY PAVER	Capacities (litres)	Daily production at 10 Kg/m ²
 SP 6 000	Aggregates: 6 000 Emulsion: 2 000 Water: 2 000 Cement: 600 Dope: 300	1,200 m ² per load, or 7,200 m ² per day
 SP 8 000	Aggregates: 8 000 Emulsion: 2 000 Water: 2 000 Cement: 600 Dope: 300	1,500 m ² per load, or 9,200 m ² per day
 SP 10 000	Aggregates: 10 000 Emulsion : 5 000 Water: 4 000 Cement: 600 Dope: 500	1,800 m ² per load, or 10,800 m ² per day
 SP 12 000	Aggregates: 12 000 Emulsion : 5 000 Water: 4 000 Cement: 600 Dope: 500	2,100 m ² per load, or 12,600 m ² per day

Joint spreading	Spreading type	Type of chassis	Binder capacity	Heating
AFU/FU	Lance	Trailer and skid	500 litres	Thermo-fluid heating
AFU/FU KOMPRESSOR	Lance	Trailer and skid	500 litres	Thermo-fluid heating
SPM	Bar	Skid	90/250/500 litres	Thermo-fluid heating

Crack cleaning	Type of distribution	Air assisted	Gas pressure	Heating
HOT DOG	Thermal lance	By independent compressor	3,5 bars	Gas

Asphalt production	Type of distribution	Type of chassis	Production	Heating
BELUGA BB5	Manual	Trailer	5 tonnes/hour	Direct heating

Binder spraying	Type of spreading	Spreading width	Capacity	Heating
FA0	Bar and lance	2.50 m	800 litres	Direct heating
U TANK V2	Bar	2.50 to 5.00 m	emulsion/water/fuel: 1 000 to 7 000 litres	Direct heating
SMART	Bar and lance	2.50 m	1 300 to 2 000 litres	Direct heating



BREINING
Maschinen- und Fahrzeugbau GmbH
Uferstraße 24
73630 Remshalden-Grunbach
DEUTSCHLAND
Tél. : +49 (0) 7151 977 100
Fax : +49 (0) 7151 977 111
info@breining.fayat.com

SECMAIR
Rue des Frères-Lumière
BP 10042
53230 Cossé-le-Vivien
FRANCE
Tél. : +33 (0)2 43 98 27 76
Fax : +33 (0)2 43 98 86 49
info@secmair.fayat.com

