



Our claim is for perfection.

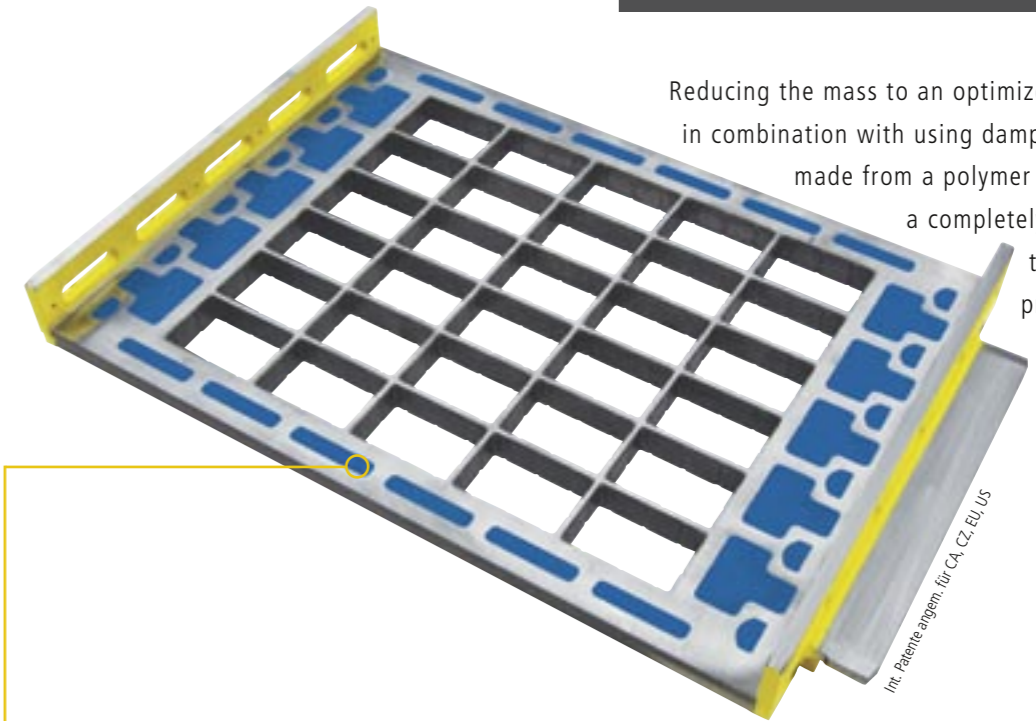


New high-tech systems

→ **RAMPF** – ADDING DOLLARS AND SENSE TO YOUR BOTTOM LINE



## IS PAVING YOUR CRAVING?



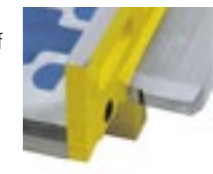
Reducing the mass to an optimized minimum in combination with using damping elements made from a polymer material will add a completely new dimension to your series production.



■ Advantage 1:  
Special dampeners reduce your mold's resonance.  
→ longer mold life  
→ better product quality



■ Advantage 2:  
Rapid field assembly of individual mold parts.  
→ less maintenance  
→ lower cost



■ Advantage 3:  
Reduced mass.  
→ shorter cycle times  
→ better compaction

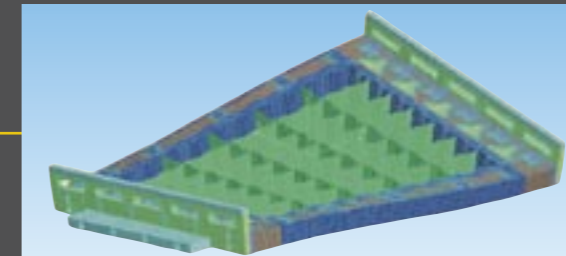


"With this type of mold we reach higher strengths and the scatter is lower. The mold has a longer service life as well."

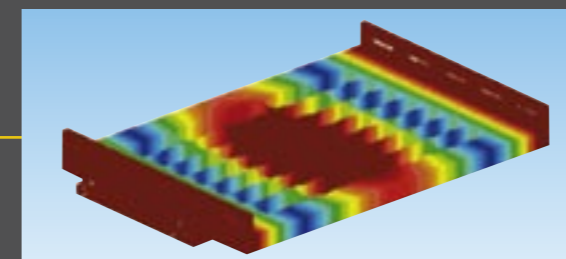
Olaf Höppe  
Reinschütz  
Munderkingen (D)

This new mold system has been developed in close collaboration with the Iff Institute for Precasting Engineering and Construction in Weimar.

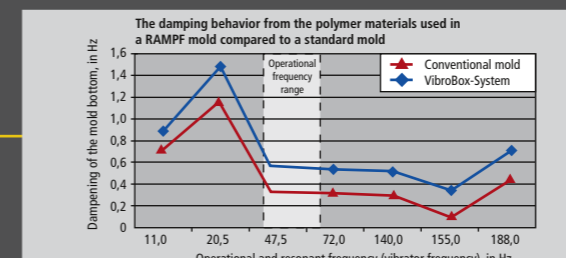
- Stability in the higher frequency range = Stability during the final-compacting phase = Less wear = Longer service life
- Mass reductions = Quicker compacting = Shorter cycle times
- Replaceable parts = High economic efficiency



Using the Finite Element Method (FEM), the VibroBox System was designed and constructed such that the web cross-section's and the course of stressing characterize optimized oscillation behavior by the mold.



The exciter frequency of modern block producers lies in the range between 45 Hz and 70 Hz. The way the new VB mold system has been designed prevents any superimposition of natural frequency and exciter frequency and hence the danger of any resonance-induced fracturing is reduced considerably in this way.



The damping realized by the mass (steel) in conventional molds is exceeded several times over by using polymer materials. This means less material wear and greater stability even in marginal areas.



## LESS IS MORE!



The usually extremely large and very robust upper section of the mold is now a two-part construction in this high-tech design. The VibroTop with exciter plate has been integrated as an additional fixture in the upper section here. The lower section of the tamper has been realized as a lightweight construction held by rubber-bonded pads as a separate part that is free to oscillate.



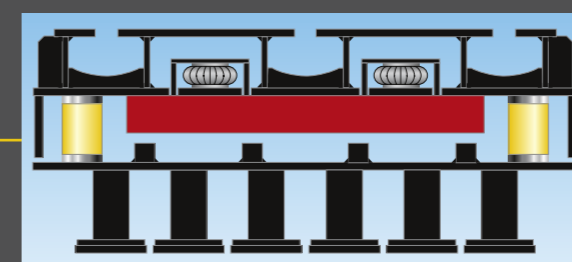
The VibroTop upper section of the mold with integrated exciter system transfers the applied forces directly to the product. The exciter plate is actuated by the vibrations applied over the shaker table. Thanks to the special arrangement of appropriately dimensioned and maintenance-free lifting cylinders, the excitation system can be adjusted to meet the particular product in terms of vibration bandwidth, frequency and exciter forces. The concrete to be compacted can be subjected to a sort of shock vibration in that extremely high compacting forces are applied at specific points of time during final compacting. The result is a higher density and better surface quality for the compacted product.



The integrated exciter plate applies the additional vibration forces directly above the concrete products to be compacted. The vibration bandwidth can be varied depending on the vibration forces to be executed.



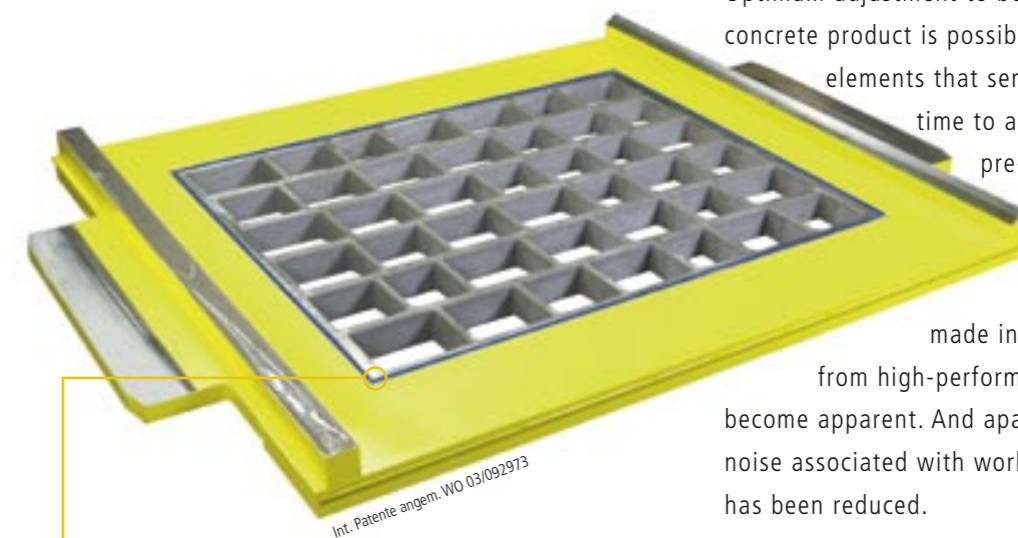
The excitation characteristics of the exciter plate can be influenced in whole or in part by a bellows-type cylinder.



One part of the tamper is held by several oscillation pieces that move with the exciter system. This means the applied forces from the tamper can be transferred directly to the products being compacted.



## BEST VIBRATIONS

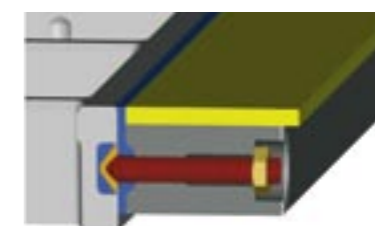


Optimum adjustment to both machine and concrete product is possible by using locking elements that serve at the same time to adjust damping and pre-tensioning. It is only then that the full effects of any adjustments made in the vibrations from high-performance machines become apparent. And apart from this, the noise associated with working with this mold has been reduced.

Int. Patente angem. WO 03/092973



Permanently elastic connection between frame ...



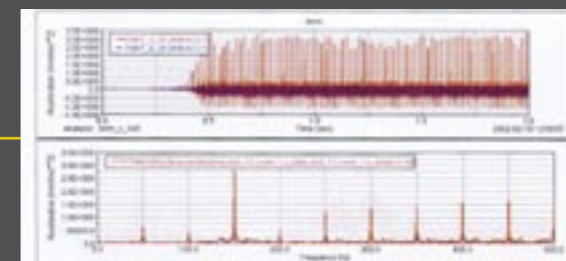
... and insert, with pre-tensioning fixture.



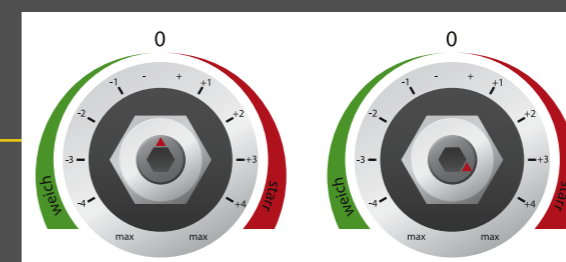
"To operate our block machines with the Oscillating molds we had to set up new parameters. For example reduce the amplitude and tune the machine to correspond to the mold frequency. The product produced shows higher density and improved surface finish."

John Vincent  
Marshalls Mono Ltd.  
Elland (GB)

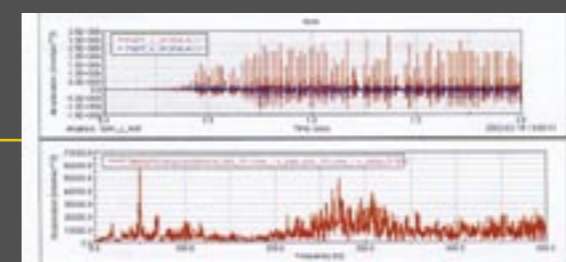
With the **RAMPF** Oscillator, the mold frame and the mold insert are not rigidly joined but rather are connected together in a permanently elastic manner. The result is optimum oscillation by the mold insert. There is less insert weight to oppose the energy exerted for the vibrations. Shock vibrations can be applied even when operating the shaker at reduced performance. This is because the lighter and loosely-held insert is easier to accelerate. The compacted concrete density is distributed more uniformly over the whole precast package.



Optimized course for shock vibrations in the reference position whereby the higher-frequency vibrations are amplified.



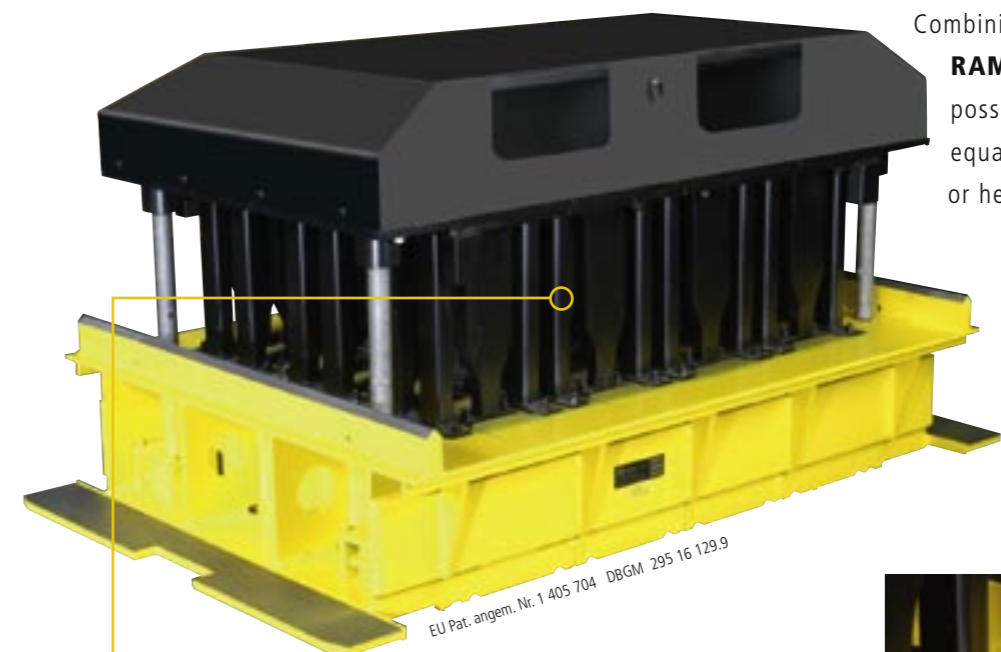
Reproducible adjusting positions using the attached graduation.



Position Max. Rigidity: The course for the vibrations is less stable the greater the rigidity of the mold is.



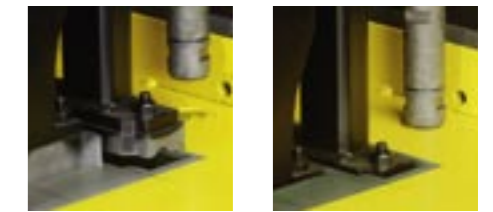
**IS THIS A PROBLEM FOR YOU?**



EU Pat. angem. Nr. 1 405 704 DBGM 295 16 129.9

Complementary to standard height control, there are also other features available like e.g. post-compacting, cleaning and signal return.

Combining height control with other **RAMPF** high-tech systems is also possible – e.g. with charging equalization, multi-level tamper or heated tamper shoes.



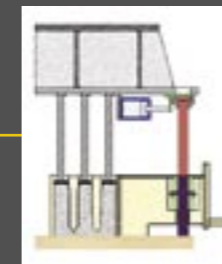
"We've been using Rampf's height-control molds for the past year. We have found that they help us to maintain our height tolerance of +/- 1mm on higher wall products."

Richard Stevenson  
Oaks Concrete Products  
Milton  
Ontario (CD)

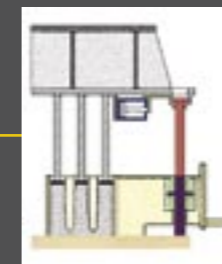
We have just the right answer for you:  
**RAMPF** Height Control

This solution already integrated in the mold gives constancy in the height for all manufactured blocks in the precast package. The block height accuracy remains inside narrow tolerances. **RAMPF** Height Control does not mean any modifications have to be made to machines. It is reliable, does not increase the cycle time and is a system already proven in practice.

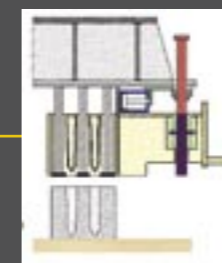
**RAMPF** Height Control –  
for production that is faster, more cost effective and even better.



Final compacting:  
Locking mechanism closed. Freely oscillating lower mold section for better compacting.



Unlocking:  
Locking mechanism opened. The system is not influenced by any inaccuracies in height because of the production boards.

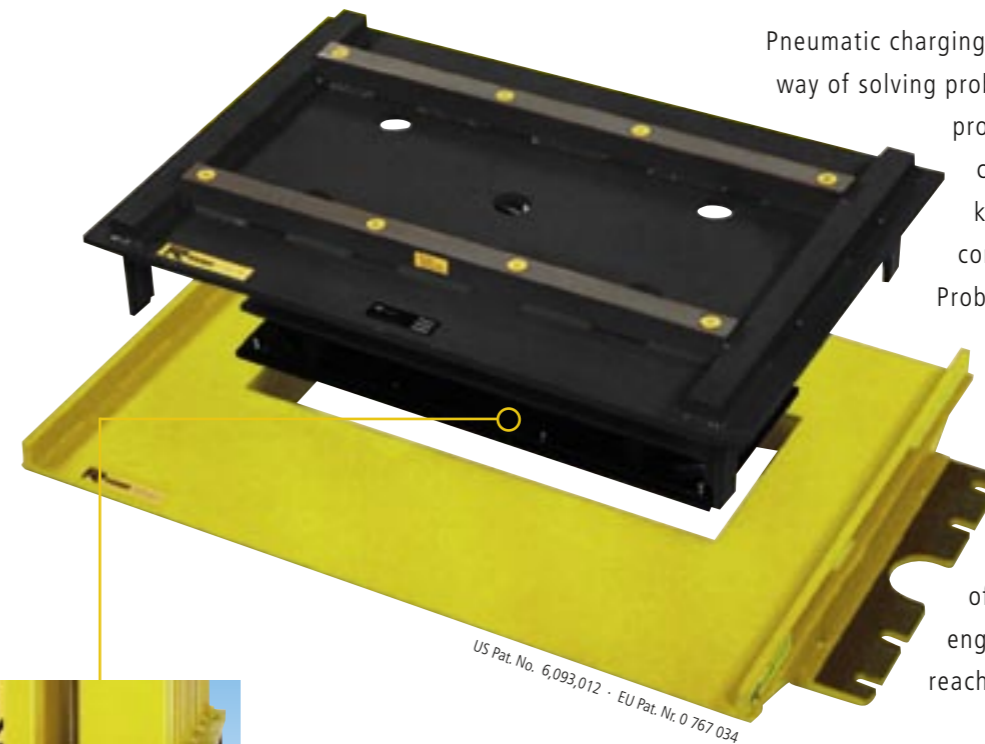


De-molding:  
All stones of the same height  
No rework necessary.

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## FIRST-CLASS SURFACE QUALITY, OPTIMUM CHARGING



Pneumatic charging equalization as a way of solving problems associated with producing high-grade concrete products where keeping dimensions under control can be difficult. Problems unavoidable in charging lead to high reject rates and large scatter in the quality. Pneumatic charging equalization is then used where the limits of conventional mold engineering have been reached.

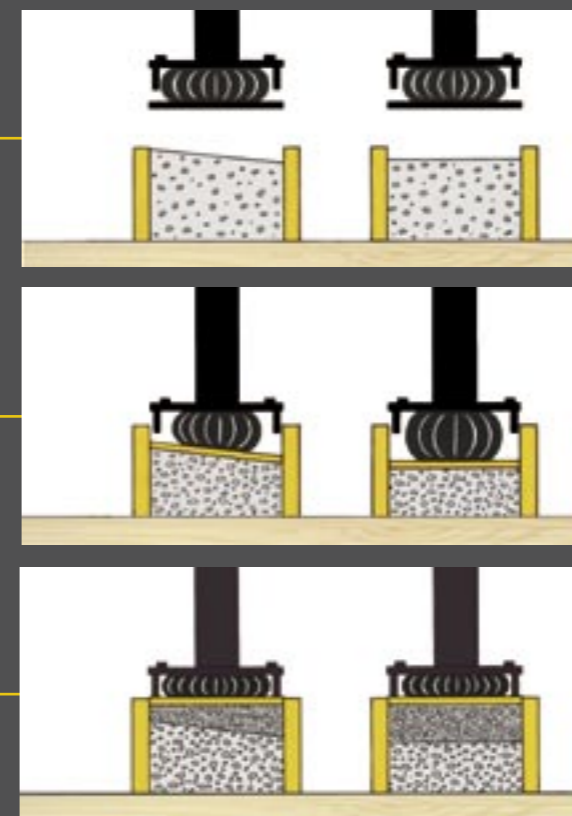


„We were able to reduce the waste more than 50% with regards to height differences on 700\*700\*70 slab at our Omag machine, when starting to use the PES from Rampf, compared to the normal mold.“

Lars-Henrik Persson  
Starka  
Kristianstad (S)



The tamper shoes are normally bolted directly to the tamper. Charging equalization is a technique whereby an adapter plate fitted with bellows-type pieces causes the individual tamper shoes to travel to different depths in the mold in accordance with the amount of concrete in each compartment. Following preliminary profiling and although the individual stones are then of different height, they all - and this is of major importance - have been compacted to the same extent. On replenishing, the different charge levels in the individual compartments of the mold are then equalized such that final tamping gives equally compacted concrete products that are all of the same height. An appreciated side effect is that adhesion by the concrete to the tamper shoes is largely avoided because the vibrations loosen the block from the tamper shoe and no vacuum is created.



### Charging

Attaining uniformity in charging the mold is very difficult for large formats and facing blocks.

### Uniform compacting

Crucial for a high quality level is uniform compacting. It is especially here where thanks to the impact-rail technique, the new pneumatic charging equalization from **RAMPF** comes into a class of its own.

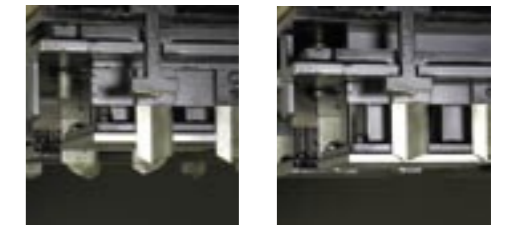
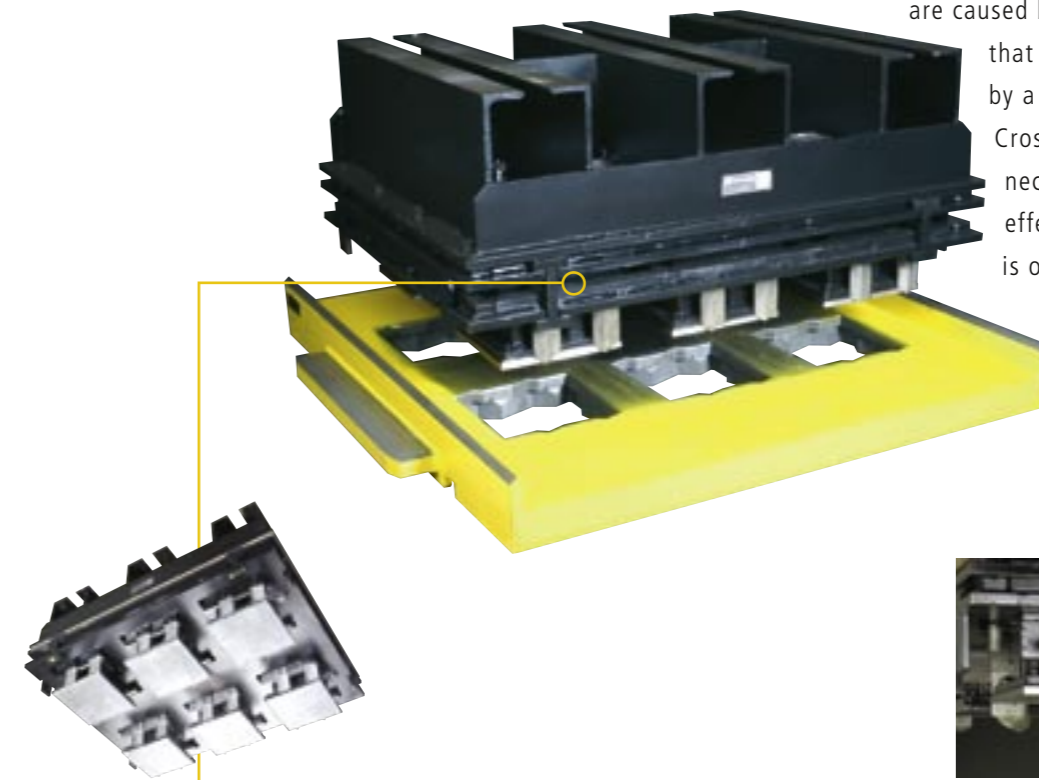
### High quality

Blocks all of the same height. Uniformly compacted blocks. Homogeneously closed surfaces even when the finest fractions for facing are used.



## QUALITY - STEP FOR STEP

Differences in the height of the product are caused by tamper-shoe regions that can no longer be cleaned by a standard filling-cart brush. Cross-cleaning then becomes necessary though the effectiveness of this method is only given up to a certain difference in levels. The multi-level tamper is the answer.

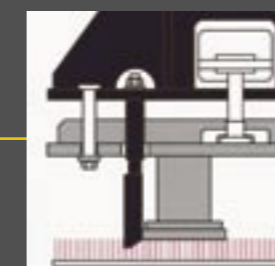


The FCN Sonopor – acoustic stone is characterized both by its appearance and a high degree of noise absorption. This is only possible by uniting optimum concrete composition with an appropriate geometry for the paver.

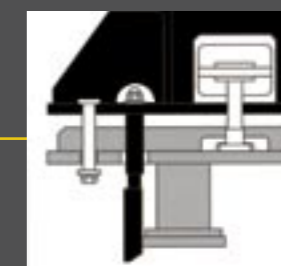
A heavily profiled surface was a problem in manufacturing at first. Lifts, flaws in the fill, as well as differences in compacting led to reject rates that were unacceptably high. The three-level tamper developed by **RAMPF** has since solved the problem. The principle of individual levels makes more uniform compacting, optimum mold release and easier cleaning of the tamper shoes possible.

Also, the quality of the product has been increased considerably thanks to using this new technique.

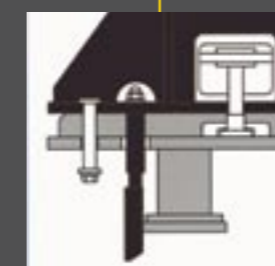
Walter Gutermuth  
F.C. Nüdling  
Kalbach (D)



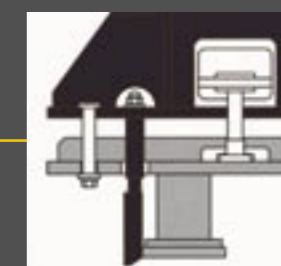
Cleaning position



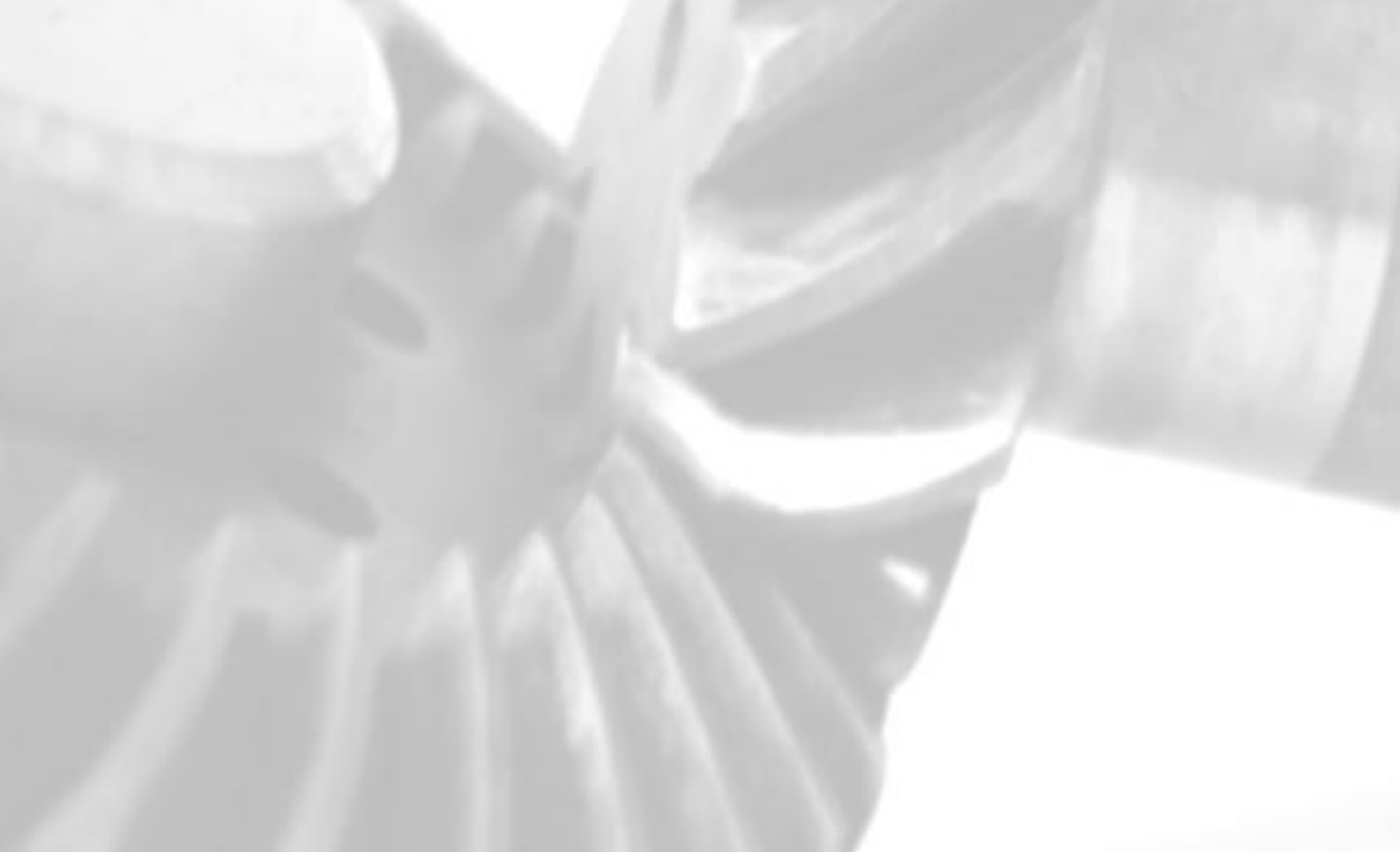
Intermediate lowering is only possible when a pneumatic control system is used.



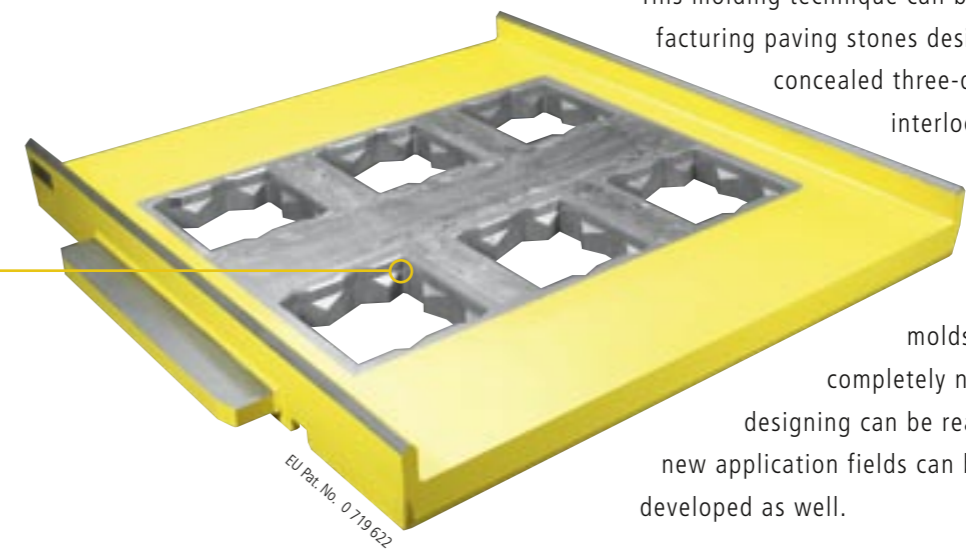
Final compacting



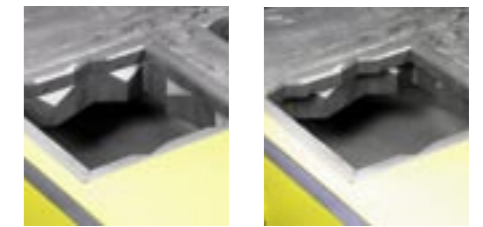
De-molding



## FOR INTERLOCKING BLOCKS



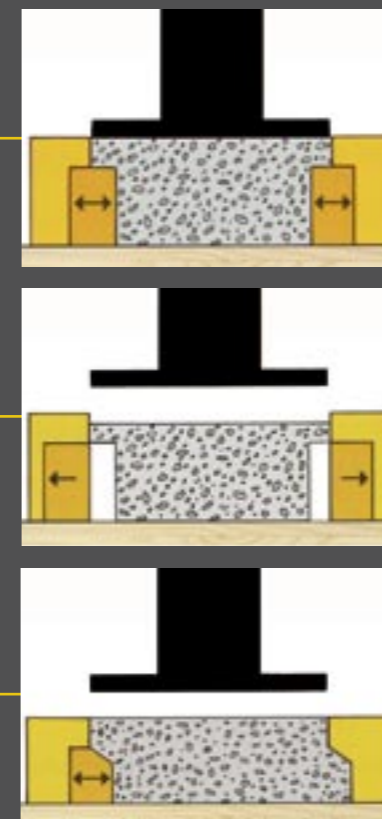
This molding technique can be used for manufacturing paving stones designed for concealed three-dimensional interlocking. The sliding-panel mold can overcome the limitations of conventional molds. This means completely new ideas in designing can be realized and that new application fields can be developed as well.



"By using sliding-panel technique, giving the pavers three-dimensional interlocking is no problem in production now. Also, straightforward de-molding is assured by the sliding-panel technique. Furthermore, cleaning after the production run has finished is by simply removing the sliding panels, cleaning and then fitting again."

Christian Funk  
Galabeton  
Braunschweig (D)

The sliding-panel technique has been engineered such that all parts subject to wear have been CSi-hardened and are replaceable. The position-monitoring device integrated in the slider fixture assures smooth-running production and constant cycle times.



Eco-paver systems incorporating drainage compartments ensure better seepage by precipitation. Reverse profiles are formed at the front face by mold components intruding as part of the charging and compacting process.

These movable profiling parts are retracted for de-molding purposes. This is realized using hydraulic cylinders and sliding rods integrated in the mold insert. This makes removal from the mold in the normal manner possible.

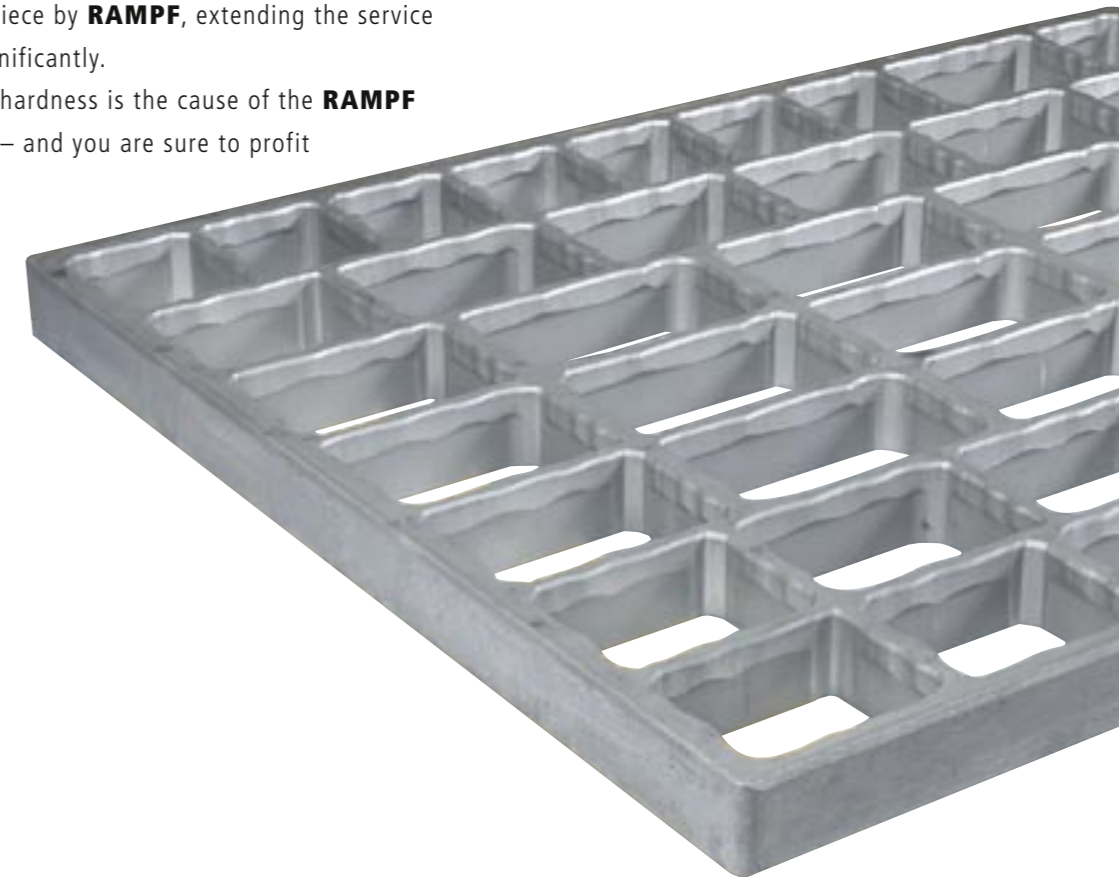
By using the sliding-panel technique from **RAMPF**, even unconventional block designs including undercuts and counterdrafts can be produced in series without any difficulties.



**NEW HARDNESS BY RAMPF**

The newly developed **CSi-DIAMOND** process is another technical masterpiece by **RAMPF**, extending the service life of moulds significantly.

This new level of hardness is the cause of the **RAMPF** „diamond fever“ – and you are sure to profit from it.



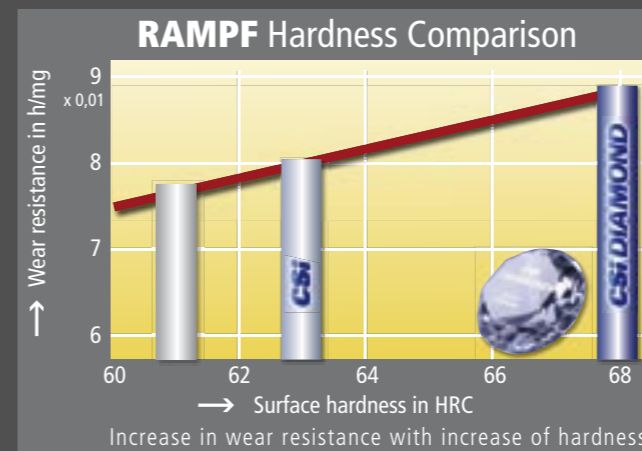
Prof. Dr.-Ing. Karl Heinz Illgner, who supervised the tests commissioned by **RAMPF** and carried them out in close cooperation with Betriebsforschungsinstitut (BFI), VDEh Institute for Applied Research in Düsseldorf: “We were primarily interested in considering the different facets and factors affecting various methods of producing stones and we used exclusively tests based on the sharpest spalls and stone chips.”



Extended time tests using an abrasion test vessel with moist silica sand have yielded the following: Regardless whether highly abrasive gravel or stone chip types or other aggregates that usually cause mould wear and tear when exposed to heavy-duty use, the **CSi-DIAMOND** surfaces can handle all of them with ease.



In the 90s, **RAMPF** was the first mould builder to develop the **CSi** technique and use its in-house hardening stations to ensure the technique was mature enough for series production. The new **CSi-DIAMOND** moulds are finished in special hardening stations.



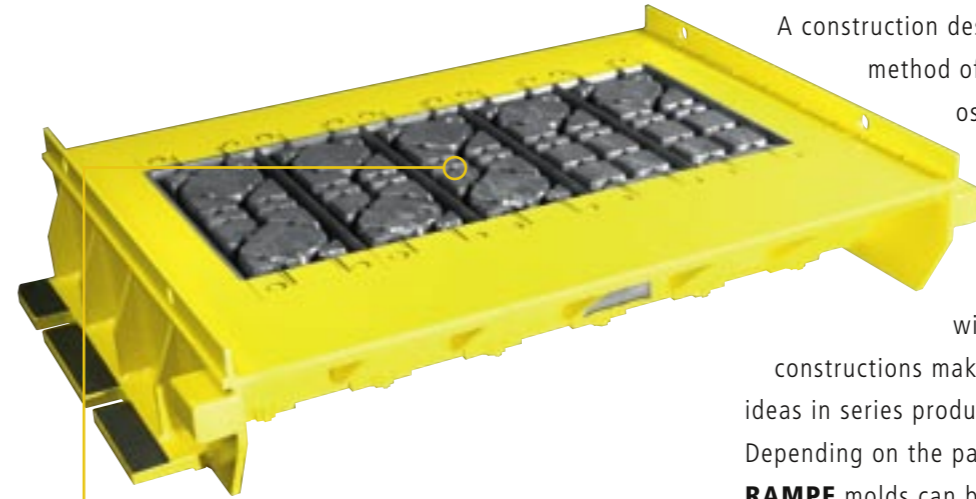
After conducting a series of sound tests based on solid facts, carried out by **RAMPF** in close cooperation with Betriebsforschungsinstitut (BFI), the **CSi-DIAMOND** hardness technique was developed. This process is able to yield a hardness degree of up to 68 HRC. The new process is suitable for most mould types regardless whether they are used for paving stones, road or building construction. This is enormously important especially

when steel prices continue to climb steadily. This provides a clear price advantage for you, regardless of the geographical location of your production facilities and the aggregates available there.





## FANTASY AND SHAPES



The proverb is that dimensional accuracy will assure constancy in the weight of the block. A construction designed for a lightweight method of building promotes the oscillation tendency and hence has beneficial effects on the block's density. Options like pre-elevated core assembly, core-drawing fixtures and other special constructions make it possible to realize your ideas in series production that you can rely on. Depending on the particular requirements, **RAMPF** molds can be nitride or CSi-hardened.



"I am standing in front of the recently delivered molds, serial numbers 630-640. This is a clear indication that we are indeed very satisfied with molds from Rampf Formen GmbH."

Dr. Wunsch Pasco  
Al Ain (UAE)



The first mold of this type from **RAMPF** was for masonry blocks. The requirements and set-up for masonry block systems differ from country to country, whereby clarity in detailing the block and the observance of local regulations are just as important as is the engineering realized for the mold. A fund now comprising several thousand customer-specific products has since accumulated at **RAMPF** in this way over five decades.



High dimensional accuracy thanks to modern milling and beveling techniques.



Patented edge-breaking in the manufacture of Softsplit blocks.

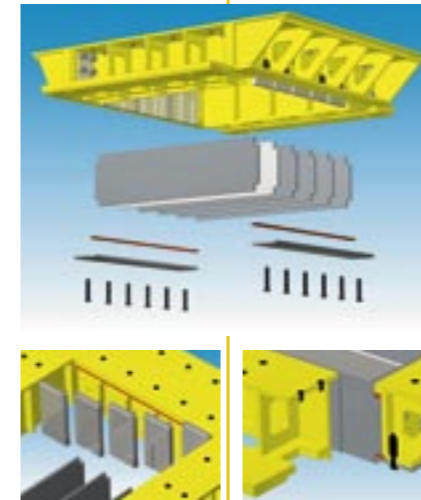
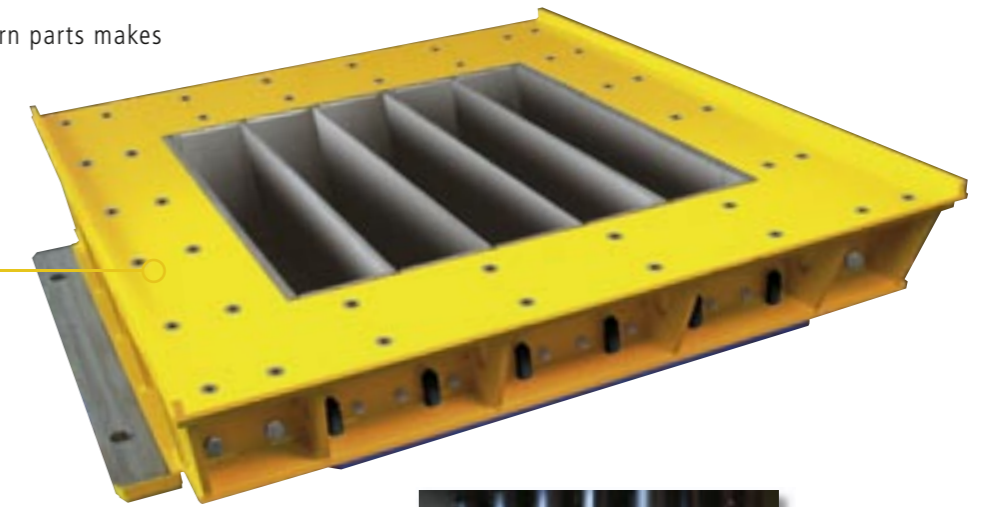


Replaceable core, and a core covering with an anti-wear coating.

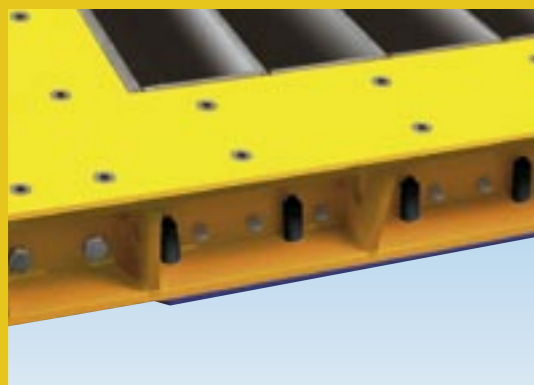
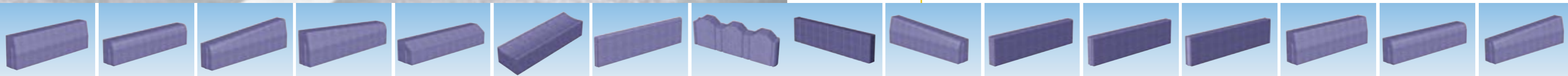


SHOWING THE WAY

The quick and easy replacement of all worn parts makes the new **RAMPF Quickbox system** an effective cost-savings alternative.



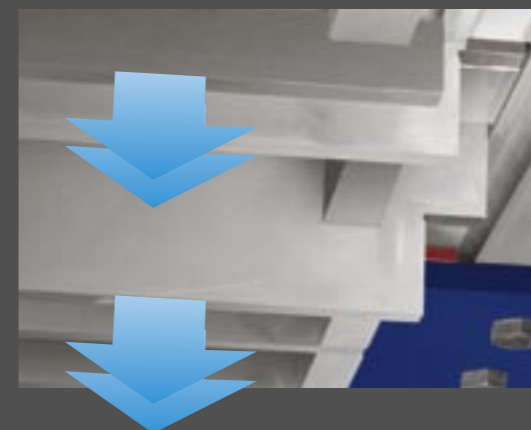
→ What **CSi** is for moulds, **Si** is for tamper shoes. The screwed blades are entirely hardened in **Si** quality. The patented chamfer intake matching the contour of the section blade protects the blade from damage if the tamper is not centred when being lowered.



- Resilient sleeves to avoid screw and bolt breakage and to fix the clamping plate in place
- Screwed cover plate for quick and easy replacement
- Worn mould parts can be quickly replaced by a trained machinist in just a few hours



- Cost-efficient since the existing mould frame can be reused and all worn parts are quickly replaced
- Significant cost-savings: The screwed centre partitions make it possible to carry out your own refurbishing and overhaul independently, which significantly reduces equipping times



- Easily replaced face sections and partitions
- **CSi** quality for parts subject to wear and tear, therefore significantly longer service life



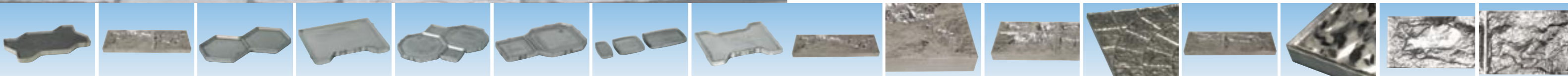
- Not pressure-sensitive clamping strips to easily fasten the mould partitions
- The screwed clamping plate ensures easy and quick replacement of the mould partitions



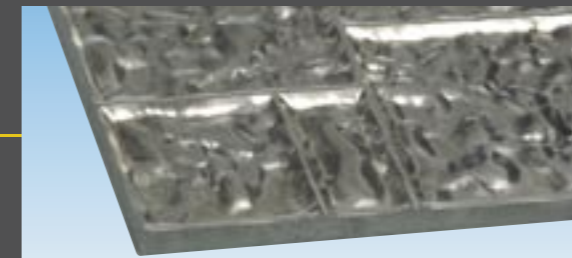
**NEW TECHNOLOGIES**



By using special elastomer compounds, surface textures can be realized that closely resemble elaborately treated stones. Also, the surface here is free of cracks and the density is very high.



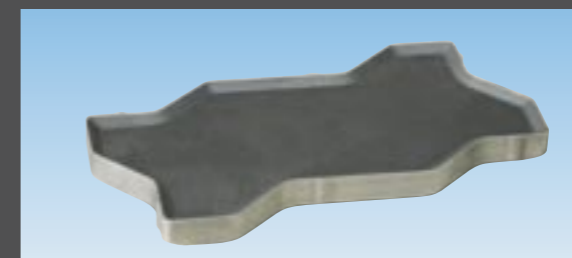
Choosing the right tamper-shoe technology is crucial in applications where the surface quality is critical. Besides the proven standard tamper shoes, **RAMPF** has a whole range of new solutions for greater effectiveness. The new techniques available can lead to greater economic efficiency in production.



Each natural-stone pattern can be digitized. Special software then processes the data for any arbitrary format. The tamper shoe is then made by high-speed milling.



Higher water-to-cement ratios imparts higher mechanical strength to the concrete block. The annoyance of wetter concrete sticking is effectively prevented by using heated tamper shoes. This means enhanced quality and lower reject rates.



Tamper shoes  
With molds it is CSi,  
for tamper shoes it is Si.  
Si-tamper shoes have hardened surfaces.



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In our show hall in Germany we are exhibiting more than 200 different products, the cream of the crop of pavers, landscape products, retaining walls. All manufactured in a **RAMPF** mold by satisfied clients around the world.

We cordially invite you to walk around and be inspired by our exhibits.



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