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# From wear part to key production component

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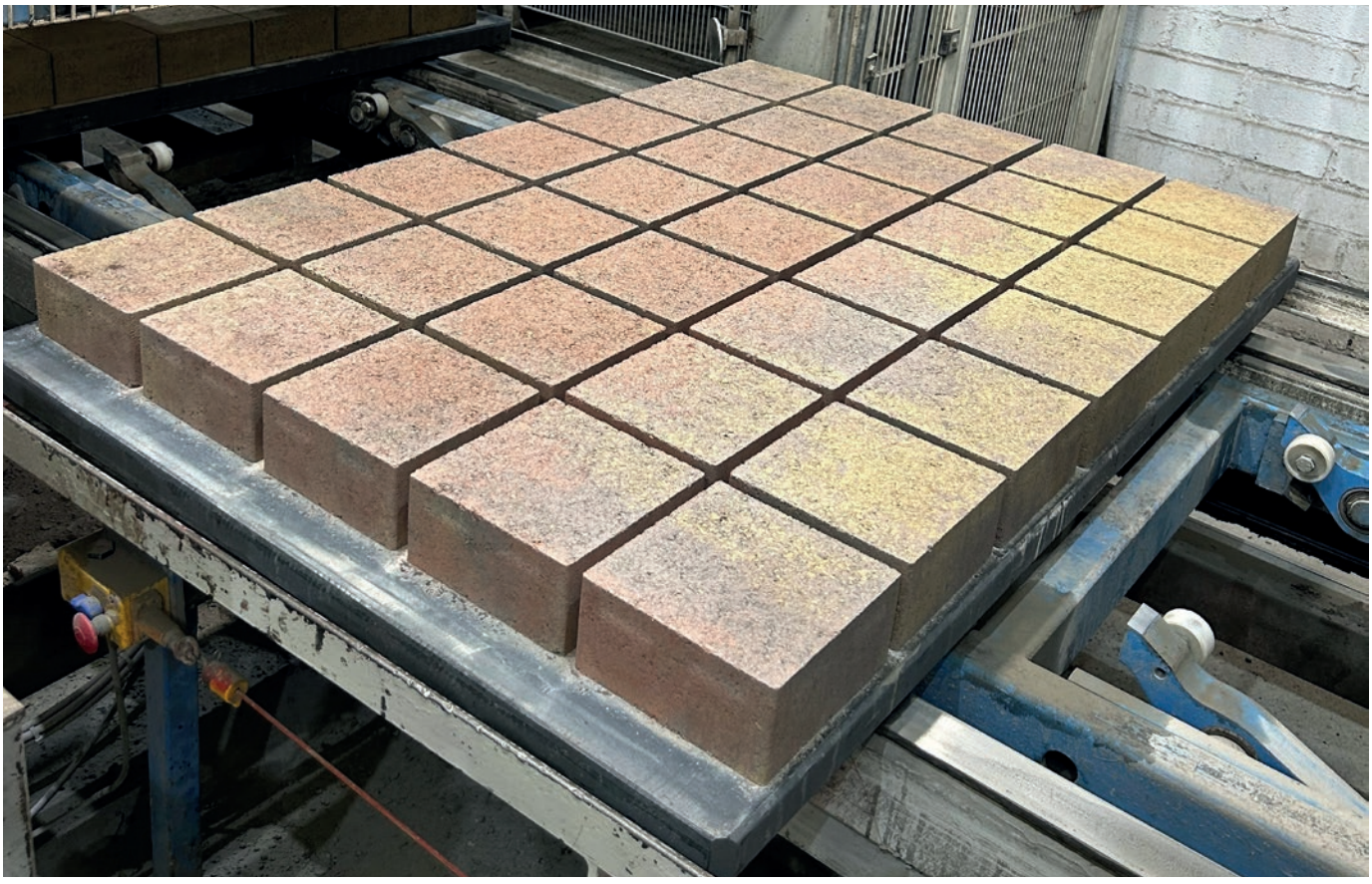


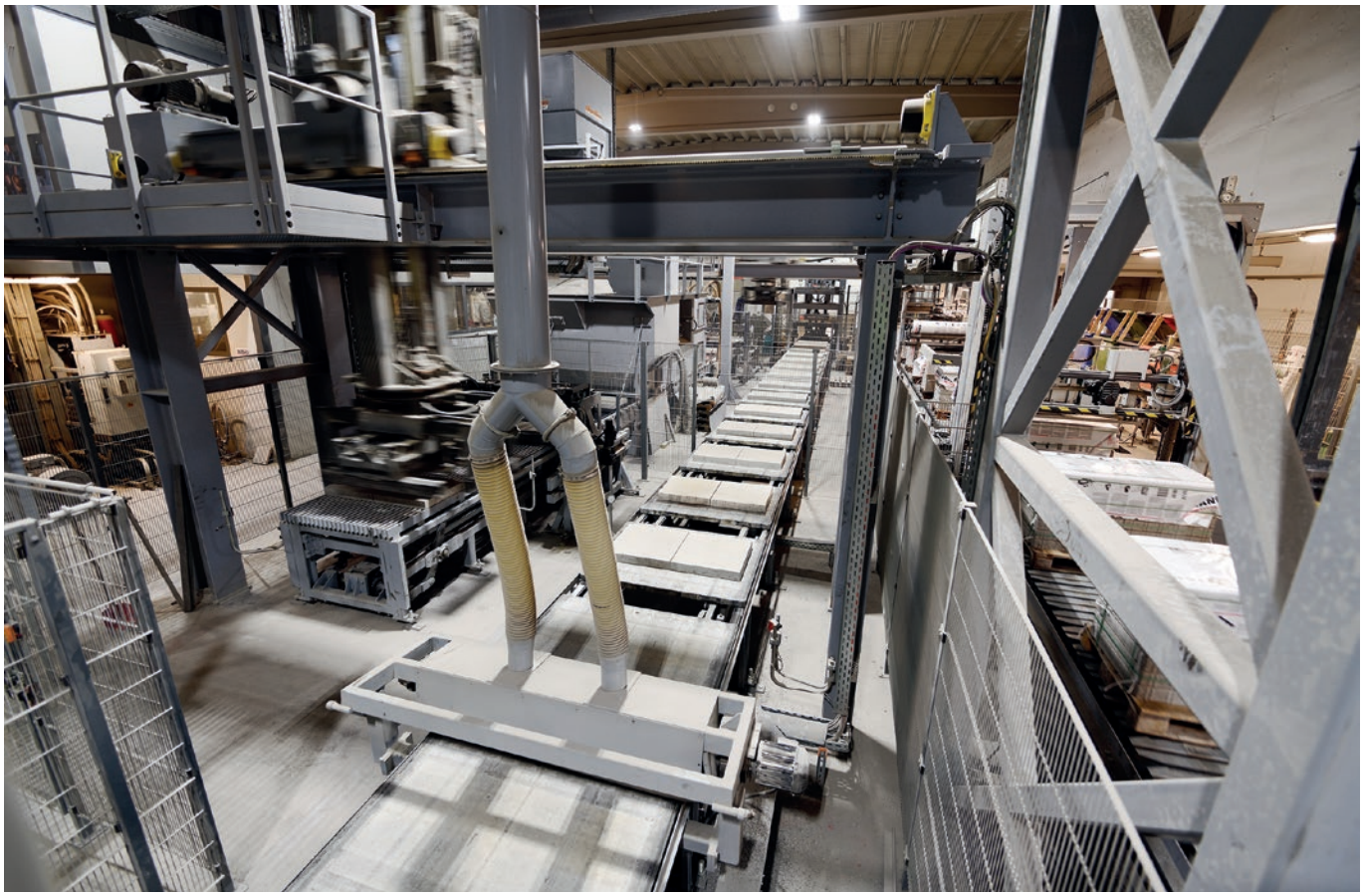
Wasa AG, Darmstadt, Germany

# From wear part to key production component

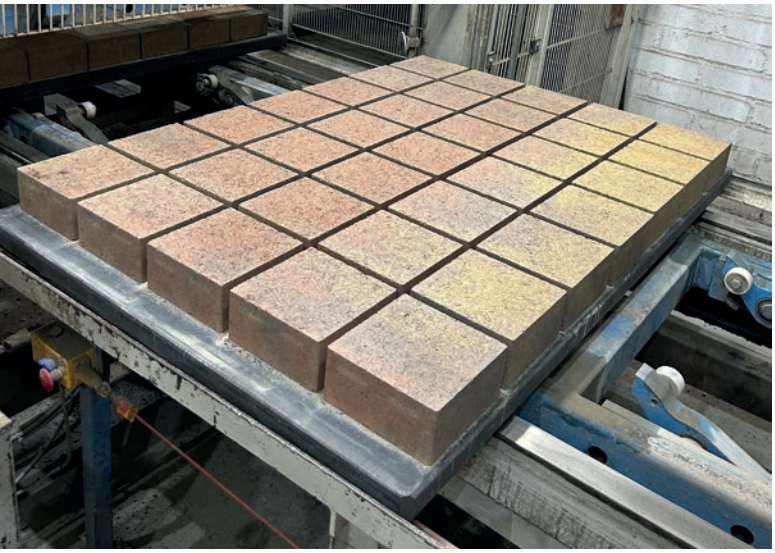
Sven Beisel, Wasa AG, Germany

**The requirements placed on modern concrete paving block plants are continuously increasing. Higher production speeds, increasing automation, and growing quality and sustainability requirements mean that production processes today must be designed to be significantly more precise and stable than just a few years ago. While machinery and control technology are often at the centre of technological developments, production components that were long regarded primarily as wear parts are also becoming increasingly important. These include steel moulds and production boards such as Wasa Uniplast® Ultra, which today have a direct influence on product quality, plant availability and cost-effectiveness.**

As cycle rates increase and production processes become increasingly automated, the requirements placed on all components within the production line are changing. In addition to the essential concrete mix design, factors such as dimensional accuracy, vibration behaviour and process stability are moving further into focus. Even minor deviations can have a direct impact on product quality, reject rates, surface texture or plant downtime. Production boards perform far more than a purely transport-related function, as they significantly influence compaction and the uniform transmission of vibration during the production process.



*Modern production plant*



*Freshly produced concrete paving blocks*

Uniform vibration transmission plays a central role in highly automated plants. Differences in material properties, flatness or wear condition have a direct effect on compaction quality. The consistent vibration transmission of Wasa Uniplast Ultra throughout its entire service life therefore creates significant added value on several levels.

Homogeneous energy transmission supports consistently high product quality in terms of dimensional accuracy, density and surface structure. At the same time, stable process control helps to reduce potential fluctuations in production and sustainably minimise rejects. In addition to its basic function as a transport and support element, the material behaviour of the production board plays a central role in the production process. Properties such as stiffness, damping behaviour, surface stability and geometric accuracy significantly influence how vibration energy is introduced into the concrete element and distributed within the material.

## Complex system behaviour

The interaction between machine, production board and concrete creates complex system behaviour in which even minor deviations in material properties or flatness can have noticeable effects on compaction quality. These interactions have a direct effect on the final product.

In addition, external influences such as fluctuations in temperature and humidity can affect the behaviour of the production board during production and storage. In highly automated plants with narrow cycle-time and quality windows, consistent material performance therefore becomes a decisive factor for stability. The production board should therefore not be viewed in isolation, but as an active component of a dynamic production system that significantly shapes the overall quality of manufacturing.

When evaluating production components, consideration of total life cycle costs is becoming increasingly important. In addition to the purchase price, service life, maintenance effort, production interruptions and process effects are now also taken into account. Especially in highly automated production environments, unplanned downtime or quality deviations can have significant economic consequences. Durable production components therefore not only contribute to process reliability, but also influence maintenance intervals, replacement cycles, energy efficiency, reject rates and long-term plant availability.

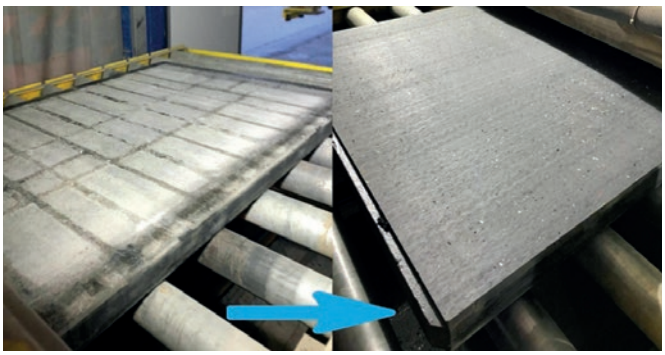
## Constant cycle times

Within the overall context of the production plant, it becomes clear that the properties of the production board not only influence individual quality characteristics, but can also have a direct impact on the overall performance of the plant. Stable and reproducible material performance helps to keep cycle times constant, reduce reject rates and minimise stress on the associated machine components.

Especially in interaction with vibration and compaction units, uniform energy transmission can help to make energy consumption more efficient and reduce fluctuations. This also has an indirect effect on the wear of mechanical components and on the energy demand of the overall plant. Against this background, the assessment of total operating costs extends beyond conventional individual cost items to a systemic evaluation of the entire production line. In addition to service life, maintenance and replacement cycles, process stability, energy efficiency and consistent quality are increasingly being considered economically relevant factors.

## Restoration of defined surface properties

In this context, the reconditioning and continued use of existing components are also becoming more important. For example, used Wasa Uniplast Ultra boards can be cut to smaller formats as part of a conversion process and reused in other production lines. This makes it possible to reduce investment costs and use existing material resources efficiently. Another approach, such as Wasa-Grinding, also increases the service life and allows reworking during ongoing operation, which significantly reduces production interruptions. By restoring defined surface properties, product quality and process stability can be maintained at a consistently high level without the need for complete replacement. This reduces not only



*Reconditioned board*

costs, but also energy and material use over the entire life cycle. In addition, a liquid secondary market for used production boards further reduces total costs.

At the end of their service life, the materials used can also be returned to the production cycle. This creates a closed material loop in which used components can be used to manufacture new Wasa Uniplast Ultra boards. The combination of material stability, reconditioning options and lifecycle extension means that production boards are increasingly no longer viewed merely as consumable parts, but as strategically relevant production components within the overall system.

## Unique identification by means of RFID

As concrete paving block production becomes increasingly digitalised, data-based process control is also gaining importance. Technologies such as RFID enable the unique identification of individual production components and create new possibilities for traceability and lifecycle monitoring. This allows maintenance intervals to be optimised, usage cycles to be documented and process data to be systematically evaluated. In this way, production components are increasingly developing into integrated elements of intelligent manufacturing systems. Integration is possible both as original equipment and by retrofitting Wasa Uniplast Ultra boards.

*Functional test of RFID tags*

## EPD certificate

In addition to economic aspects, sustainability targets are moving further into focus. Durable production components help to reduce resource consumption and material use over the entire life cycle. Fewer replacement cycles, reduced downtime and stable production processes make an important contribution to resource-efficient concrete paving block production. Sustainability is no longer defined solely by individual materials, but by the overall performance and service life of production systems. The possibility of refurbishment, reuse and return to the material cycle further strengthens this approach and directly links economic efficiency with ecological responsibility. This is certified, for example, by an available EPD (Environmental Product Declaration) for Wasa Uniplast® Ultra.

With increasing automation and rising quality requirements, the role of many production components in modern concrete paving block plants is fundamentally changing. Today, production boards are no longer regarded solely as wear parts, but increasingly as relevant influencing factors for process stability, product quality, cost-effectiveness and sustainability. The holistic consideration of technical and economic interrelationships, from material and system behaviour to vibration transmission and total operating costs, is therefore becoming increasingly important for modern production concepts. ■

**FURTHER INFORMATION**

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"If we stop getting better,
we stop being good."

Philip Rosenthal

For a company that creates value from raw materials, precision, quality and progress go hand in hand.
Our long-lasting success relies on all three.

As a global leader in the manufacture of high-quality production boards, we are continuously driving innovation and development – so that our customers can rely on the best possible board every single time.
Our production boards form the robust foundation for excellent, dimensionally accurate concrete products.

Every day, we work to optimise our processes and redefine our standards –
for ourselves and our customers.

WASA®
Competence Leadership.

WASA BOARDS WASA CONSTRUCT WASA ACCESSORIES WASA SERVICE

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