

Kobra Formen GmbH, 08485 Lengenfeld, Germany

A good mould starts with a good stone

Customer-oriented mould construction starts with the creation of uniqueness and a variety of continuously new, fully reproducible concrete block products. MY STONE »Development™« is a design platform that describes the creative, continuous development process of the complete block production. Concrete blocks of all types are realised. In this way all shapes, geometries, surfaces and functions in concrete block products are created on the basis of natural models or firm specifications. Each type of stone is given its own character and no two stones are alike – and yet each is fully reproducible. Through equivalent market understanding, Kobra offers realistic product support for the development of new products and special technical solutions.

■ Holger Stichel and Kati Woityczka,
Kobra Formen GmbH, Germany ■

Vision to reality

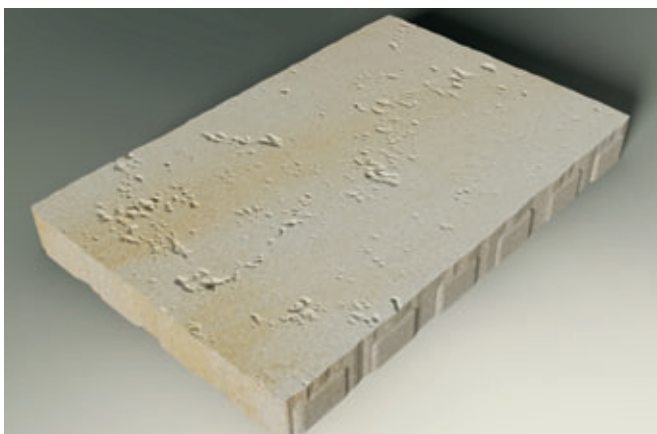
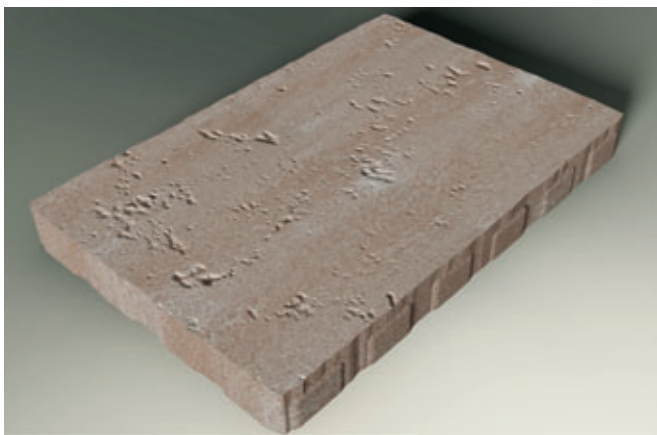
Today, concrete blocks are one of the most popular building materials for pavements. Composed of natural substances – cement, the aggregates sand and gravel, and water – this building material offers an innumerable variety of diverse, visually impressive and functional shapes and surfaces in road, landscape and garden construction. Concrete blocks have an extremely high load capacity and their design versatility makes our present-day habitat inconceiv-

able without them. This requires a high degree of creativity and know-how in the creation and manufacturing process. Kobra supports its customers in every challenge and assists them in the development of new stones and stone systems – from the idea to the finished product – with mature and innovative solutions.

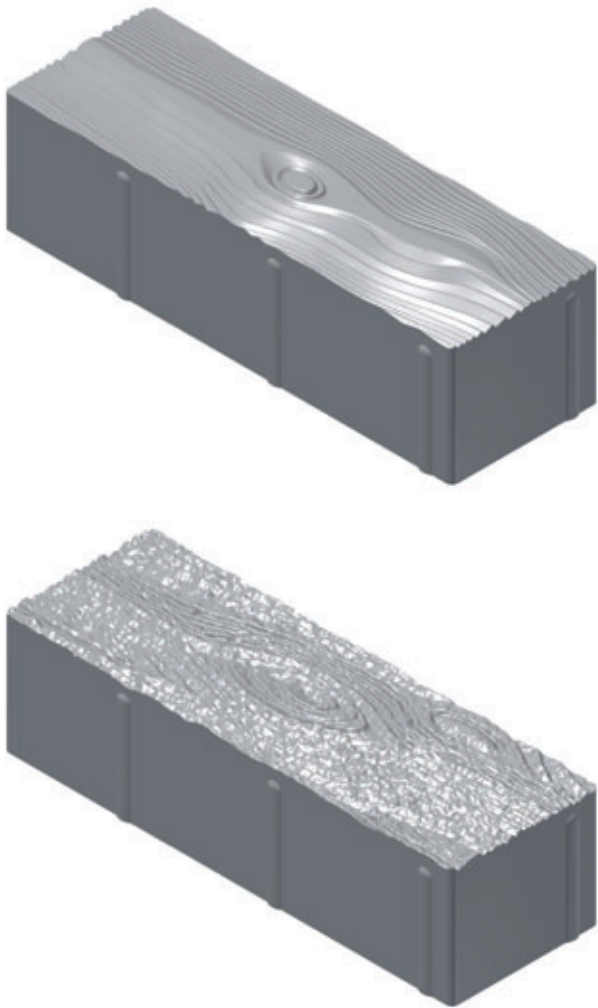
The customer determines the design – individuality in modern mould construction

Sketches, pictures, natural stones or 2D templates are adequate for the production of true-to-scale stone models in virtual 3D

drawings as well as different surface modellings, shapes and geometries. Technical drawings of individual stones, stone systems, laying patterns and board occupancies are made available to the customer on the basis of these specifications. Colour graduations can be made visible and used to determine a suitable colour pallet for the customer's product portfolio. Close co-operation between the concrete block manufacturer and Kobra is important during the development phase of new products, since designs and drawings are exchanged and finalised.



Wide variety of stone models



Each stone development includes the CAD volume models.

Kobra works with state-of-the-art CAD and CAM programs. This enables the creation of a multitude of surface variants, some with very slender elements, which cater for the strongly increasing differentiation of surfaces on the international market. The capability of each product to be produced, packaged and stacked is checked during the development phase in order to ensure trouble-free manufacturing of new products. The customer's existing products can also be included in the development phase and checked, for example, to determine whether they are suitable for installation together with new developments. The archive of the Stone Development Department at Kobra currently contains over 3,000 different basic surfaces and around 33,000 different stone models. Kobra offers its customer the production of a prototype during the order phase. On the one hand, a 3D model can be produced in which the characteristics of the stone are visible in detail. The customer can choose between a visual 3D model in the form of a PDF file or a real 3D print. On the other hand, sample tamper shoes can be manufactured which the customer can use in a test process for the production of the finished concrete blocks, especially for the determination of the surface and chamfers.

This creative development process also includes the design and production of the appropriate mould. Kobra pays attention here to sustainable and high-quality manufacturing methods. The modular design of the mould, which is a precision tool, enables the cost and time-saving exchange of spare parts. The service life of the mould is



PRECISION MATTERS



Diana Mueller
[Department CNC milling]

Your advantage in Accuracy

We manufacture molds for the concrete block industry using the most advanced milling technology and highest expertise.



Visualisation possibilities with different colour graduation.

significantly increased with the hardening standard »Optimill carbo 68 plus™«, which has a hardness quality of 68 HRC, thus supporting economic and environmentally friendly concrete block production.

Well-thought-out from the outset

At the beginning of a development phase for a new stone system, the grid size is the determining starting variable for the format and the area to be paved. In principle, the following applies:

$$\text{Stone size} + \text{joint width} = \text{grid size}$$

This also applies to the use of different sized stones within an area. The calculation and adherence to the correct grid size are indispensable for a perfect installation.

Location of the lobes

The location of the lobes on the stones is based on the grid size. These do not automatically determine the joint width. Lobes protect the edges of the stone or have an interlocking effect, depending on the type. There are many different variants: radius, trapezoidal or double lobes are common. Stone tolerances and the “growing stone” are compensated with the stone minus allowance. Special ID lobes can be designed for marking a company’s own products; these allow the respective stone producer to be recognised and determined. It remains to be said in addition that bases can represent an alternative to lobes. These are used, for example, for products with embossed outer contours.

The function of the joint

Each pavement is only as good as its joint filling. The correct joint filling prevents the

breaking-off of edges and guarantees the elastic load-bearing behaviour of the pavement through horizontal force transmission. In Germany the joint width is standardised according to the stone height. The lower limit of these standard values guarantees an adequate joint width, enabling complete backfilling of the surface. The upper limit of these values in turn guarantees that the stones support one another and ensures the transverse force transmission.

The function of the chamfer

There are chamfers in the variants standard and radius. The trend, however, is clearly towards plateau run-outs and micro-chamfers. The advantages of these two variants are minimum rolling resistance, edge stability when vibrating the stones during instal-

lation and the lowering of traffic noise. Regardless of their shape, chamfers protect the edges of the stones during packaging and when compacting after installation. Apart from the visual aspect, chamfers reduce trip hazards, for example in the case of embossed surfaces, and enable stronger compaction in the boundary area.

Composite action

The composite action of a surface is defined by the basic geometry of the stone, the interlocking of the lobes and the method of installation. Depending on the shape and installation of the stones, systems are possible with horizontal interlocking and also with simultaneous horizontal and vertical interlocking and additional anchoring in the ground. Fundamentally, the fol-



Sample tamper shoe for real test production in an existing concrete block mould.



Sample from normal production conditions.

lowing applies: Formations with cross joints are not suitable for motor vehicle traffic. Continuous joints in the direction of travel are to be avoided. Using rectangular and square stones, decorative paving patterns can be created whose straightness is particularly emphasised by a circumferential chamfer. A vivid surface pattern is created by installing different plays of colour.

Large variety of shapes

On the basis of the properties listed above, there are innumerable installation possibilities in the area of concrete pavers alone, which differ in size, formation, colour combinations, area of use and design.

Decorative paving

In the area of decorative paving the most diverse optical variants are possible, from formal aesthetics to Mediterranean ambience. The trend is still towards concrete products in a natural stone look with embossed surfaces and dummy joints, as well as various stone formats and shapes within an installation in combination with differently dimensioned chamfers and spacers. Kobra provides support for the development of surface samples for installations and colour variations in the stone and establishes an optimum connection between design and function.

Large sized paving

Large sized paving for the layout of large areas in the urban and landscaping sectors underlines a modern, urban method of construction. Pavers and slabs with edge lengths up to 1,250 mm and nominal thicknesses > 120 mm can determine the characteristics of both puristically designed large areas and varied nature-oriented



The name OMAG stands for quality and tradition - worldwide!



As an independent German company we wish to remain your reliable partner in the future. With our core competency acquired over many years and our performances in the fields of mechanical engineering, service, spare part manufacturing and repair, we will tie in seamlessly to the traditional OMAG strengths: German-made quality, innovation and durability of the products.

We would be pleased to convince you of our capabilities and look forward to your enquiries!



OMAG Service GmbH

Managing director: Jakob Weets
Westfalenstr. 2 • D-26723 Emden
Phone +49 4921 805 0 • Fax +49 4921 805 401

www.omag.biz • info@omag.biz



RELIABILITY

INNOVATION

QUALITY

FLEXIBILITY



Possibilities to use 3D volume models in customer marketing.

zones. Regardless of whether the slabs are square or have long, slender bar formats in various widths, their combination with embossed surfaces and colour variations produces a large number of interesting combination possibilities when installing.

Ecological stone systems

Ecological stone systems are ideally suited as water-permeable paving for surfaces that are intended to quickly absorb high amounts of precipitation and dissipate them slowly into the substrate. The surface conception of the stones and the joint pattern within the installation assist the seepage of water into the ground and are therefore characterised by particular environmental friendliness. Almost any design paving can be developed as an ecological stone variant.

There are further, infinitely large product varieties for masonry and slope reinforcement systems, flat and high kerbstones and hollow blocks and formwork blocks.

Kobra is a development partner and solution provider for sophisticated products and attractive design in connection with concrete block moulds. Kobra stands for sophisticated and innovative technology in this segment. Kobra offers realistic product support for the development of new products and special technical solutions. In doing so, the customer's wishes and ideas always come first. The effect of new stones, surfaces and facing colours on individual stones or installations can be visually and reliably evaluated even during the product development phase. Common formalities of the German market are observed in the implementation. Before each season, in jointly developed customer projects, ideas are discussed and filtered, checked for feasibility and finally concretised on schedule.

Since its establishment in 1991, Kobra has oriented all its technological developments to the needs of its customers. Numerous innovations are the result of close co-operation with concrete block manufacturers all over the world. The combination of intelligent technical solutions and expert support – as early as during the development process – will continue to be an important component of the services provided by Kobra in the future. ■



Kobra sponsored the free download possibility of the pdf of this article for all readers of CPI. Please check the website www.cpi-worldwide.com/channels/kobra or scan the QR code with your smartphone to get direct access to this website.



FURTHER INFORMATION



KOBRA Formen GmbH
 Plohnbachstraße 1
 08485 Lengenfeld, Germany
 T +49 37606 3020
 F +49 37606 30222
info@kobragroup.com
www.kobragroup.com