

Kobra Formen GmbH, 08485 Lengsfeld, Germany

## Technological further development makes new designs and high quality possible in the production of concrete goods

The product development trends in recent years make new technologies and manufacturing equipment necessary for the production of concrete goods. The Hotshoe™ technology represents the technological further development of an old production trick for reliable manufacturing in the production tools of the concrete goods manufacturers – i.e. the moulds. High quality products, such as structured paving designs resembling natural stone, can be manufactured with the heated pressure plates of the Hotshoe moulds. Mixed layouts which are complicated to manufacture are implemented reliably and paving slabs measuring up to 1,200 x 1,000 mm can be produced with minimised scrap. The facing quality of dummy joint designs with deep-drawn chamfers is impressive and sandstone-like facing recipes in the fine-grained range are easier to implement. Desirable high w/c ratios in products for further refinement can be achieved without adhesion. The scrap rate due to adhesions at the point of demoulding, such as ‘lifters’, ‘pimples’ and ‘micro-tears’, are drastically reduced. The areas of application have become more varied due to new products and prove the ever broader manufacturability of quality products.

■ Dipl.-Ing. Holger Stichel,  
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Hotshoe™



Picture taken with a thermal imaging camera



Project with large-format concrete paving slabs

The Hotshoe technology from Kobra Formen GmbH has been continuously developed and today encompasses a complete equipment package, including control technology. The basic technical outfit is completed with a once-only installation of the main connecting cable, the control and regulating equipment and the cable to the machine's tamper head. Each mould is thus controllable. Hotshoe moulds are manufactured for a specific product in accordance with the pressure plate surfaces to be heated and the  $\Delta T$  values to be achieved. Temperature sensors installed directly at the surface guarantee reliable reheating to the target temperature in each production cycle and make Hotshoe a practicable feature of mould technology.

Many years of practical experience show that the best results are achieved at process temperatures between 50 °C and 70 °C. Hence, the same conditions are realised at different times of the day and during different seasons, and fluctuating concrete temperatures are avoided. Increased w/c ratios in the facing concretes result in improved final strengths for an even higher-quality further refinement without errors at the point of demoulding. Filling problems in the case of differently sized stone field volumes in mixed layouts are no longer visible. Facing concretes with higher powder and fines contents and high cement contents are processed without problems. Heated pressure plates produce smoother surfaces with a brilliant sheen. Rough micro-tears, as produced by cold pressure plates, disappear. Horizontal lateral demoulding in the case of lateral profiling is made easier for the first time by Hotshoe. Very complicated geometries, such as high kerbstones, are also configurable with Hotshoe. The economic benefit has

been proven by the drastic lowering of the scrap ratio, which is particularly effective in the case of products in large lot sizes.

The Hotshoe technology has been developed further for combined application with other process technologies, from pressure plates on anti-vibration bearings and compulsory tamper head guides to multi-stage tamper heads and/or hydraulic and pneumatic multi-stage technologies. Current innovations of the Hotshoe technologies even achieve stable process data with small surface areas up to a diameter of approximately 30 mm. Visual examinations show the differences in the surface compared to cold production. Damage related to concrete technology has not been found with the process parameters mentioned.

An advanced research project currently being conducted by Kobra Formen GmbH with industrial partners is aimed at searching for the physical principles of the aforementioned effects so that the results can be used as the basis for further technological improvements.

### FURTHER INFORMATION

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