

FC Sonderkonstruktion GmbH, 93086 Wörth/Danube, Germany

# Innovative finishing line for high-quality pavers and masonry blocks at Delfing in Saffig, Germany

Delfing Baustoffwerk GmbH & Co. KG in Saffig is a family-owned business which is now successfully managed by the second generation of the family. Above all, Delfing produces pumice and lightweight concrete wall materials and is a partner in the KLB sales company. Five years ago, on account of the growing requirements, the decision was taken to also manufacture garden and landscaping products. This resulted in the creation of the KLB-Gala brand. With the new finishing line the product range has now been extended by decorative paving, quarry stone walls, steps and palisades with high aesthetic standards.

■ Bernd Rudler, FC Sonderkonstruktion GmbH, Germany ■

The contract for the supply of the plant was awarded to FC Sonderkonstruktion GmbH. The objective was clearly specified: to conceive a flexible plant with various treatment methods in order to obtain high-quality and different end products.

Since, for example, an existing masonry milling unit was also to be integrated, several concept variants were elaborated together with the customer. Finally an optimum solution was found.

The plant consists of two connected lines with a common packaging station. Pavers, masonry blocks, split blocks or other concrete products with a maximum working width of 1250 mm can pass through the main line. The top sides of the products are refined here. The auxiliary line is for the splitting of concrete blocks and the refinement of lateral surfaces.

The stone layers are packaged on different pallets, which are removed by a fork-lift truck.

The treatment machines can operate both separately and together with one another. The possible combinations result in a multitude of different products.

Depending on the selected recipe, the feeding of the products for the main line can take place either directly from the board after hardening (bypass) or pallet-wise from the storage area. Optimum flexibility is thus achieved.

A robot with a hydraulic 4-sided clamp unstacks the stone layers from the pallet or picks up the layers from the bypass and sets them down on a sliding table. Automatic height measurement is integrated in the hydraulic clamp so that each stone layer is

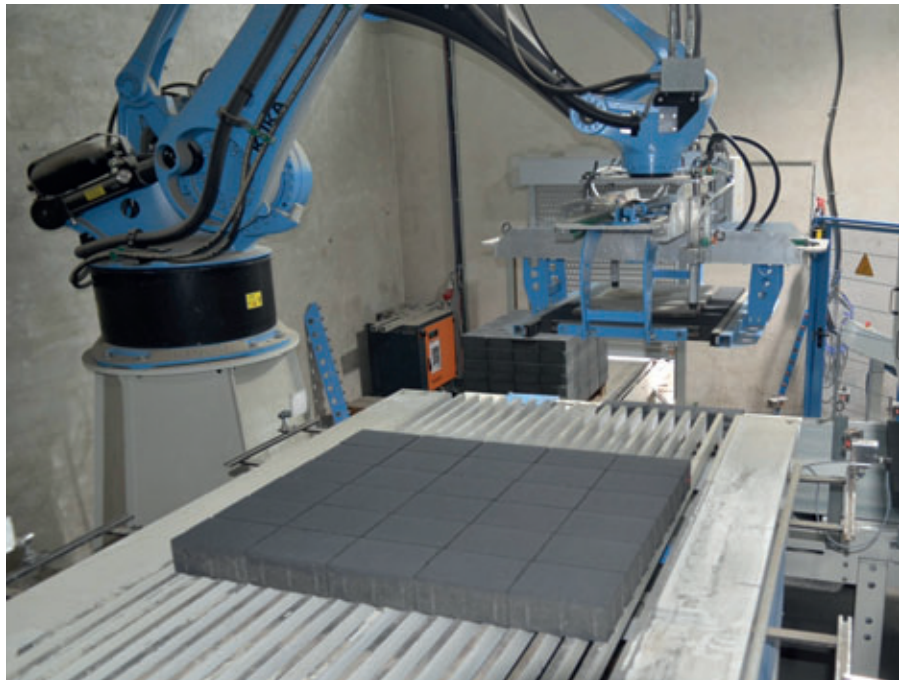


Fig. 1: Main line – feeding of the products in bypass or as stock products



Fig. 2: Rustico – aging

gripped evenly. This prevents malfunctions, especially when unstacking stone layers from the pallet. The empty pallets are similarly placed by the robot onto a chain conveyor and stacked.

A slide forms the stone layers into an endless line and pushes them into the "Rustico"

aging/bush-hammering machine, where they are treated by a multi-row hammer mill. Through the use of different tools and variable settings, various treatment results are achieved, from light to rustic edge breaks. The stones are lifted slightly by means of a patented technique, as a result of which the edges are free and can be better broken.



Fig. 3: Soffliner – treatment from above

The surfaces are preserved and do not have to be additionally protected by foil or similar.

With special tools the machine can also be used for bush hammering.

The machine is placed inside an acoustic enclosure in order to reduce the noise level.

Following the Rustico an additional machine was integrated – the “Soffliner”.

The patented Soffliner treats the surfaces and edges of the products in a different way. Elastically suspended tungsten carbide tools treat the surfaces of the stones. The fines are thereby dislodged from the surfaces of the stones. The most diverse looks are achieved, depending on the setting of the tools and the concrete mixture. The colours of the stones are particularly emphasised, or surfaces are created that look like blasted products. The effects are astonishing, especially in conjunction with a brushing machine.

The resultant waste is removed to a container via a transverse conveyor belt.

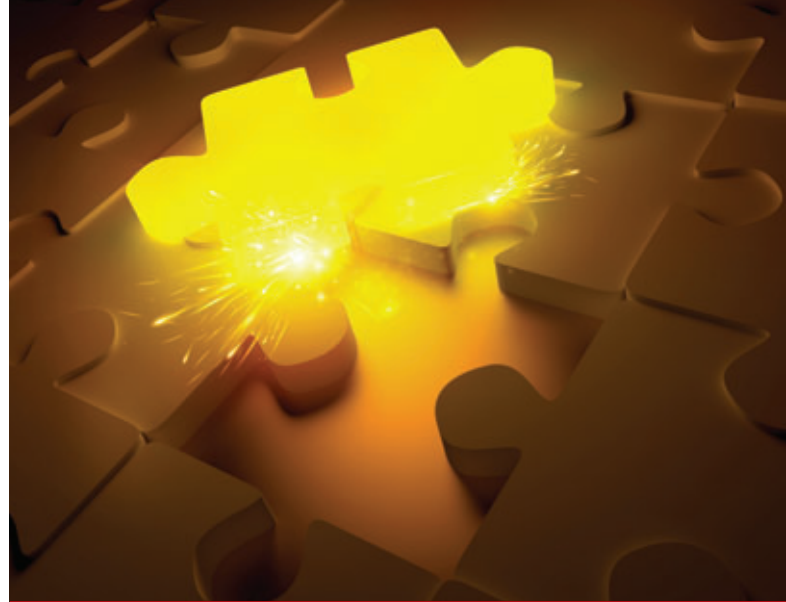
This is followed by a brushing machine with four stations. This is where the honing of the products takes place. The surfaces are freed of cement and fines. Fine and in some cases velvety surfaces are created through the use of different brush grades. The speed of rotation of the brushes is infinitely adjustable by frequency converters. This allows different degrees of hardness to be achieved. The contact pressure is monitored by an automatic current control system and the brushes are automatically controlled according to the adjusted value. The brushes are moved away from the stone surface when the conveyor belt is stopped in order to avoid the formation of streaks.

Following the brushing machine the endless lines are separated into individual layers again and transported on a slat conveyor. After quality checking, a surface protector is automatically inserted for each layer and the layers are prepared for packaging.

The core of the packaging station is once again a robot with a hydraulic 4-sided clamp.

The stone layers are picked up from the slat conveyor and stacked on a pallet.

The empty pallet towers are placed by a fork-lift truck onto a feeding conveyor and transported to the robot. The robot removes an



## THE UNIQUENESS OF THE SHAPE

PEGASO STAMPI WILL MAKE IT FOR YOU



DESIGN AND  
PRODUCTION OF  
MOULDS  
FOR CONCRETE  
ELEMENTS

[www.pegasostampi.com](http://www.pegasostampi.com)

**Pegaso Stampi S.r.l.**

Via Tevere, 1/2 - 53036 Poggibonsi (SI) ITALY

Tel. +39 0577 992635 Fax +39 0577 985866

[info@pegasostampi.it](mailto:info@pegasostampi.it)

**MOULDS FOR PAVING STONES  
MOULDS FOR GARDEN ELEMENTS  
MOULDS FOR BLOCKS AND KERBS**



*Italian  
design  
for your  
products!*







Fig. 4a: Pavers treated by Softliner and brushes



Fig. 4b: Pavers treated by Rustico and brushes



Fig. 5: left – brushed only, right – Softliner with brushing

empty pallet from the stack and transports it to the packaging station.

The loaded pallets are automatically provided with a cover foil and then horizontally and vertically strapped. The finished packages are transported to the outdoor area and taken off the conveyor by a fork-lift truck.

The auxiliary line is used for the splitting and lateral refinement of products.

The products are transported in circulation; only the packaging robot is used to handle the layers.

The pallets with the blanks are set down by a fork-lift truck onto the previously emptied empty pallet feeding conveyor and transported to the robot. The packaging robot removes the blanks in layers and places them on a slat conveyor. The empty pallets are gripped by the robot and placed on a buffer station ready for packaging.

The blanks are cycled forwards to the splitting machine and fed sideways by a layer pusher into the splitting machine. The block is pushed precisely to the splitting position by means of an integrated displacement measurement.

The splitting machine has a splitting force of 120 tonnes. Products up to a max. width of 1200 mm and a height of 350 mm can be split. The machine operates with mobile upper and lower blades and is equipped with single blades. In order to split thick products, the side blades are also activated in order to obtain a better result.

After splitting, the products are pushed onto a transverse slat conveyor. The end pieces are transported to the right on a conveyor belt and automatically ejected into a waste container.



Fig. 6: Brushing machine with packaging unit



Fig. 7: Splitting machine with inlet into the Softliner-wall

The split stones are fed in rows to the similarly patented "Softliner-wall". The elastically suspended tools now treat the side surfaces and edges of the products in a continuous flow process (two-sided or single-sided). Due to the many different possible settings, the most diverse results are once again achieved. The partially visible split edges are rounded, the peaks of the split faces are chamfered and partly also blurred. This produces a very natural stone, although the concrete mixture also plays an important part in the result. This aging method also enables the trouble-free refinement of hollow blocks.

In combination with the subsequent separately adjustable brushing stations, very soft products are produced. The surfaces become velvety and smooth, clearly perceptible with the hand. As a result the products are also less sensitive to dirt, since the pores are closed to the maximum degree.

The Softliner-wall is also suitable for the treatment of smooth, non-split surfaces. Very beautiful, completely changed fair-faced stones are produced.

Conveyor belts on which the waste is automatically conveyed outside to a container are mounted parallel to the splitting machine and the Softliner.

After treatment the stones are collected into rows on an accumulating conveyor.

These are pushed away to the side and formed into layers. The layers are then pushed onto the slat conveyor of the main line and transported back to the packaging robot. This robot picks up the layers and stacks them on the packaging line. The finished packages are then removed by a fork-lift truck.

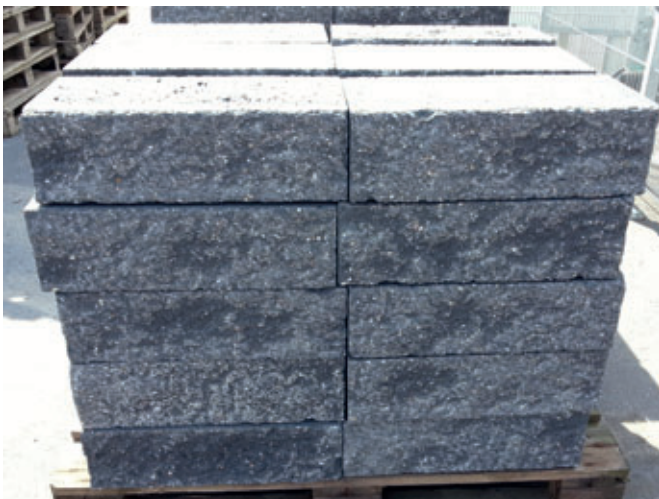


Fig. 8: Split products treated with Softliner-wall

# The base plate

**for the concrete and pumice-stone industry**



- ➔ Available in all dimensions, max. length 1800 mm, max. width 1430 mm, max. 80 mm thick.
- ➔ Version with or without tongue and groove.
- ➔ Pine or larch from best forest stands.
- ➔ With throughgoing twisted round steel 10 mm (special steel III a) or with threaded rods M 8 and M 10 mm, U disks and self-locking nuts.
- ➔ Edge protection with galvanized profiles in different dimensions and forms.
- ➔ The base plates are planed on both sides, impregnated with colourless biodegradable forming oil.
- ➔ Technical wood drying guarantees that wood humidity can be adjusted to the local conditions.
- ➔ We consider customer's requirements in production.

**Eckart Holz GmbH**  
**Holzbe- und -verarbeitung**

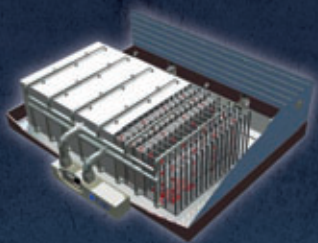
Kallbachstraße 48  
36088 Hünfeld-Michelsrombach, GERMANY  
Tel.: +49 (0) 66 52 - 25 77 · Fax: +49 (0) 66 52 - 55 55  
E-Mail: [Info@eckart-holz.de](mailto:Info@eckart-holz.de) · [www.eckart-holz.de](http://www.eckart-holz.de)





# CONCRETE CURING SYSTEMS

## ENVIRO CURE & AIR CIRCULATION



Reduced Curing Time  
Ability To Reduce Cement  
Control of Efflorescence

## VAPOUR CURE



Easy to Operate  
Low Maintenance  
Cost Efficient

## RAD THERM



Piping Does Not Interfere With Production  
Preheats Forms / Moulds / Beds  
Option Of Maturity Curing Software



WWW.CDS-CONCRETE.COM

UK: +44 1782 336666 USA: +1 973 641 6857  
info@cds-concrete.com

Cinderhill Industrial Estate, Weston Coyney  
Road, Longton, Stoke-on-Trent,  
Staffordshire ST3 5JU, England



Fig. 9: Hollow block treated by Softliner-wall

The products can be fed back into the plant if they are to be subjected to a 90° split or rework.

All the treatment machines are connected to a central dust extraction system. The piping is fitted with automatic shut-off valves so that extraction takes place only from the main or auxiliary line, depending on the selected recipe.

The plant is equipped with an S7 PLC. A touch screen terminal enables the setting and visualisation of all relevant data. Separate local controllers in prominent places facilitate the operability of the section. All setting parameters can be stored as recipes and can quickly be activated when changing the product.

The plant was built according to EU regulations and is subdivided into various safety zones. Particularly dangerous areas are secured by protective fences. The doors are electromechanically locked and can be opened only after confirmation of the request. Overlapping areas are fitted with a muting system. The quality checking area and the pick-up/set-down points for the fork-lift trucks are equipped with safety light barriers.



Fig. 10: Input of the blanks for the 2<sup>nd</sup> splitting with post-processing

The new finishing line puts the Delfing company in the position to manufacture highly refined products. Thanks to the special surface treatments and charming colouring, the new product types have particularly classy looks. The masonry blocks also find favour with the customers thanks to this manufacturing method, which is unique in the Rhineland in this form.

### FURTHER INFORMATION

## Delfing

Baustoffwerk GmbH & Co. KG

Delfing Baustoffwerk GmbH & Co. KG  
Ochtendunger Str. 30  
56648 Saffig, Germany  
T +49 2625 96390  
F +49 2625 963939  
info@delfing-baustoffe.de  
www.delfing.de

So wird  
gebaut



KLB Klimaleichtblock GmbH  
Lohmannstraße 31  
56626 Andernach, Germany  
T +49 2632 25770  
F +49 2632 257770  
info@klb.de  
www.klb.de



FC Sonderkonstruktion GmbH  
Reitfeld 4  
93086 Würth/Donau, Germany  
T +49 9482 938580  
F +49 9482-938581  
info@fc-maschinen.de  
www.fc-maschinen.de

