

Whatever you want...
Whatever you like...



Made in Germany

HEBBECKER, already having more than 30 years experience in cloth printing-and flocking machines engineering.

Flexibility for each requirement

Versatronic screen printing carousels work with up to 20 printing stations + various intermediate dryers

star-configured around the machine center. The squeegees are driven by servo-motors. This guarantees a precise contact pressure and an adjustable speed. In interaction with the different print courses the printing process is coordinated optimally with the materials and pressures. The results are highest precision with all kind of printing inks, low or high viscous (opaque). The modular software concept of the VERSATRONIC allows to change print configurations flexibly and to realize customer's requests with low effort.

In the meantime all over the world thousands of textilprinters work successfully with the concept of the design for carousels developed by Rolf Hebbecker in 1971. It became a status for other manufacturers of textile printing machines and today it is still the most important basis for all VERSATRONIC carousels. Printed textiles win particularly as advertising media more and more importance.

It is possible to print all kind of motives such as fashion design, photo-realistic design etc. on t-shirts, sweat shirts, polos, jackets, caps and bags. Hebbecker GmbH is one of the leading manufacturers of textile screen printing machines, flock machines and dryers (both intermediate dryers and final dryers). Through the modular design of the software the **VERSATRONIC** realizes to change the printing process individually.

Anyway, if you need 4 colours or 20, the wide range of HEBBECKER modular textile printing machines meet everybody's requirements.

HEBBECKER GmbH

Stettenstr. 17
72131 Offerdingen
Germany

Telefon +49(0)7473-9499-0
Telefax +49(0)7473-9499-55
e-mail sales@hebbecker.com
Internet <http://www.hebbecker.com>

**VERSATRONIC
printing carousels**

6 - 20 Stationes
-for all textiles
for Advertisement - Merchandising -
Events - Sports - Fashion -

**VERSAJET
Hot-air dryers
IR-Dryers
Flashcures**

**VERSAFLOCK
Print/Flock-Carousels
Flockequipment
Flock-Cleaner**

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FLOCK + PRINT

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Further conditions for a high-quality cloth printing.

The precision and the flexibility of the VERSATRONIC printing carousels are the basis for a successful print. Further parameters are to be considered as follows:

The quality of the Shirts is important for the results of printing.

Today for the artwork there are available good graphic-programs (Adope-Illustrator, Freehand, Corel-draw, Photoshop) to make it possible creating simple motives and complex photo-realistic motives for prints on textiles.

The Design/film

For automatic presses we recommend to work with half-tone 65 dots/inch. For using simulated half-tone colours we recommend an angling of 25° for all colours. Half-tones with elliptical dots (bead ruling) help to avoid moiré development.

Angling of 4 - colour half tone rulings

Strong colours like CYAN, MAGENTA and BLACK must always be at an angle of 60° from each other. This kind of handling minimizes the problem of visible moiré patterns due to the interplay of the raster rulings. YELLOW, being a weaker colour, can be set at a 15° angle from a darker colour. In half-tone printing, YELLOW should be on the vertical axis of the image, since a moiré caused by the stencil mesh is barely perceptible.

If we work only with C-Y-M-K elliptical Half-tone (assimetric) we recommend the angling

Yellow 0°

Magenta 135°

Cyan 75°

Black 15°

Avoiding moiré between film and mesh

In half-tone printing, an additional problem can result from unsuitable angling of the raster lines of a particular component colour in relation to the raster fabric. This moiré effect is most apparent in the 40 - 60 % range of multi colour printing.

The moiré can be wholly or partially eliminated in the following ways:

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Colour deviations

1. Printing speed

Variations of the printing speed can cause colour- deviations.

2. Squeegee

One other reason for colour deviations can be the squeegee:
Differing in blade hardness, changing the squeegee angle or a defective or inadequate blade edge can cause deviations in colour.

Solving the problem:

- Adding ink as frequently as possible helps to prevent variations in density and viscosity of the ink.
- Printing parameters established at the art of printing must be maintained throughout the run.
- The finished result must be continually compared with the original
- Distortion
Non contact printing with lift-off distorts the stencil carrier, even before consideration of the mesh shift caused by the squeegee action. The change of distortion of the impression depends primarily on the distance between the stencil and the printing substrate (off-contact).

The friction of the squeegee on the stencil leads to a shifting or distortion of the imprint in the direction of the squeegee motion.

Register inaccuracies are influenced by:

- Ink viscosity
- Squeegee pressure, shape and position
- Squeegee hardness
- Printing speed
- Surface condition of the substrate

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The selection of the squeegee-blades depends on the motive, the textile and the selected printing ink.

Usually with aluminum flood-bars one floods, i.e. the open meshes are filled with ink, afterwards in the contact or with off-contact the ink is transferred if possible with only one strike to the textile. For low viscose inks we use PU squeegee rubber blades with a shore hardness of 65° and for high viscose inks we use 75° shore. For halftone-prints or for fine lines it is recommended to work itself with a duplex squeegee-blade (hard back 95° shore and soft blade surface 65° shore) or with a RKS squeegee blade (back rigidly, blade surface softly 65° shore)

The screen fabric is to be selected setting of tasks i.e. the motive for pressure accordingly. Importantly with it is also the tension of the screen fabric. The higher the quality of the pressure is and the finer the fabric is, the higher should be the tension (not below 20 Newton). The stretching of the meshes must be set parallel to each other.

The ink is according to the requirements of the motive to select the textiles and the possibly existing regulations of the client.

Intermediate dryers

There are many variants on the market. Hebbecke is very innovative also in this area and offers again developed equipment. Most of the intermediate dryers need a lot of energy because in short time they have to achieve a high temperature. We solved this problem with our new IR radiators.

Due to the new radiation type, the absorption and /or the reflection of the IR jets is in relation to different colors more neutral. Thus these IR emitters are harmless and are not as aggressive to the textile as short-wave emitters. The textile will not be damaged or destroyed. This cannot be achieved with short-wave emitters which have too high temperatures in connection with a too long drying time. An important part regarding the process security are the inserted pyrometers, which measure permanently the Radiation-temperature on the textile and/or the ink. Thus a constant temperature is guaranteed during the entire duration of printing.

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Drying and fixing of printed textiles

The printing inks frequently used in the cloth printing are water-based dispersions. The thickness of the layer is about 0.05-0.3 mm (depending on printing ink and textile). The contents of water is between 60 to 90%. To approve bleaching resistance the water of the ink has to evaporate. This effect and the heat are the condition of starting the chemical process of cross-linking.

First step: water is evaporating

Second step: cross-linking of the ink due to the heat

Different types of heating systems

A Infrared systems

This kind of drying is basically used for fixing of plastisol inks. There are short, medium and long waves. The difference is that short waves are drying the surface and long waves are drying lower coatings.

Infrared is reacting differently on different colours. I.e. black is heated quicker than white.

The reason for the decision of this kind of drying might be that it is the less expensive one. But be careful: It is only less expensive in the purchase price of such a dryer. The energy costs are relatively high. This system is not really recommended for water based inks because the way they have to dry is in two steps, as mentioned above: First the water must evaporate, only after that is the second step, cross-linking of the ink, possible.

Even if you use self-cross-linking inks it means that you need about 100% more time for drying. For hot fixing water-based inks an IR-dryer would need much more time for drying and fixation than for plastisol inks. This means that the heating capacity is lower for water based inks when using an IR dryer. Another possibility is to make longer the IR dryer accordingly, but this means that you will need more energy – and also more space. So the advantage of saving money in the purchase of such a dryer is no advantage any more if you consider how much energy you need.

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B Hot air systems

Circular hot air systems are the ideal kind of drying for all kind of inks. The hot air is used to transfer the heat energy into the ink. During this process the water of the ink is evaporating, the humidity is absorbed by the hot air. Due to the guided air circulation in the dryer the humidity is taken out of the system.

Advantages of this system compared with IR dryers:

- it works without any relation to the colour.
- due to the air circulation energy can be saved
- the circular air-system has a very high constancy of temperature – inside the VERSAJET Dryer about + / -1,5°C

The Standard size of the VERSAJET-DRYER is 4 m long – 1,20/1,50/1,8 m belt width. Optional there is the possibility to add a passive heating zone with 1,7m length, which means that in the active heating zone (4 m) the air is circulating and in the passive heating zone there is only heat without air-circulation. After the active zone, the water/solvent is out of the ink and the passive zone is used for the curing-process.

Different kind of hot air systems

Now that we are sure that a hot air system is the most efficient and the most qualified system, we have to choose the kind of heating energy.

1. Electric
2. Steam
3. Diesel
4. Thermo-Oil
5. Gas

Point 1 to 4 are heating energies which work indirectly, this means hot air is produced through a heat exchanger.

Point 5 – Gas heated dryers work directly. Direct because no heat exchanger is assigned. The energy of the gas flame is transferred

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without any loss to the environment. Special gas burner conceived for this kind of heating are installed the circular air-channel. Circulating air and heat of the gas flame are mixed homogeneous and optimally within the burner range. The heating-up time is extremely short, to reach e.g. a temperature of 150° C you need only approx. 5 minutes. Due to the modulating flame regulation quick changes of temperature are possible as well as a temperature constancy. The air is drying extremely quick, the moisture absorption is optimal.

An economical, clean solution

Extreme low consumption (only 2 – 5 m³ Gas / h, 2 – 4 kW / H)

The request for less harmful printed textiles is increasing. Companies like ADIDAS, NIKE or PUMA

Instruct their suppliers to go conform with the Oeko-Tex Standard 100 rules.

Oeko-Tex Standard 100

The Oeko-Tex Standard 100 was developed in 1992 and is a globally recognized test and certification system which serves as a reliable indicator to the consumer that the textile products bearing the label are not harmful to health in terms of possible toxic substances.

The list of criteria on which the testing for harmful substances is based draws on the latest scientific findings and is continuously further developed, so that year after year more far-reaching standards are set for the textiles which are tested for their safety with regard to human ecology. The test criteria and the associated test methods are standardised internationally and are used as a guide in numerous sets of terms and conditions for purchase and delivery, right through to the retailer.

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Future perspectives for textile printing

The t-shirt will increasingly be used for textile advertisements in the future and its position will be strengthened on the market. Studies on the advertisement market have shown that the t-shirt is a successful long-term advertisement agent. For that reason the number of printing colors will increase from 4 to 6-8, in order to add different, impressive pictures to company logos and names, for example: a picture of fresh bread will be added to the name of a bakery.

The **music scene** will want to use printing motives which use more than 12 colors. The motives will be even more extensive, apart from more colors the request will be for special printing methods like glitter, combined with 3-dimensional effects, colors, which will reflect in disco light etc.

There will be a great competition in the area of **sporting textiles** between the major sponsors, and therefore the motives on the textiles will bring forth new forms and shapes. Also in this area, the amount of colors will increase.

The **fashion textiles** will also increase their styles. Since the demand for better quality and the quality controls are increasing the textile printing industry will have to meet and exceed new expectations. The awareness of ecology will raise the request for harmless colors especially in the fashion area.

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Our company, Hebbecker GmbH, has already considered these tasks and offers already today the widest selection of all European producers. We are offering manual and half-automatic machines for beginners, automatic textile printing machines with up to 24 stations for professional textile printers, driers, automatic take-off units, laser positioners and other machines and units for the textile printing industry.

Our qualified staff will be pleased to listen to your questions. We will modify your machines as per your wishes and will come up with solutions that will work for you.

It is our vision to make you a successful textile printer.

HEBBECKER GMBH

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