MACHINERY MANUFACTURER

Zimmer AUSTRIA

PIONNERING INNOVATIONS
150 YEARS

COLARIS
towel printing

DIGITAL PRINTING SYSTEMS

04/2024

content

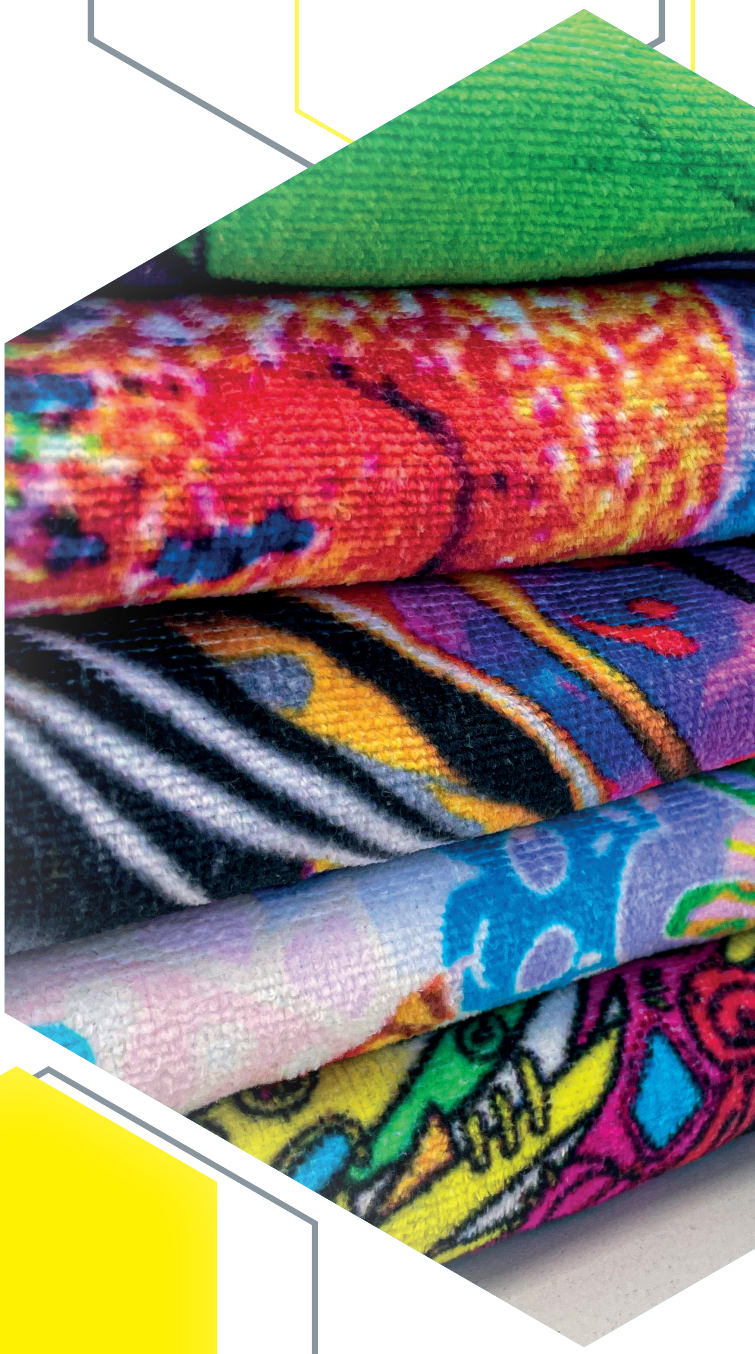
concept 4

print line with offline pre-treatment 6

print line with analog inline pre-treatment.....8

print line with digital inline pre-treatment 10

components 12



Highlights

- digital workflow from design through output
- open ink system allows free selection from certified ink suppliers
- permanent ink circulation system for efficient production
- automatic printhead cleaning system
- integrated printhead calibration system
- printhead recondition center for extended printhead service life
- modular concept for optimized print production
- environmentally-friendly, sustainable print process

Zimmer AUSTRIA

inline pre-treatment for a wet-on-wet printing

print width:
2200 | 2600 | 3400 mm

scalable capacity:
from 60 to 1100 m²/h

up to 12 color groups with up to 8 heads per group

concept

HOW TO PRINT TERRY FABRIC EFFICIENTLY WITH A DIGITAL PRINTER?

Different towel qualities and fabric structures require a flexible printing method. The key to success can only be a digital printing solution. Flexibility in terms of application amount, penetration control, and an efficient process for dye fixation are the challenges.

Heavy and voluminous products can't be printed with conventional digital printers as offered by other manufacturers. Such printers may be suitable for fashion fabric but are not economical for heavy fabric structures.

Terry fabric printed by a ZIMMER AUSTRIA COLARIS will look fresh even after many washes, as the penetration has been controlled precisely and ink has entered deeper into the pile. Improved fastness, strong, vibrant and brilliant colors for a long time are the benefits.

TERRY FABRIC
What does printing need?

- Fabric should be well prepared for printing. Mercerizing of fabric is strongly recommended for high quality towels with bright colors.
- Nice velour, mostly double sheared and brushed for fine and even surface.
- Well cleaned fabric surface to avoid uneven printing.
- Reactive printing needs inkjet pre-treatment for dye fixation.
  The same can be applied offline with a padder on a stenter or inline, with a foulard, a MAGNOROLL-GMA or a CHROMOJET-DPT digital pre-treatment applicator.
- Digital inkjet printing
- Hot air or steam treatment to fix the dyes with the fiber of the towel
- Post print washing to remove unfixed dyes and improve rub fastness

The most economical way of printing is the all inline process. It may involve a slightly higher investment, but gives 100% control of penetration, reduces ink consumption and logistical needs and delivers fabrics ready for post print washing and final finishing.

Shorter process means less handling, less energy consumption, less work force demand and finally a much faster process (ready to market).

FABRIC SUPPLY

Fabric may be provided on roll or from stack on pallets. The fabric feeding system needs fine alignment for a precise fabric positioning onto the printer from any kind of fabric supply.

TOWEL ALIGNMENT

Although we recommend the use of precisely aligned fabric for printing, some cases may require additional weft correction/alignment systems. Such devices can be incorporated into the line on demand.

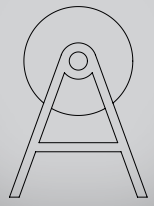
CUTTING AND HEMMING

Towels may be made from terry fabric with all over terry, from pre-fitted woven structure with flat hemming seam in weft direction, or in weft and warp direction.

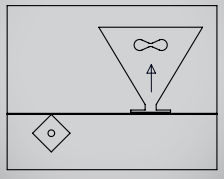
In case of hemming seams in warp direction, the towel length may vary and the print image needs trimming according to the actual towel length. ZIMMER AUSTRIA installs a special towel measuring and subsequent design trimming function in towel printing lines on demand.

towel print line
OFFLINE PRE-TREATMENT

1 A-frame unwinder

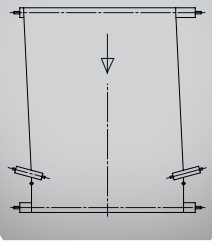


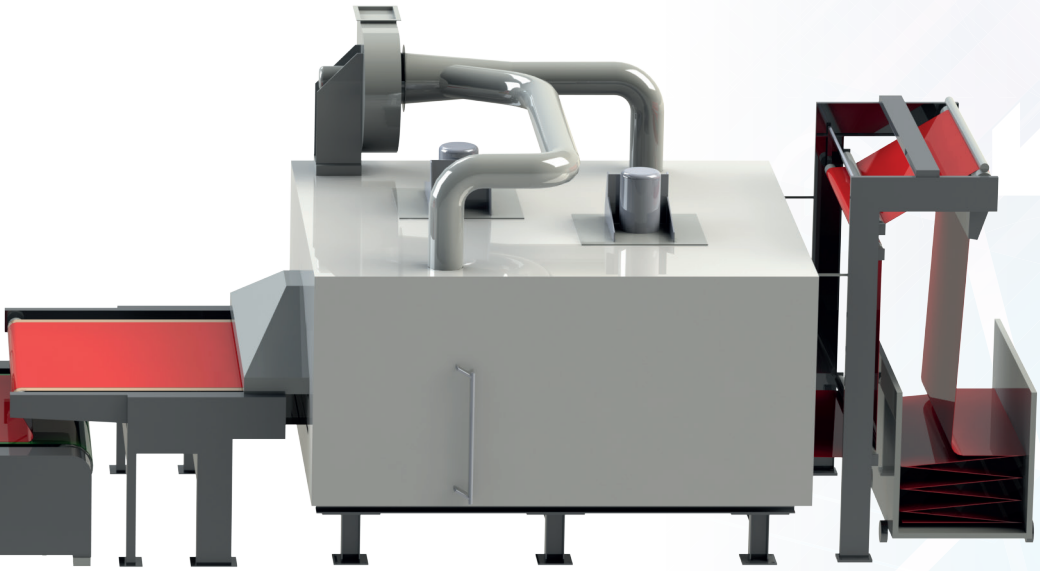
2 fabric cleaning device



optional

3 fabric guiding system





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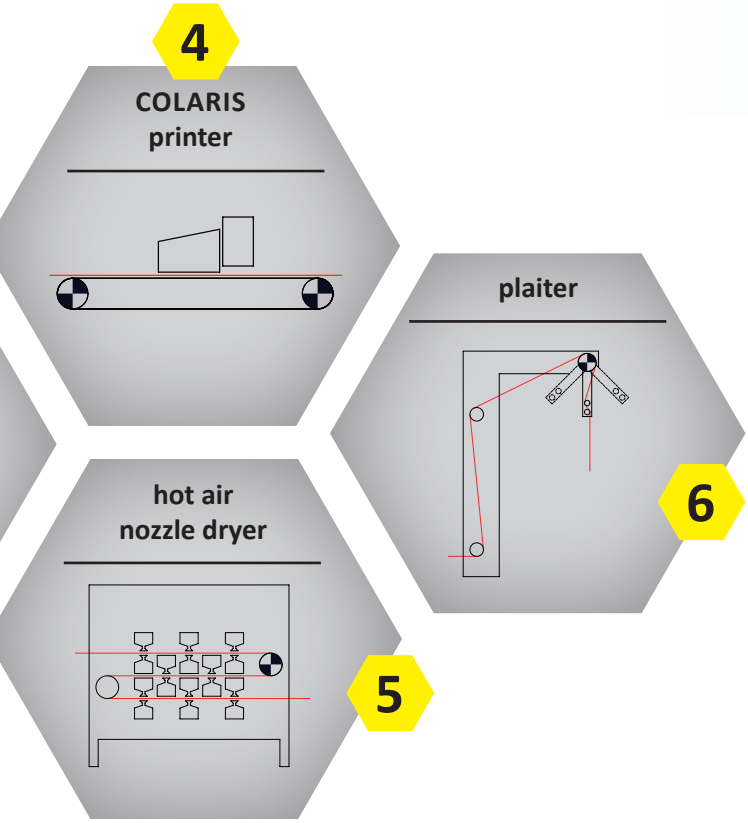


The offline pre-treatment process requires fabric which is prepared for inkjet printing and neatly rolled on A-frames.

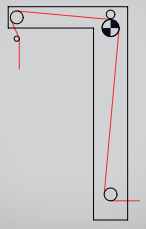
A fabric cleaning system may be installed optionally. Printing is done with a penetration booster system to achieve a good penetration and a strong color depth. Right after printing, the fabric is dried with a hot air nozzle dryer and goes then offline for dye fixation into a loop steamer or a thermosol fixation unit.

Finally, the fabric needs to be washed to avoid staining because of unfixed dyes and to achieve a good fastness level.

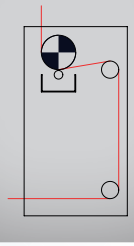
towel print line
INLINE PRE-TREATMENT

1 2 3 4

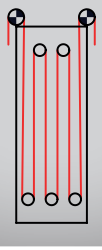
1 fabric from plait



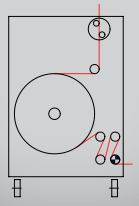
2 MAGNOROLL GMA



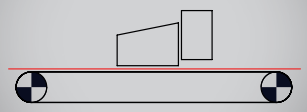
3 roller compensator

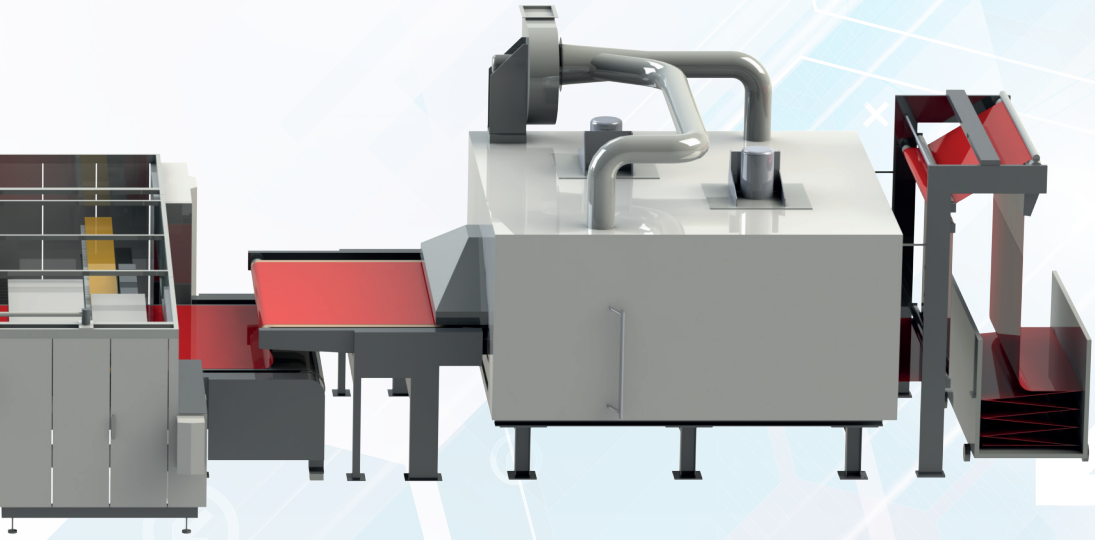


4 weft straightener

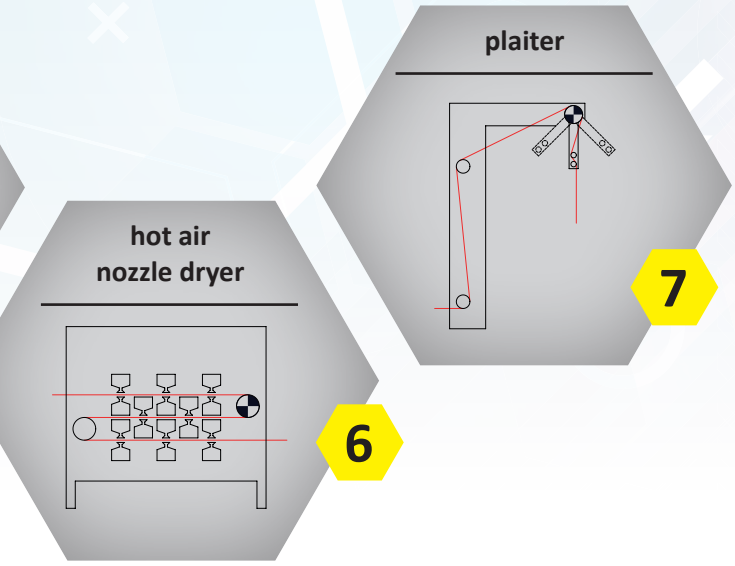


5 COLARIS printer





5 6 7

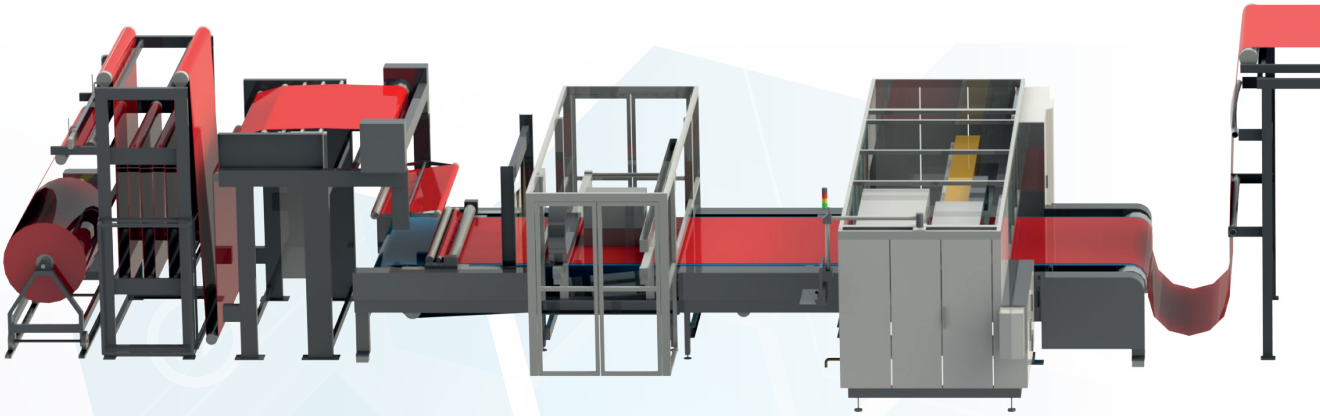


Terry towels are preferably printed with a wet-on-wet process. The chemicals required for reactive printing are applied trough a foulard or a MAGNOROLL-GMA applicator. The COLARIS is printing the design and passes the printed substrate on to the hot air nozzle dryer.

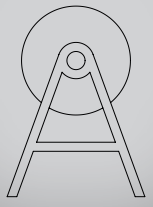
Finally, the dyes need to be fixed offline by a loop steamer or in a thermosol oven before the fabric is washed for good fastness.

towel print line

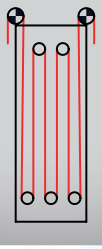
WITH DIGITAL INLINE PRE-TREATMENT AND INLINE FIXATION



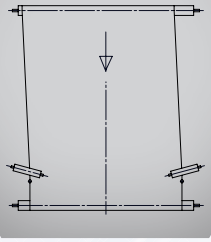
1 A-frame unwinder



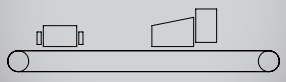
2 roller compensator



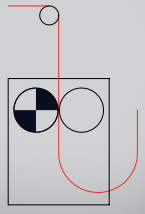
3 fabric guiding system

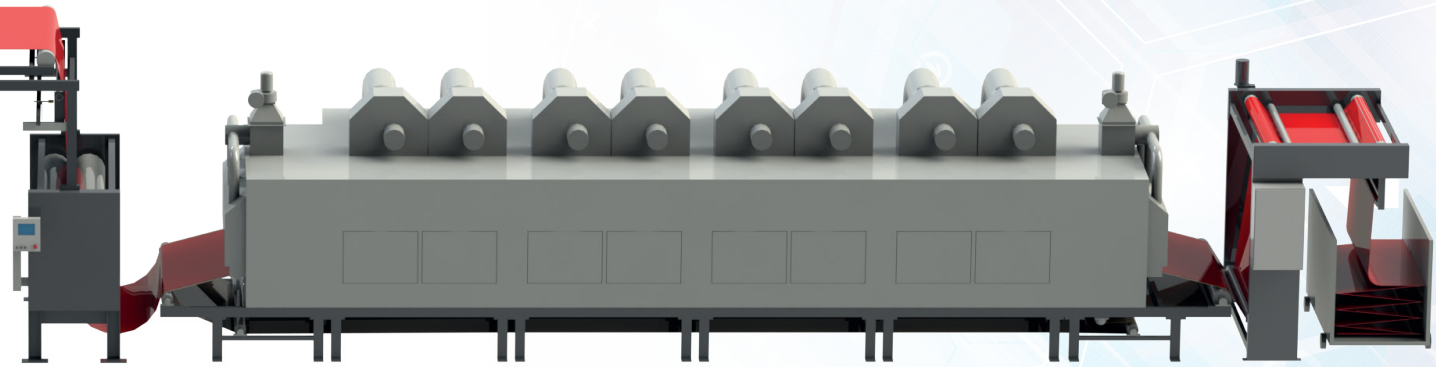


4a **4b** CHROMOJET inline pre-treatment and COLARIS printing



5 SUPRAPRESS penetration enhancer





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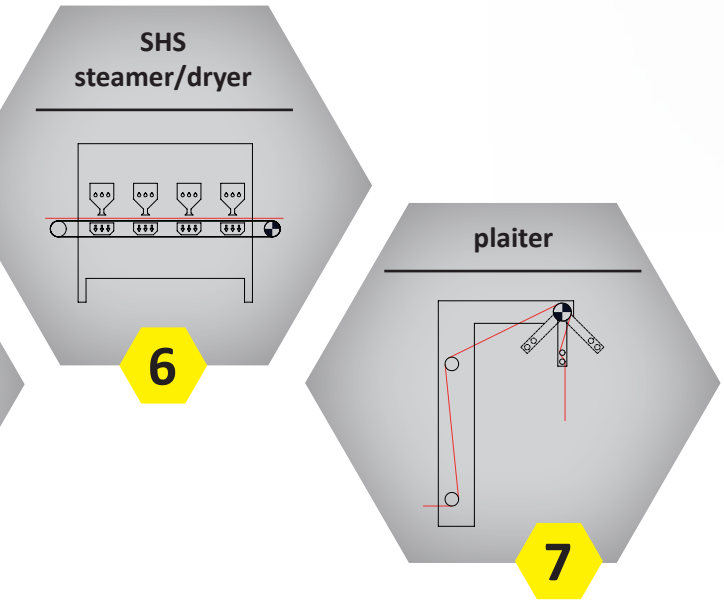


Well prepared and neatly aligned fabric is supplied from an A-frame. A roller compensator is used as a buffer for batch changes. The fabric feeding system aligns the fabric on the printer. The pre-treatment is applied digitally with a CHROMOJET applicator and is massaged into the fabric by a traversing press roller. Prints are applied by a COLARIS printer. Optionally, a SUPRAPRESS penetration enhancer can be installed between printer and dye fixation unit in case of loop pile and heavy substrates. Dye fixation is completed inline by a SUPRAFIX-SHS fixation unit.

This layout reduces the total energy consumption and makes the process more sustainable. Finally, post print washing and finishing will be required to achieve good wash- and rub fastness.

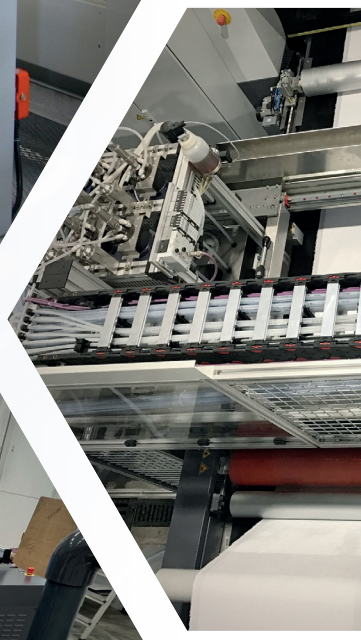
towel print line COMPONENTS

1 FABRIC FEEDING SYSTEM

Different fabric feeding systems are available to match different needs of customers and the process requirements.

2 MAGNOROLL-GMA APPLICATOR

MAGNOROLL-GMA or alternatively a foulard are used for application of pre-treatment chemicals, when printing wet-on-wet for optimized penetration results.



3 VACUUM TRANSPORT SYSTEM

The vacuum belt ensures a safe and precise towel transport during the printing process. There is no need for fixation by a permanent or wet glue. This makes the process more ecologic and improves the economics of digital towel printing.

5

PRINT CARRIAGE

The COLARIS print carriage can be laid out with up to 12 color groups. The print capacity can be tuned by flexible installation of 2 up to 8 printheads per color group.

6

THERMOCURE/DRYER

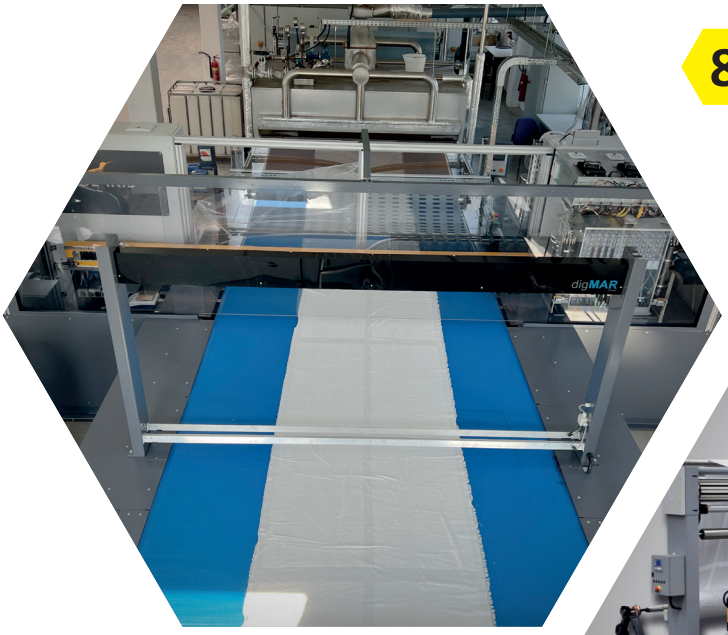
Various options for inline drying ovens are available. Hot air nozzle dryers are the most common option which is available with heating sources such as natural gas, thermal fluid circulation, steam or electric heating. Fabric capacity can be varied by single or multiple passes (up to 5 are possible).

4

CHROMOJET-DPT APPLICATOR

The CHROMOJET-DPT is a digital pre-treatment applicator directly mounted on the printing conveyor for ease of application control and to economize short runs with the wet-on-wet print process.

towel print line COMPONENTS



8 WEFT STRAIGHTENER

For printing of towel fabric from plait, we recommend to install the optionally available weft straightening system to correct alignment and possible bow and skew.

7 CAMERA SYSTEM

An automatic camera system to read the towel size and number of splits is available as an option. The camera detection supports print in position even when towel sizes have a certain deviation.

9 SUPRAPRESS

For printing on heavy towels, loop pile substrates or bathmats, we recommend to include the optionally available SUPRAPRESS penetration enhancer for optimized penetration results.

11 MODUS LOOP STEAMER

In case of high-capacity towel printing, the MODUS loop steamer is the best option as its capacity can easily be tuned to serve several digital and screen printing installations.

12 SUPRAWASH

SUPRAWASH is a high-performance post print washer, dedicated to the needs of cotton terry fabrics printed with reactive dyes. Even the best fixation process will leave unfixed dyes on the fabric. They need to be washed out together with remaining pre-treatment products, to achieve a good rub fastness.

10 SUPRAFIX

The SUPRAFIX-SHS fixation unit is a flow through steam curing system for inline dye fixation. It allows to fix the dyes without intermediate handling and drying at reduced energy consumption to economize digital towel printing.

INNOVATION | QUALITY | SERVICE

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