



PIONNERING INNOVATIONS  
150 YEARS

# COLARIS textile prints

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reactive ..... 10

towel ..... 12

acid ..... 14

cationic ..... 16

disperse ..... 18

blanket ..... 20

VAT ..... 22

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# highlights

- ◆ digital workflow from design through production
- ◆ open ink system allows free selection of inks from certified ink suppliers
- ◆ permanent ink circulation system for efficient production
- ◆ automatic printhead cleaning system
- ◆ printhead re-condition center for extended printhead service life

1874

QUALITY SINCE 1874  
Factory Franz Zimmer's Erben KG Warndorf

1951

g machine



1955

RSD rotary screen printer



1976

carpet printer



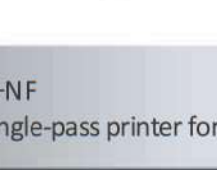
2001

CHROMOTEX digital inkjet printer  
for special applications



2008

er for textile



2012

COLARIS-NF  
narrow single-pass printer for webbings

1. Which fiber, size or target market do you seek for and what's your fastness requirement?
2. Do you have equipment available, which you would like to integrate into a new print line?
3. Is there a specific ink supplier you wish to work with? Will you require technical and technological support from the ink?
4. Is your plant and the environment prepared for a fully digital world? Industrial production requires process stability.
5. Which software is most suitable for your business and how do you integrate the design into a printable color?
6. How do you define, measure and communicate the colors internally and with the customer? Do you have a measuring system such as a spectro-photometer?
7. Which requirements or skills are needed to operate a digital printer given capacity, regarding to the utilities or the operator?



# SELECTION DEPENDS ON MATERIAL AND FINAL APPLICATION.



## ACID | METAL COMPLEX

protein based, and polyamide fibers

light fastness	+
wash fastness	++
crock fastness	++
chlorine fastness	+
brilliance	+++

### PROCESS REQUIREMENTS

- pre-treatment
- inkjet printing, drying
- steaming
- post-print washing
- drying

### END PRODUCTS

## CATIONIC

acrylic fibers, cationic PES

light fastness	+++
wash fastness	++
crock fastness	++
chlorine fastness	+
brilliance	++

### PROCESS REQUIREMENTS

- pre-treatment
- inkjet printing, drying
- steaming
- washing
- drying

### END PRODUCTS

## DISPERSE | SUBLIMATION

PES fibers

light fastness	+++
wash fastness	++
crock fastness	++
chlorine fastness	+
brilliance	++

### PROCESS REQUIREMENTS

- pre-treatment
- inkjet printing, drying
- thermal fixation
- reductive washing
- drying

### END PRODUCTS

## VAT

cellulosic based and polyamide fibers

light fastness	+++
wash fastness	+++
crock fastness	++
chlorine fastness	++
brilliance	++

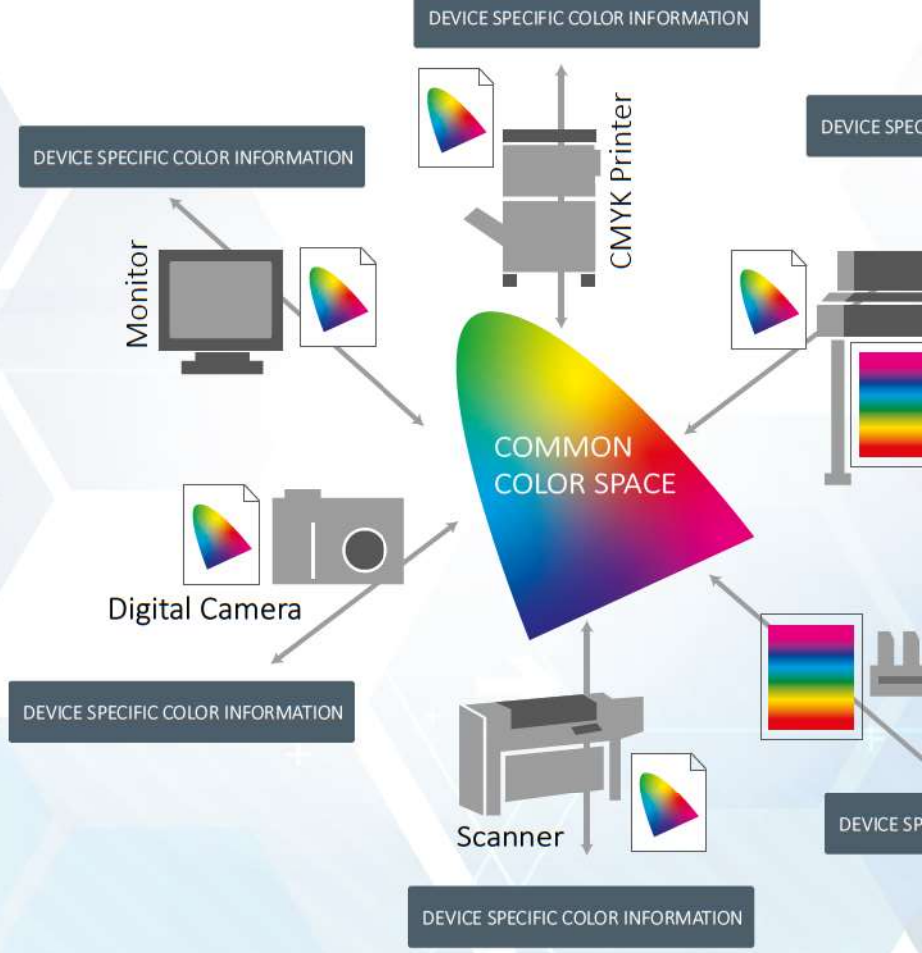
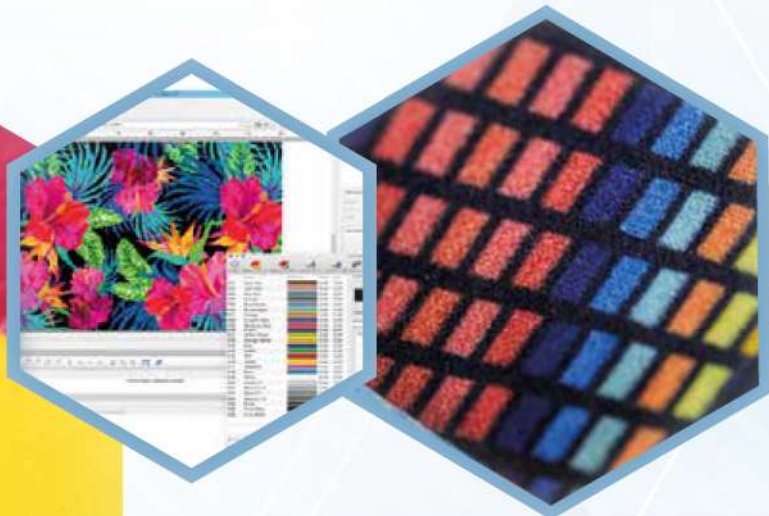
### PROCESS REQUIREMENTS

- pre-treatment
- inkjet printing, drying
- inline padding, steaming, washing
- drying

### END PRODUCTS

Digital printing is a complex task for which the entire workflow has to match. From design, color management and communication up to printer calibration - all must be perfect for a superb result.

Essential tools are fast computers with fast networks, a lot of memory space and well trained operators.



## PRINTER CALIBRATION

Basic process setup and print resolution must be defined and stable before a calibration is made.



## COLOR MEASUREMENT

Digital printing needs digital information to communicate. Color measurement is essential. Different



## COLOR CALIBRATION

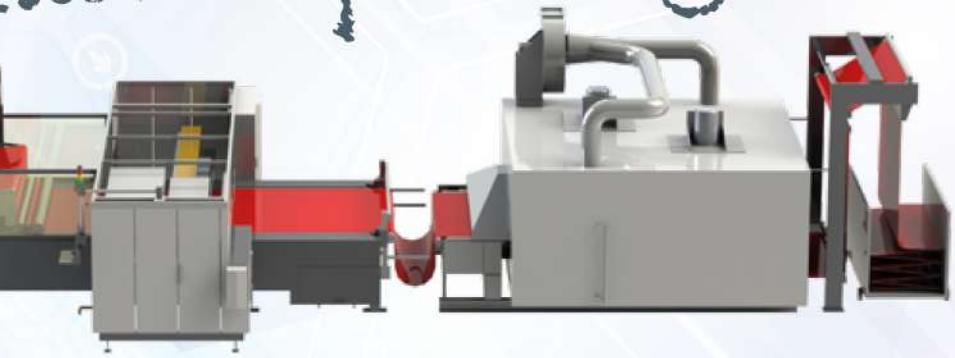
Color calibration is needed to communicate and match colors. This makes sure that colors appear identical



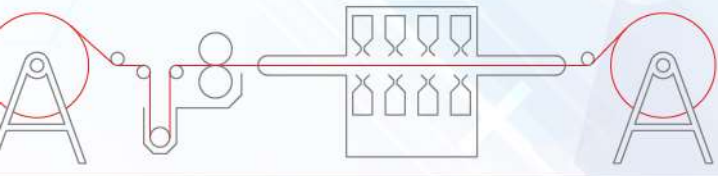
## DESIGN SOFTWARE

There are a number of pixel- or vector- based software tools on the market: Photoshop®, Gimp®

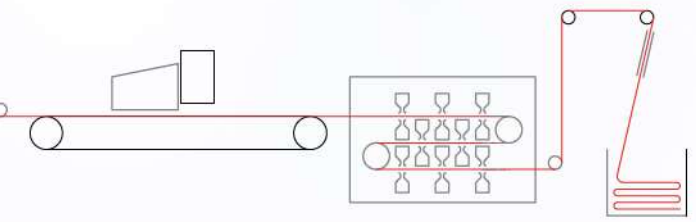
During inform



on fabrics made of cellulosic fibers such as cotton, linen, viscose, etc.  
 for printing on nylon substrates. For control of penetration and to achieve  
 colors the fabric needs a special inkjet preparation. Depending on the substn  
 can be done as an inline or an offline process.



**OFFLINE INKJET PRE-TREATMENT:**  
 adder application followed by stenter drying  
 required for wet-on-dry print process

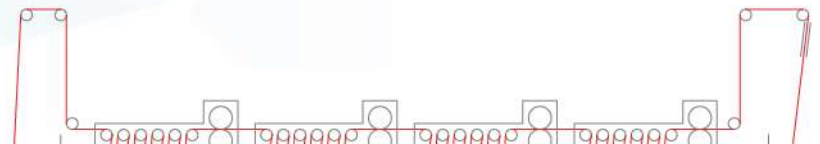


**INLINE PRINTING:**  
 ing on ready for inkjet prepared fabric



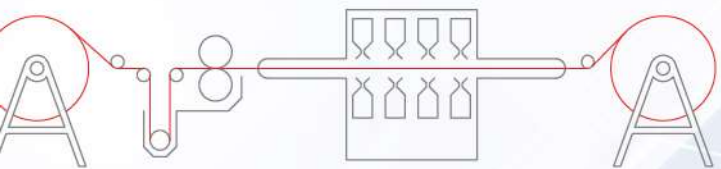
Reactive prints are known  
 for a good wash fastness, fine  
 haptics and brilliant colors,  
 achieved by thorough clean-  
 ing in a post-print washing  
 process.

Typical applications are fa-  
 shion fabrics, cotton and  
 cotton/viscose blended bed  
 sheets, terry towels and other  
 cellulose-based substrates.



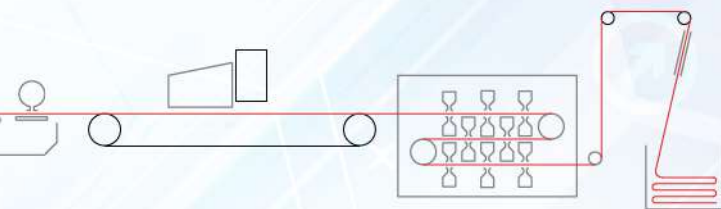


Typical applications are terry towels or bathrobes. Such items are more and more considered as a personal statement. Fancy, multi-color designs are economical to print only. COLARIS printers with automatic seam detection can print to a slightly varying towel length.



**OFFLINE INKJET PRE-TREATMENT:**

Pre-treatment application followed by stenter drying is required for wet-on-dry print process

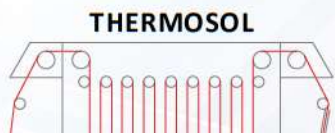


**WET-ON-WET PRINTING:**

Wet-on-wet process – integrated inline fabric pre-treatment, printing, and drying on ready for inkjet prepared fabric



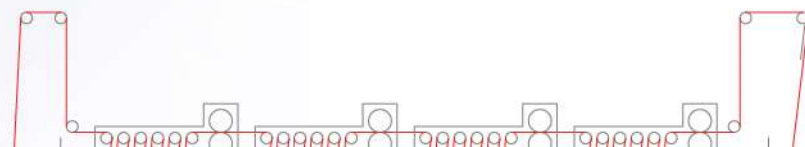
**STEAMER**



**THERMOSOL**

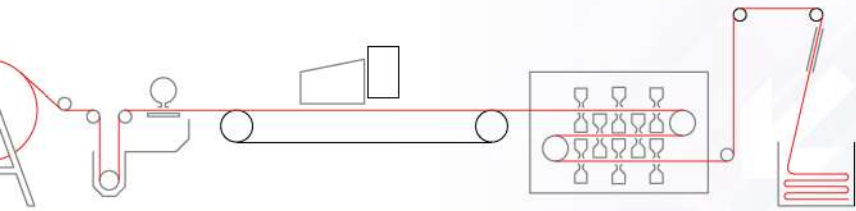


Post-print washing is mandatory for reactive towel printing. Only through removal of unfixed dyes, good fastness properties can be achieved.



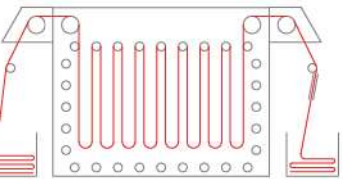


more complex than a simple print and dry process. Most important criteria for acid print application on fabric are penetration and sharpness of the print. Typical acid print applications are on heavy weight fabrics for public transport vehicles which are fabrics made from wool or blends of these fibers.



**INLINE PRE-TREATMENT & DIGITAL PRINTING:**

Wet-on-wet process - integrated inline pre-treatment, followed by printing and drying.



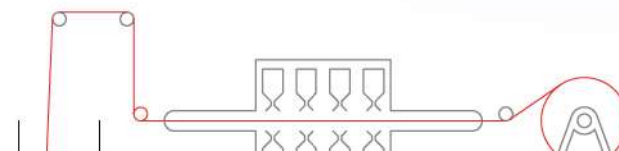
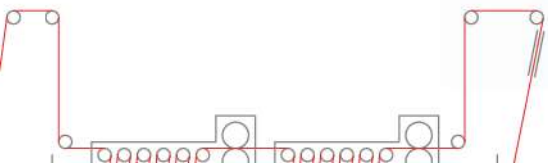
**STEAM FIXATION PROCESS:**

- (1) OFFLINE: saturated steam
- (2) INLINE: saturated steam

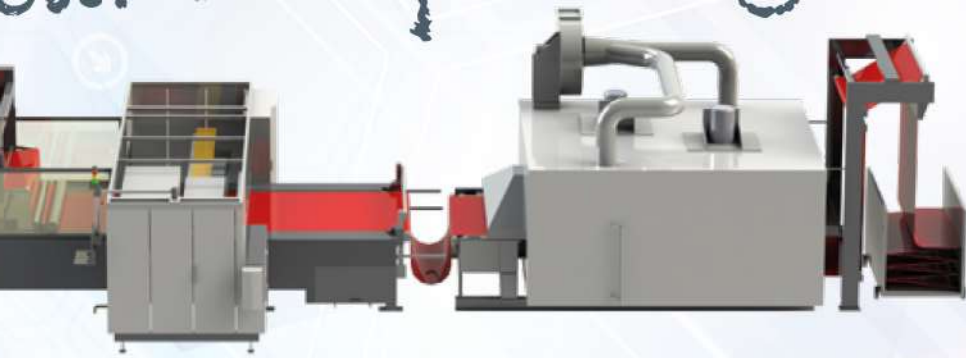


Typical applications are upholstery, velour and seat furnishings for public transport vehicles such as train systems, cable cars, buses and aircrafts with high seat load.

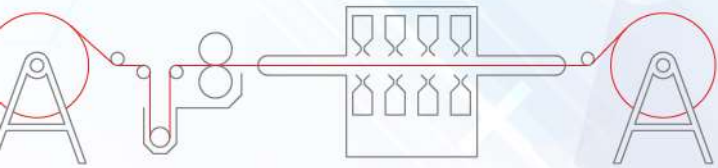
ACID prints are known for good fastness properties. For extended fastness pre-metallized inks are available. Such inks are good for improved light and chlorine fastness.



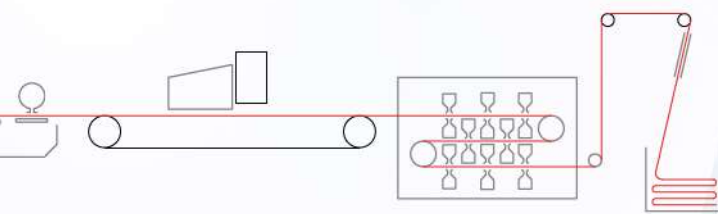




cially when used in combination with acrylic fibers are well resistant against weather conditions and are therefore ideal for outdoor use such as canopies



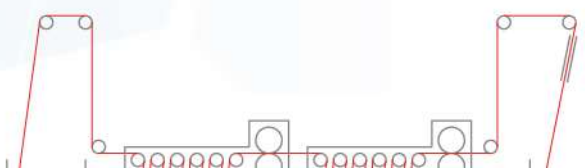
**OFFLINE INKJET PRE-TREATMENT:**  
 adder application followed by stenter drying  
 required for wet-on-dry print process



**ON-LINE INKJET PRINTING:**  
 wet-on-wet process – integrated inline fabric pre-treatment,  
 by inkjet printing and drying  
 printing and drying on ready for inkjet prepared fabric

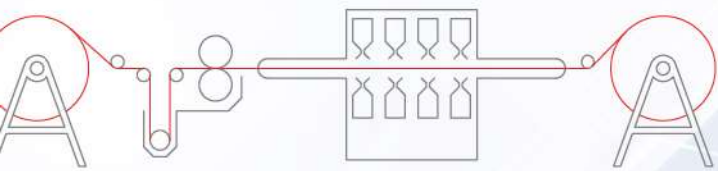


Acrylic fiber printing may include artificial fur, acrylic blankets as well as outdoor fabrics. Additionally, printing of CDP (cationic dyeable polyester) becomes popular too, as the dyes do not require high temperature fixation but can easily be fixed in saturated steam condition.

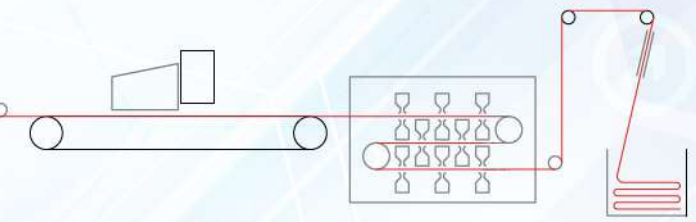




ATION inks are categorized by their molecular structure. They are also known as high energy disperse inks. Disperse is referring to the ink characteristics, as they are kept evenly distributed within the ink by a dispersion to reduce the risk of sedimentation/agglomeration to a minimum.



**OFFLINE INKJET PRE-TREATMENT:**  
 Primer application followed by stenter drying  
 required for wet-on-dry print process

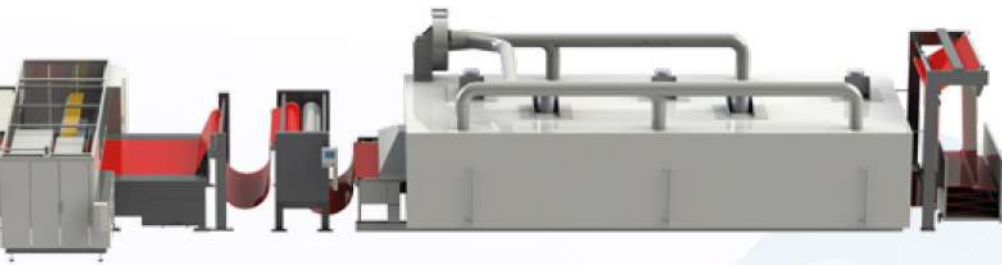


**DIGITAL PRINTING:**  
 Printing and fixation of inks on ready for inkjet prepared fabric

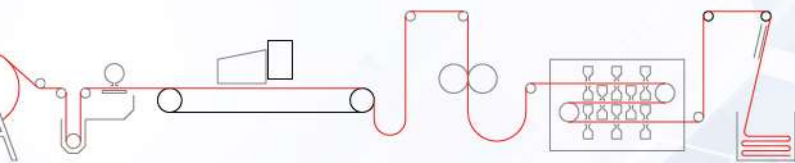


PES DISPERSE printing covers a wide range of products including shower curtains, window fashion, flag & banners, various outdoor fabrics, etc.



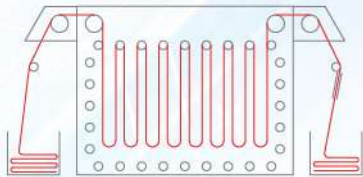


Alternative for a medium energy disperse application is a PES blanket print line. Raschel blankets, especially raschel blankets, need good penetration. COLARIS blanket printers are configured as stand-alone printers or as a complex, fully integrated, all-inline



### ONLINE DIGITAL PRINTING:

on-wet process – integrated inline fabric pre-treatment, followed by inkjet printing, penetration enhancer and drying



### OFFLINE DYE FIXATION PROCESS:

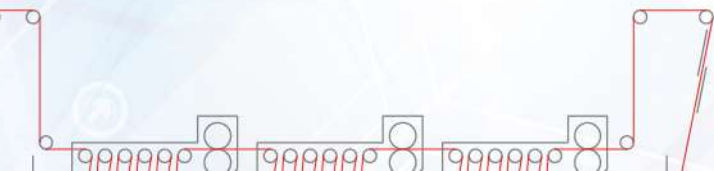
saturated steam or thermosol hot air fixation

2



Dye fixation is commonly performed in a hot air condition or using superheated steam at 180 °C, reducing the risk of ghost prints with delicate designs. For high temperature steam fixation, a loop steamer is the most commonly used equipment to achieve excellent prints at good dye penetration and fixation.

Deep penetration is mandatory to achieve deep colors on both sides of the blanket, although they are printed from one side only.



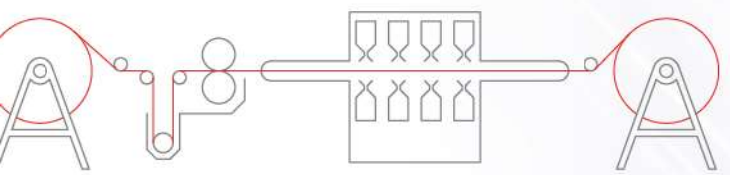


or unsurpassed fastness  
of cellulosic and regene-  
rants with VAT dyes easily  
light exposure, boil was-  
lorine bleach to a great

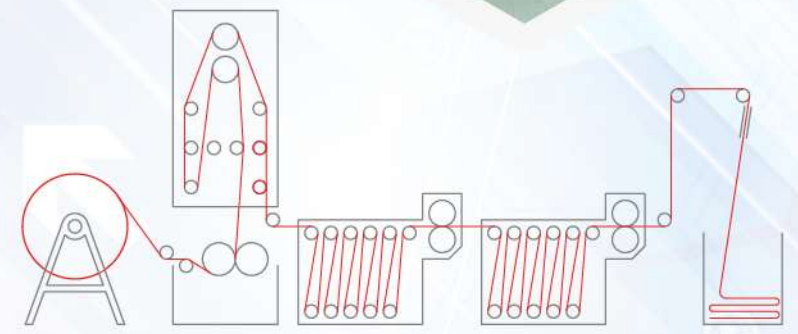
complex compared to  
printing solutions, but the  
end products are paying  
steps in processing.



Due to their high perfor-  
mance VAT prints are ideal for  
heavy duty environments and  
are also used for clothing in  
the security and special for-  
ces segment incl. camouflage  
fabrics.



**OFFLINE INKJET PRE-TREATMENT:**  
adder application followed by stenter drying  
required for wet-on-dry print process



**OFFLINE POST-PRINT PROCESSING:**



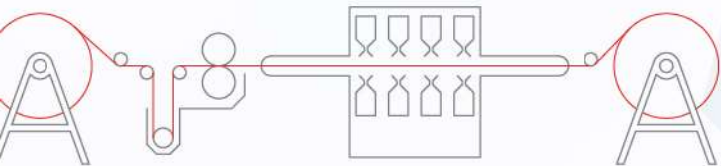
forcing the industry to look at more eco-friendly processes.

the most eco-friendly print process energy consumption is less than the traditional print process that requires a lot of energy. Water consumption is also significantly lower. The need for post-print finishing is completely eliminated. With these developments, dry and wet rub printing processes with conventional pigments and the haptics have drastically



Pigment prints are suitable for almost any fiber class and are therefore the only ink suitable for multi-fiber-based substrates.

Pigment prints are known for high light fastness. Accordingly, window fashion, sun blinds and outdoor fabrics including various technical textiles, are the key products printed with pigment inks. The simple and environment-friendly process is rapidly growing - not just for the afore-mentioned end products, but also within the fashion and home textile market.



**OFFLINE INKJET PRE-TREATMENT:**

adder application followed by stenter drying is required for wet-on-dry print process



# Components

is suitable for COLARIS Digital Ink-processes. The simplest option is followed by a stand-alone post-print fixation.

ts are available from ZIMMER called as offline or inline compo-

For inline post-print washing, ZIMMER AUSTRIA can offer various combinations and dimensions of single-step or multi-step washing systems.



For inkjet pre-treatment ZIMMER AUSTRIA can provide MAGNOROLL coating units to be installed with a stenter as well as for inline pre-treatment. Applicators with vacu-

# Laboratory Components

In addition to complex print lines, ZIMMER AUSTRIA offers a large range of laboratory equipment like sample printers or evaluation devices for process development by our customers.

## COLARIS 12-1200T



### TECHNICAL DATA

working width:  
1200 mm

Operation options:  
for individual pieces or  
continuous processing

processing options:  
steam fixation for dyes,  
post-print washing or  
pre-treatment application,  
drying or hot air curing

dyestuff classes:  
reactive, acid, cationic, disperse,  
direct sublimation, pigment

## POST-PRINT PROCESSING LINE



## COLARIS-IPT Ink Performance Tester



Print heads

Recirculation

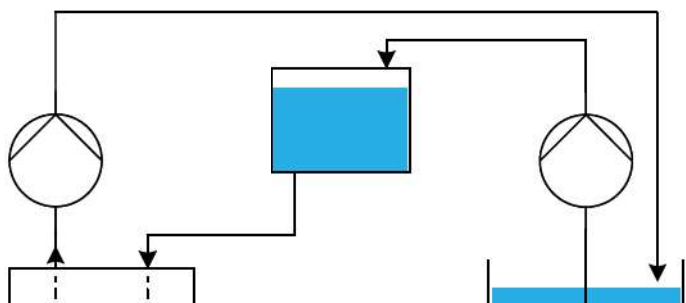
different performance standards from

(A/MA/LA) unit built to handle various material textile applications for a long service life and ink recirculation at 400 l/h replaceable



uction - resist high ce bric can d binary es

### INK SUPPLY & CIRCULATION SYSTEM



1024 MA

**DROP SIZES**  
30 - 75 pl  
**APPLICATIONS**  
heavy fabrics  
i.e. technical webbings,  
terry towels, velours,  
transport fabrics

1024 SA

**DROP SIZES**  
12 - 35 pl  
**APPLICATIONS**  
medium fabrics  
i.e. belts, camouflage,  
home textiles

1024 LA

**DROP SIZES**  
80 - 240 pl  
**APPLICATIONS**  
pile production  
i.e. carpets,  
blankets

1024 XSA

**DROP SIZES**  
7 - 21 pl  
**APPLICATIONS**  
light fabrics  
i.e. wash labels,  
lanyards, deco tapes,  
fashion



PRINTHEADS CAN BE COMPLETELY DISMANTLED



Printheads are a significant cost factor in digital printing systems. Nevertheless, our experience shows that rather deposits or mechanical damage result in malfunctioning printheads than natural aging. Usually, clogged printheads are no longer usable and must be replaced.

To relieve our customers and to extend the printheads service life, ZIMMER AUSTRIA built up a great deal of knowledge and technology to understand, clean and repair Star-Fire™ print heads. Depending on the error pattern and ink used, different approaches, chemicals and procedures are

Manufacturing

ZIMMER AUSTRIA Digital Printing Systems is known for flexibility and for building tailor-made machines and systems. This is the reason why we remain one of few textile machine manufacturers with a deep, vertical inhouse manufacturing capability.

Starting from engineering to mechanical manufacturing, electronic and software development, machine and control cabinet assembly, programming, internal testing, we also provide shipping, on-site installation, start-up and training of customer personnel and most important: after sales service through our own team.

Additionally, we can offer on-site process development and optimization for a wide range of digital printing and coating applications.



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# technology center

Our technology center is the heart and source of all our developments and innovations. New technologies and processes are developed and tested on individual textiles, carpets, narrow fabrics and other materials.

Our facilities are fitted with all technologies including CHROMOJET, COLARIS Printing and Coating Systems, as well as with a comprehensive set-up of laboratory equipment. But most important is the staff working in the Technology Center: Each of them is a specialist in his field.

The technology and application center supports machinery and technology development. Furthermore, it gives proof





**COLARIS**



**MACHINERY  
MANUFACTURER**

**chromoJET**



**DIGITAL PRINTING  
SYSTEMS**



**INNOVATION | QUALITY | SERVICE**

**Zimmer**  
AUSTRIA

**ZIMMER MASCHINENBAU GMBH**  
DIGITAL PRINTING SYSTEMS

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