

MACHINERY MANUFACTURER

Zimmer
AUSTRIA



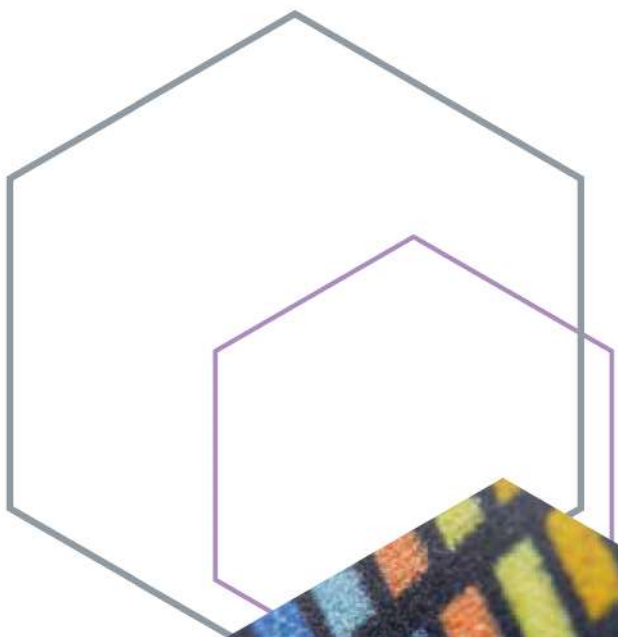
PIONNERING INNOVATIONS
150 YEARS

COLARIS technical textiles

DIGITAL PRINTING SYSTEMS

 04/2024

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workwear	12
military camouflage	14
transport fabrics	16
outdoor fabrics	18
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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



1955

RSD rotary screen printer



1976

COLARIS digital inkjet printer for textile

2008

2012

2021

COLARIS
transport fabric printer

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 printing line given capacity, regarding to the utilities or the operator?



Technical Textiles cover a wide range of fabrics, made of various fibers and blends. These Fabrics are mostly used under severe environmental conditions and require highest fastness levels.

The wide range of end products covers textiles for indoor use such as furnishing for contract business or different variants of sun blinds. Workwear and protective clothing are another group of products, as well as outdoor fabrics such as canopies and tent fabrics, parasols and awnings or furnishing fabrics for camping use.

High end furnishing fabrics for public transport systems such as buses, subways, trains, cable cars, aeronautic and marine needs are another challenge to deal with. Last but not least the needs for printed military fabrics with specific infrared reflectance control can be matched with ZIMMER AUSTRIA Digital Inkjet Printing Systems.

APPLICATIONS

- workwear
- military camouflage
- transport fabrics
- outdoor fabrics
- advertising fabrics



FIBERS AND CONSTRUCTIONS

- cellulosic fibers

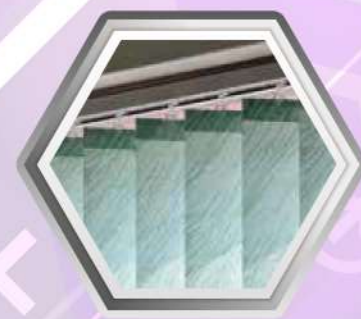


DYE FAMILIES

- reactive, VAT or pigment

Depen

SELECTION DEPENDS ON FIBER AND FINAL APPLICATION.



ACID | METAL COMPLEX

polyamide, wool, Aramid

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

-
- PROCESS REQUIREMENTS
- pre-treatment
 - printing, drying
 - steaming
 - washing
 - drying
-

END PRODUCTS

VAT

cellulosic, polyamide, Aramid

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

-
- PROCESS REQUIREMENTS
- pre-treatment
 - printing, drying
 - steaming - oxidizing
 - washing
 - drying
-

END PRODUCTS

DISPERSE | SUBLIMATION

polyester

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

-
- PROCESS REQUIREMENTS
- pre-treatment
 - printing, drying
 - dye fixation
 - reductive washing
 - drying
-

END PRODUCTS

PIGMENT

any kind of fibers

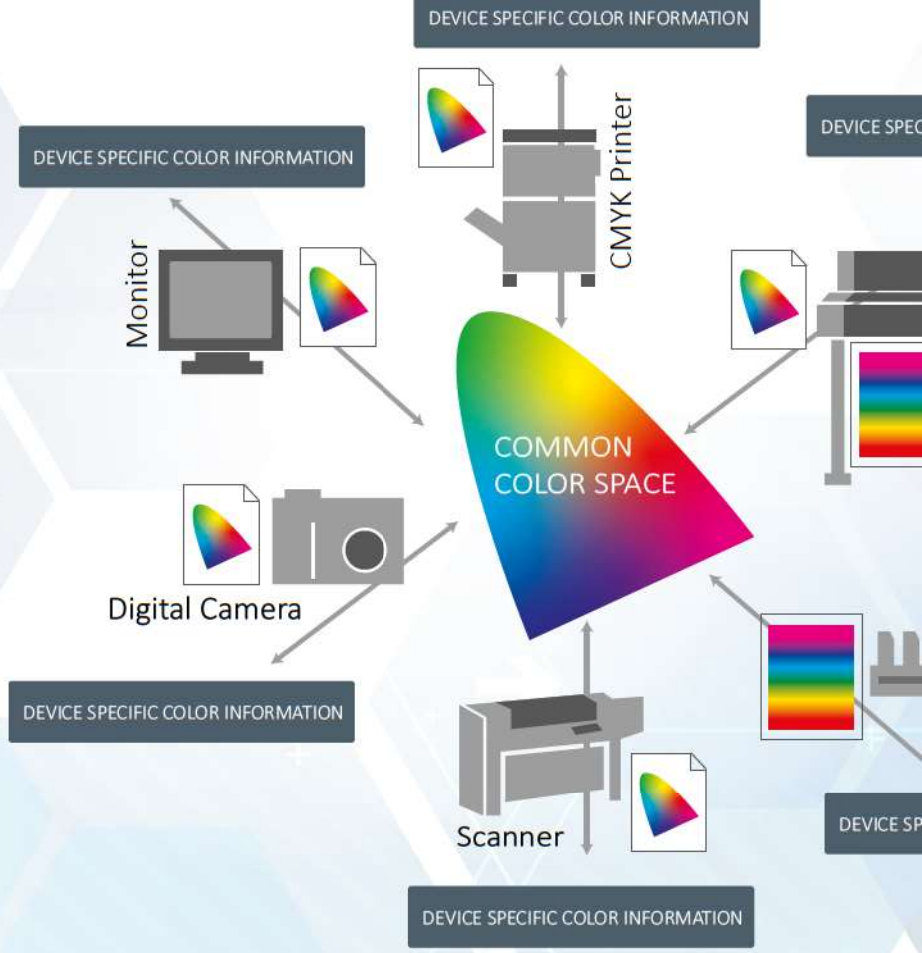
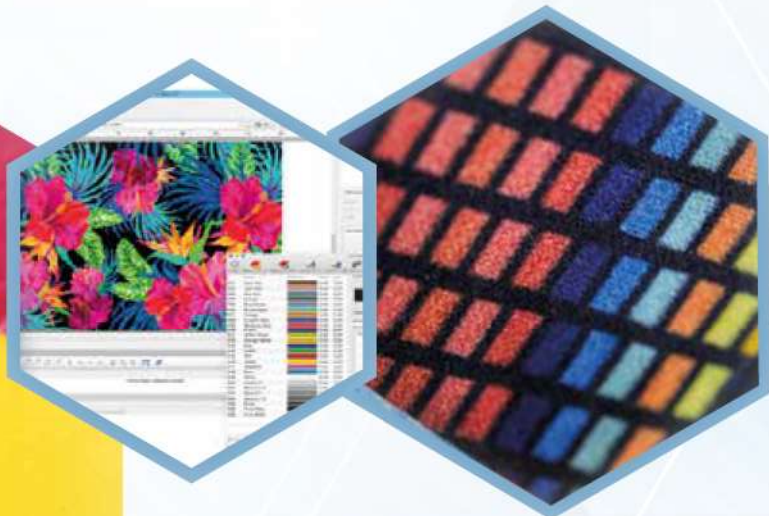
light fastness	++
wash fastness	++
crock fastness	+
chlorine fastness	+
brilliance	+++

-
- PROCESS REQUIREMENTS
- pre-treatment
 - printing, drying
 - (post-treatment)
 - polymerization
-

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

WORKFLOW

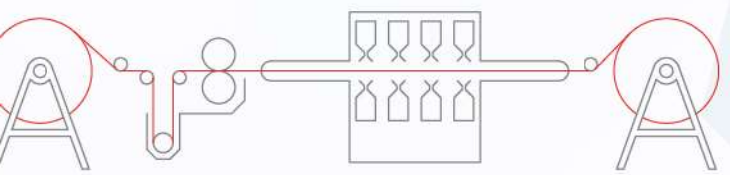


For unsurpassed fastness of cellulosic and regenerative prints with VAT dyes easily withstand light exposure, boil wash, chlorine bleach to a great

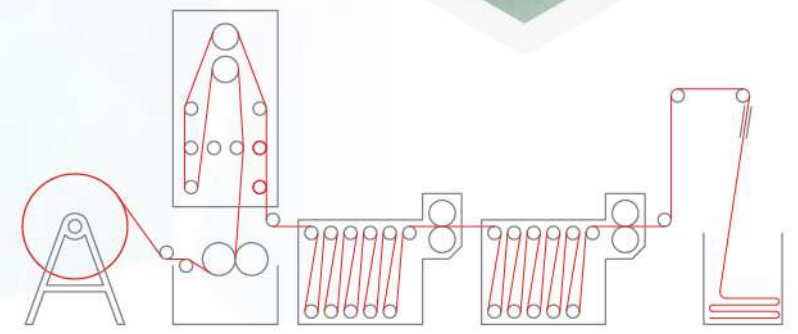
complex compared to other printing solutions, but the end products are paying their steps in processing.



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



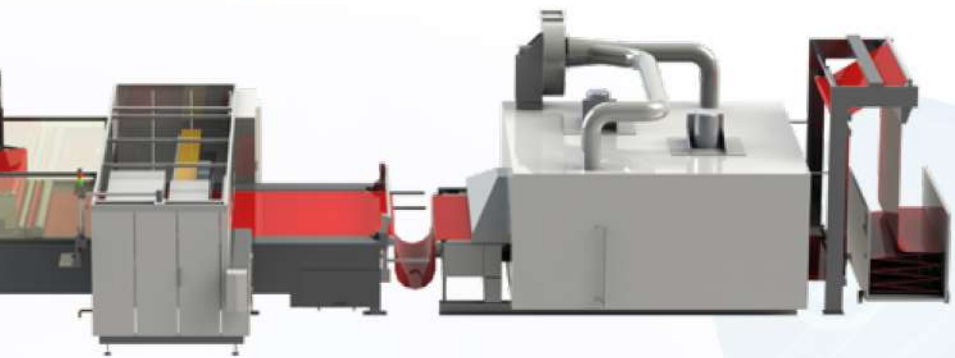
OFFLINE INKJET PRE-TREATMENT:
Inkjet application followed by stenter drying is required for wet-on-dry print process



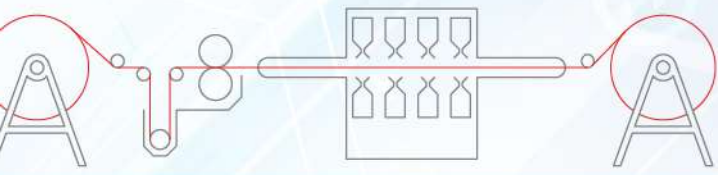
OFFLINE POST-PRINT PROCESSING:



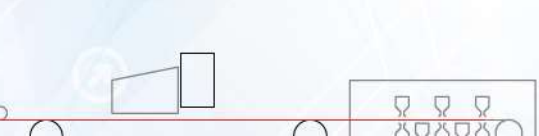
...berging



fabrics have to fulfill a wide range of protection needs. Accordingly, a gre-
ses are used. From cotton, re-generated cellulose fibers, polyamide, Ara-
nex™, Conex™, Kevlar™ Twaron™, LENZING™ Lycell and Modal, LENZING™
air blends are well known for their specific properties. Products may include
of vests, rain protection, ponchos, tents, carrying systems, sleeping bags,
r hook and loop quick-fix-and-release products, etc. All these products need
reflection control and this is what ZIMMER AUSTRIA Digital Printing Systems
RIS Digital Prints with IR-reflectance control, perfectly match requirements
ilitary forces around the globe. Camouflage printing is not about existing
duced digitally from traditional screen printing – digital camouflage printing
ore.



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



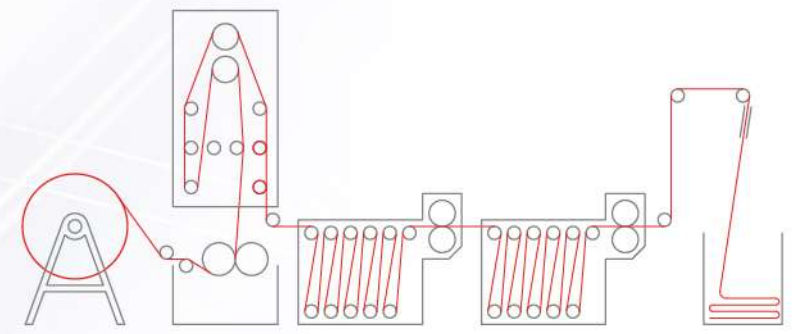
print seen at daylight



with IRR Control



without IRR Control

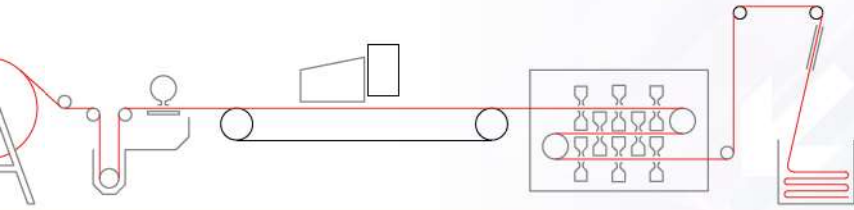


OFFLINE POST-PRINT PROCESSING:

transport fabrics

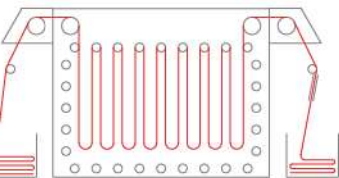


more complex than a simple print and dry process. Most important criteria are penetration and sharpness of the print.



INLINE PRE-TREATMENT & DIGITAL PRINTING:

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



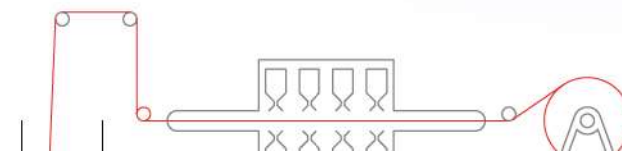
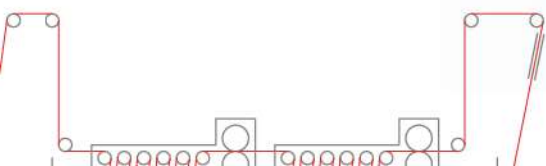
STEAM FIXATION PROCESS:

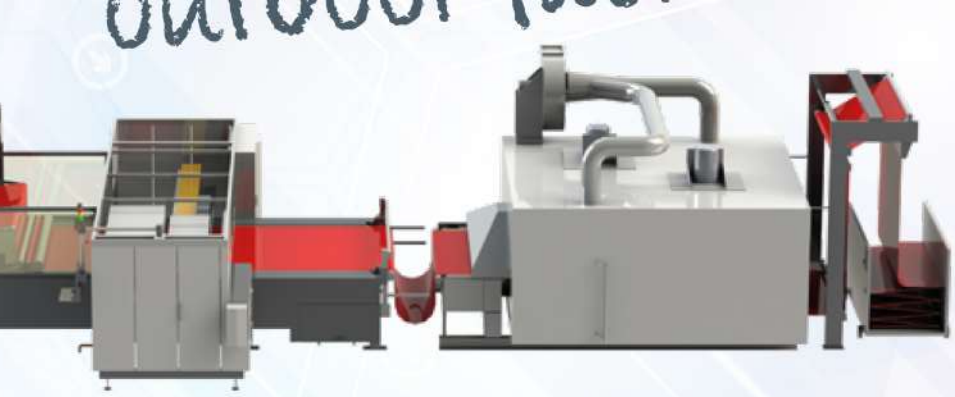
- () OFFLINE: saturated steam
- () INLINE: saturated steam



Typical applications are upholstery, velour and seat furnishing fabrics for the public transport such as train, subway, cable cars, buses, aircrafts and cruise ships.

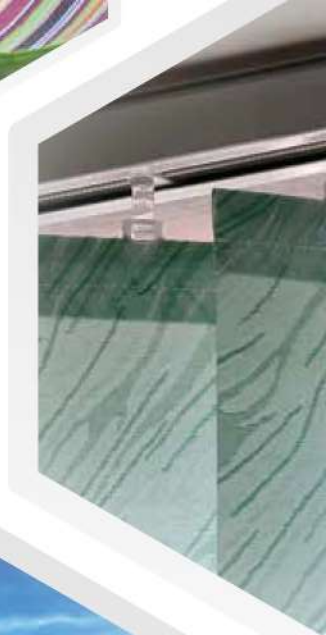
ACID prints are known for good fastness properties. For extended fastness requirements, pre-metallized inks are available. Such inks are good for improved light and chlorine fastness.





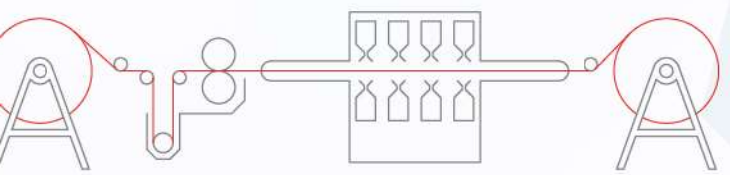
forcing the industry to look at eco-friendly processes.

the most eco-friendly print process energy consumption is less than the wet print process that requires a lot of energy. Water consumption is also significantly lower. Post-print finishing is almost completely eliminated. With the development of dry and wet rub processes, dry and wet rub processes with conventional pigment inks 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.

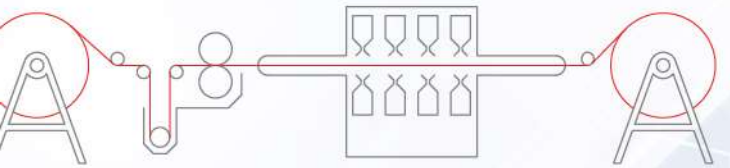


OFFLINE INKJET PRE-TREATMENT:
 roller application followed by stenter drying
 required for wet-on-dry print process

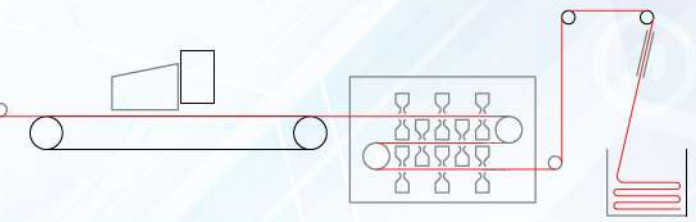




ATION inks are categorized by their molecular structure. They are also known as high energy disperse inks. Disperse is referring to the ink characteristics, as they are kept evenly distributed within the ink by a dispersion to reduce the risk of segregation/agglomeration to a minimum.



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



2

ONLINE PRINTING:
 Printing on ready for inkjet print fabric



Polyester DISPERSE printing covers a wide range of products incl. shower curtains, window fashion, flags & banners, various outdoor fabrics, etc.

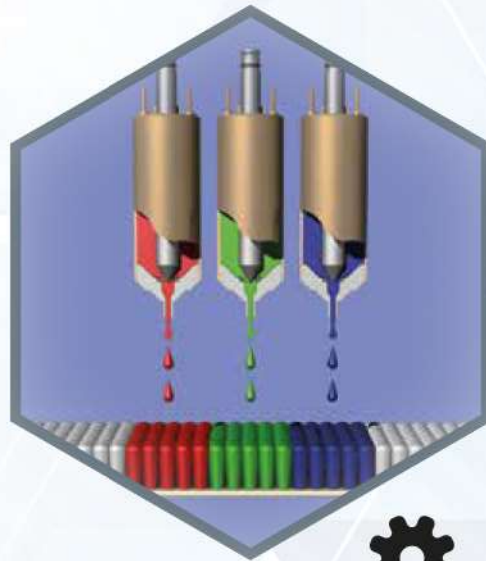




CHROMOJET -based technology

Valve-based technology has initially been used for carpet printing. Over the years, the range of applications has expanded into other areas. CHROMOJET stands for carpet printing, digital functionalization of textile substrates and

CHROMOJET technology is available with two different jet versions. This allows a wide range of applications starting from digital functionalization of flat textiles, through printing of medium to heavy weight pile substrates including loop and velour carpets and medium to heavy weight raschel blankets.



TECHNICAL DATA

jet versions:
HSV-400-R & HSV-800
max. particle size:
7 μ m
pH range:

HSV-400-R

HSV-800



Applications

HSV-400-R

ing
S
schel blankets

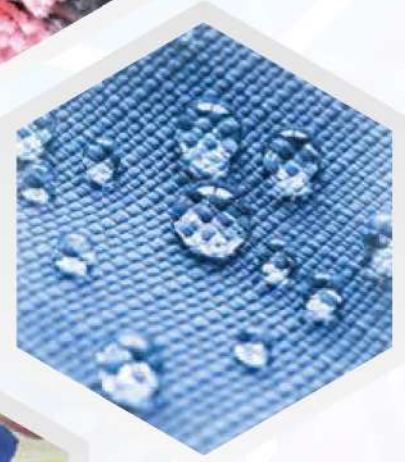


high-pile
spot color print

HSV-800

alization -
medium
n weight
s

hydrophobic
digital coating



process color print



Laboratory printer

The CHROMOJET TABLETOP printer is perfect for product and process development under lab conditions. It requires very little space on a table.

Small removable medium tanks provide quick and easy change of fluids and dyes. Designs can be uploaded from a standard computer.

Resolution, rasterization, pressure, head-speed, nozzle size, viscosity: These are the parameters to control penetration, pick-up and definition.



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.



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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

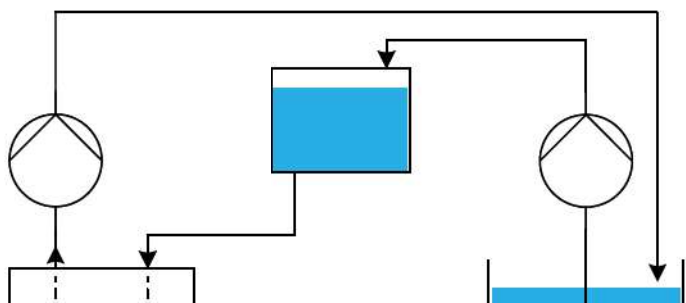
different performance standards from

(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

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DIGITAL PRINTING SYSTEMS

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