All around Digital Direct Printing

Flags / Promotional textiles

Clothing / Corporate Identity
Fashion / Swim Wear

Homodeco / Bedlinnen
Processes in Digital Printing

- **Pre-treatment**: Coating / Drying
  - Porta-Pad / Drum-Dryer
  - Porta-Pad / Portafix

- **Print**: Digital Printing
  - Inks / Printer

- **Dye-Fixation**: Steam- / Heat-Fixation
  - Steamers / Heat fixation units

- **Wet After-treatment**: Washing / Drying
  - Porta-Wash series

- **Textile Finish**: Finishing / Drying
  - Porta-Pad / Portafix
  - Porta-Pad / Drum-Dryer
1. Reactive dyes

a) on plant fibre: cotton, linnen, viscos e for e.g. indoor decoration, clothing

b) on animal fibre: silk, wool for e.g. luxurious indoor decoration, clothing

Inkjet-Coating:
e.g. - thickener x, - pH-regulator - ...
- recipe: ink supplier

Dye gammut:
Reactive dyes

Fixation conditions:
a) saturated steam: ~ 100°C, ± 10 min.
b) saturated steam: ~ 100°C, 12-15 min.

Washing process:
- rinsing cold
- washing hot with surfactant

Finishing / Drying:
- softener,
- crease-resistant
- antisoil-release / drying

Example of: Dye Fixation with Wet process lines for washing / padding or finishing / drying

Copyright © B-STEaM / Portafix / E-STEaM

Porta-Wash/Porta-Pad/Drum-Dryer // Porta-Wash/Porta-Pad/Portafix 24/09/2011
2. Acid dyes

a) on animal fibre: silk, wool for e.g. luxurious indoor decoration, clothing
b) on synthetic fibre: polyamide for e.g. swimwear, sportswear
3. Disperse dyes
a) on polyester for e.g. flags, promotional textile

<table>
<thead>
<tr>
<th>Inks</th>
<th>Dye Fixation</th>
<th>Porta-Wash series</th>
<th>Porta-Pad / Drum-Dryer</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Dye Fixation" /></td>
<td><img src="image2.png" alt="Porta-Wash series" /></td>
<td><img src="image3.png" alt="Porta-Pad / Drum-Dryer" /></td>
<td></td>
</tr>
</tbody>
</table>

**Inkjet-Coating:**
- thickener x,
- pH-regulator
- ...
- e.g. - recipe: ink supplier

**Dye gammut:**
- Disperse dyes

**Fixation conditions:**
- Dry Heat fixation
  -175-200°C,
  20-60 sec.

**Washing process:**
- 30-50°C rinsing
  with surfactant
  or
- mild reductive
  washing, neutralizing

**Finishing / Drying:**
- UV protector, flame-resistant, antistatic, anti-soil release
  / drying

**Example of:**
Combi line for fixation / (washing) / padding or finishing / drying

**Copyright©**

I-Fix

(Porta-Wash) / Porta-Pad / Drum-Dryer
3. Disperse dyes

   b) on polyester for e.g. high-quality indoor decoration, clothing

Porta-Pad / Portafix
Porta-Pad / Drum-Dryer

Inks
Dye Fixation
Porta-Wash series
Porta-Pad / Portafix
Porta-Pad / Drum-Dryer

Inkjet-Coating:
e.g. - thickener x,
  - pH-regulator
  - ...
e.g. - recipe: ink supplier

Dye gammut:
Disperse dyes

Fixation conditions:
- High Temp. steaming ~ 165-175°C, 6 min.
- Dry Heat fixation ~175-200°C, 20-60 sec

Washing process:
- 30-50°C rinsing with surfactant or
- mild reductive washing, neutralizing

Finishing / Drying:
antistatic, flame-resistant, antisoil-release / drying

Example of: Combi lines for fixation / washing / padding or finishing / drying

Porta-Wash/Porta-Pad/Drum-Dryer // Porta-Wash/Porta-Pad/Portafix
The Porta-Pad is a modular roll-to-roll padding unit especially developed for applying pre- and after-treatment chemicals e.g. an ink-jet pre-treatment or a fabric protector finish. Especially suited for a wet-in-wet finishing process line-up combined with washing.

- for inkjet-coating and after-treatment of cloth
- cost-effective and simple application process
- excellent evenness over the complete width
- very suitable for short runs
- high efficient vacuum extraction for cloth friendly application of chemicals
- low content saves on chemicals
- recycling of padding liquid
- for drying combinable with Drum-Dryer, I-Fix or Portafic Universal
- In-line finishing after washing saves extra drying cycle
- available in a 1.85, 2.50 and 3.40 m width
The B-STeaM is a compact and reliable steam/air fixation unit with integrated steam generator for the fixation of textile dyes.

- fixation of reactive, acid, disperse dyes & pigment
- on board steam generator
- High STeaM re-flow system for exceptional colours
- low fresh steam consumption
- reproducible and uniform fixation results
- low operational and maintenance costs
- available in 2.20 m width
The Portafix Universal is a modular steam/air fixation unit with integrated steam generator for the fixation of textile dyes. Besides this is especially suited for steam-drying.

- fixation of reactive, acid, disperse dyes & pigment
- on board steam generator
- High STeaM re-flow system for exceptional colours
- low fresh steam consumption
- reproducible and uniform fixation results
- no leaders for feed-in / feed-out
- low operational and maintenance costs
- usable as universal dryer also
- upgradable production speed
- available in 1.85, 2.50 and 3.40 m width

Example of: Steaming / Washing / (Finishing) / Drying
The E-STeaM is a modular high volume production steamer with integrated steam generator for the fixation of textile dyes.

- fixation of reactive, acid, disperse dyes & pigment
- on board steam generator
- High STeaM re-flow system for exceptional colours
- low fresh steam consumption
- reproducible and uniform fixation results
- no leaders for feed-in / feed-out
- low operational and maintenance costs
- upgradable production speed: Reactive 108 till 432 m/h
- available in 1.85, 2.50 and 3.40 m width

Example of: Steam- / Heat- Fixation

E-STeaM series: ES-B and ES-U modules
The I-Fix is a complete autonomous heat fixation unit that can be coupled in-line to each digital printer without the need of a mechanical or electrical interface.

- fixation of disperse direct / disperse sublimation dyes
- operational within 15 minutes
- integrated exhaust

**In-Line:**
- fits every digital printer
- no electrical or mechanical interface
- no heat or vapour influence on printer

**Stand-Alone:**
- output of almost 200 sqm/h
- usable as universal dryer also
- available in 1.85, 2.50 and 3.40 m width
The Porta-Wash is a modular roll-to-roll washing system consisting of 4 selectable washing modules to be combined into a washing line according to process and fabric requirements.

- removing of coating chemicals and non-linked dyestuff
- 4 different washing modules
- free configuration
- afterwards upgradable
- high temperature washing
- long dwell time with minimal water content
- high efficient vacuum extraction of polluted water
- recycled and fresh soft water spraying nozzles
- counter flow heat exchanger for hot water
- thermally isolated walls
- pre-drying vacuum system ensures cost effective drying
- available in 1.85, 2.50 and 3.40 m width

Example of: Wet processing lines for washing / (finishing) / drying
The Drum-Dryer is a modular roll-to-roll drying unit developed for the combination with the Porta-Wash washing units and the Porta-Pad coating unit. Moreover it’s an excellent heat fixation unit for disperse dyes.

- for drying and heat-fixation
- efficient heat transfer by aluminium drums
- one-sided contact only
- integrated exhaust
- for all types of textile cloth
- fixation of disperse direct / disperse sublimation dyes
- free configuration from 1 to 4 drums
- combinable with Porta-Wash and Porta-Pad
- in-line drying after washing and padding
- available in 1.85, 2.50 and 3.40 m width
The winding units are modular units and can be selected from roll-to-roll, lorry to lorry, batch winder or a combination of these.

- modular combinable
- no heavy axle
- easy to fasten
- adjustable in width
- conical suspension for different cardboard tubes
- transverse substrate correction with cloth side detection
- scroll rollers for e.g. knitwear
## Advantages / Highlights

<table>
<thead>
<tr>
<th>Pre-treatment with the Porta-Pad</th>
<th>Direct Print with textile dyes</th>
<th>Dye fixation with B-STeaM, Portafix Universal, E-STeaM or I-Fix, Drum-Fix</th>
<th>After-treatment with the Porta-Wash</th>
<th>Textile Finishing with the Porta-Pad</th>
</tr>
</thead>
<tbody>
<tr>
<td>• cost-effective and simple application process for inkjet pre-coatings</td>
<td>• waterbased dye inks developed for real textile print</td>
<td>• excellent colour yield, maximum colours</td>
<td>• removing coating chemicals and non-linked dyestuff</td>
<td>• flexible and easy solution for applying chemicals</td>
</tr>
<tr>
<td>• excellent evenness over the width and length</td>
<td>• providing textile fastnesses</td>
<td>• excellent evenness</td>
<td>• providing good water and wash fastnesses</td>
<td>• suitable for wet-in-wet processing saving time and money</td>
</tr>
<tr>
<td>• resulting in even and reproducible printing results</td>
<td>• eco-friendly (Ökotex), sustainable</td>
<td>• reproducible and uniform fixation results</td>
<td>• extremely economic concerning water and energy use</td>
<td>• providing usability of endproduct like professional textile finish</td>
</tr>
<tr>
<td>• very easy to operate</td>
<td>• big colour space</td>
<td>• energy efficient</td>
<td>• pre-drying vacuum system ensures cost effective drying</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• vivid colours</td>
<td>• low operational and maintenance costs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Pre-treatment with the Porta-Pad
- With the Porta-Pad, you can pre-treat the fabric with a variety of chemicals before printing. This step ensures a smooth and even application of the dye.

### Direct Print with Textile Dyes
- Direct printing with textile dyes allows for vibrant and vivid colors. The dye is applied directly to the fabric, ensuring high color yield and maximum colors.

### Dye Fixation
- Dye fixation is crucial for ensuring the colorfastness of the printed fabrics. Systems like B-STeaM, Portafix Universal, E-STeaM, or I-Fix, Drum-Fix ensure that the dye is evenly and reproducibly fixed onto the fabric, resulting in excellent evenness and reproducible and uniform fixation results.

### After-treatment with the Porta-Wash
- After printing and dye fixation, the Porta-Wash is used to remove any excess chemicals and non-linked dyestuff. This step is crucial for providing good water and wash fastnesses, ensuring the durability of the printed designs.

### Textile Finishing with the Porta-Pad
- The final step of textile finishing is done with the Porta-Pad. This ensures that the end product is not only visually appealing but also functional, with excellent color yield, maximum colors, and excellent evenness.

### Flexibility and Easy Solution
- The Porta-Pad system is designed to be flexible and easy to operate, making it suitable for wet-in-wet processing, saving time and money, and providing usability of the end product like professional textile finish.