# Auxiliaries and functional chemicals in the wet textile processes

- are they vital and properly used?

#### 2. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS NO.	Portion(%)	Remarks
Methyl naphthalene	90-12-0	45.0	

Although forbidden in the EU, many companies have production sites or suppliers outside Europe, where the use of NPEO is not forbidden.

#### 12. ECOLOGICAL INFORMATION

Contains no substances known to be hazardous to the environment or not degradable in

waste water treatment plants

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Stora Holsjön. Man varnar	vårdsinspektör	Börje	I Stora Holsjons fiske-	ocksa alla som har stugor	medel.

## Challenges in the dye-houses

• Huge consumption of resources and high emissions.

 Increased need for textiles



• Higher customization with same production conditions.





www.colorpsychology.org

What comes out from a dyehouse?

Quality: 100 % Cotton Single Jersey Spec: 160 g/sqm - 150 cm circular knit Batch size: 1050 m → 250 kg

Total dyeing machines: 30 Total batches in a year: 25 000

Total dyed cotton single jersey: 6 300 tonnes/year

1 12 13 23

Total wastewater m<sup>3</sup>/year: 1 260 000 (using 200 l/kg) <u>In wastewater if dyeing ratio 1:10</u> Dyes 30% unfixed: 60 tonnes Salt: 4 000 tonnes Alkaline: 2 000 tonnes Other auxiliaries: 600 tonnes Total area of pallets - close to a soccer field

What if you do not fill up to a full batch...?

Not mention all energy used for heating up the dye bath.... With energy mainly produced by coal.

1 tonnes





Experts estimate that half of the fabric dyed worldwide comes out the wrong color and needs a correction. Good dyers get things right first time and use much less water, energy and chemicals as a result.

Recycled, organic fabric that is dyed in a poorly managed dyehouse will likely have a much higher environmental impact than a conventional fabric dyed in a well-managed dyehouse.

Natural Resources Defense Council April 2012

Lack of relationship between buyer and dyehouse!





#### Bangladesh pollution. New York Times.



 Saneringen av Viskans bottnar nedströms Borås kan vara på gång inom några är för nu är ansökan om förberedelserna för det omfattande arbetet klar.
Att oskadliggöra de mycket farliga gifterna har blivit än viktigare då risken för böra Øbelen det i klimatförändringens sör.

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Citarum River, Indonesia 2016. By Larry C. Price.

Pollution in The Hangzhou Bay Area. Greenpeace.

"New" Technology......



drydy







*#Digitaldyeing* www.imogotech.com

www.arcedition.com

### How it works: 1. Dye application

- Savings on chemistry
- Controlled pickup no variation in bath ratio
- All dyestuff on the fabric
- Easy and quick change between colours
- Adjustable speed
- Small to large batches with same settings
- Applicable on all dyeable fibres and most dye classes

### 2. Fixation

- Savings on energy
- No need for temperature gradient
- No steam or extra water added
- No contamination cleaning between batches not critical
- Several batches in different colours fixated at same time





## Project FlexDyer®

2015: From greige to grace - Idea to develop a textile process where the need to be unique on the market is meet

2017: Research related Verification project 1.0

2018: Research related Verification project 2.0

Oct 2018: Imogo founded

April 2019: Lab unit from TEKO - MiniMax

2019: Smart Textiles project



 Develop a method for high reproducibility and eliminate the risk of reworking – Do it Right-first-time.

Nov 2019: Pilot scale line (1700 mm width) at Imogo Test Center, Borås

### Still much to do:

- Finding optimum pickup.
- Studying input volumes of chemicals and the need for those in different dyeing processes.
- Reduce the number of process steps in textile production, ex. drying and finishing steps by better process control. Combine dyeing with finishing.





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Probably not. We can easily do a lot more!

Who likes to contribute?

THANKS!