



Project Information Sheet

DIGital finishing with High Speed Ink-Jet technology, significantly improving sustainability, flexibility and economic performance of the textile FINishing industry (DIGIFIN)

Programme area:	Green Business Textile industry Depositing / application of chemicals on textile substrates
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Website:	www.digifin.eu
Benefits:	Reduction of environmental impact Improved economical performance due to new product potential Mass customisation route textile cloth finishing
Keywords:	Textile, environment, digital technology
Sector:	Green Business
Type of solution	Product, process, technology
Duration:	14/07/2012 – 13/07/2015
Budget:	€ 3,291,465 (EU contribution: 30,99%)
Contract number:	ECO/11/304431

Summary

The textile industry is on the eve of one of the biggest breakthroughs since the industrial revolution. The present project is one of the essential steps in realizing this breakthrough. Traditionally a generous amount of chemicals is applied for textile finishing operation in the textile industry, using an excessive amount of water as carrier for these chemicals. In the last decade, digital printing is entering the textile process market. Speeds are however limited to maximal 5 m/min due to required intermitting operation being used in most existing digital textile printers. With traditional textile finishing process speeds of 40 – 35 m/min, these machines are obviously not a suitable replacement of traditional process lines. By joining forces Reggiani, a well-known textile machine supplier, and Ten Cate Protect, a renowned textile production and finishing company, realized and validated a continuous printing process that enables high speed digital processing of textile substrates. The goal of the current project is to show the technical and industrial reliability of ink jet technology for economically feasible applications, and to demonstrate new products as carriers for this new technology. The first step is to show the world that ink jet is a technology reliable in industrial settings, outperforming the traditional processes from both a technical and an economical view. During the first phase the technical principle and reliability will be demonstrated and proven by means of applying a colored design to textile substrates. The next step, applying functional chemistry besides coloring, will be engineered simultaneously. This latter phase differs in machine set up and handling from the first application, and shows the extra potential of the technology by means of a completely new product with innovative characteristics, that would not be feasible with current state of the art technology.

Expected and/or achieved results

The main purpose of this project is the first demonstration/application and market uptake of the Digital Textile Finishing concept as a major eco-innovation for the textile industry, using two “digitalized” products as carriers for this innovation. TCP and REG will show the technical reliability of the technology/concept (as negative perception is a major hurdle for a broad market entry), as well as the innovative potential (making way for eco-innovation) and the strong environmental benefits, together making this a very cost effective solution. Expected results are:



1. Reduction of the environmental impact (energy and raw material usage) due to replacement of traditional finishing technologies by ink jet technology for high performing products (a replacement of 20 - 40% of the current traditional finishing operation is estimated to be possible). Comparison between the new enabling technology and the current traditional technologies result in a significant environmental performance improvement potential:
 - a. reduction of water > 80%
 - b. reduction of chemicals > 50%
 - c. reduction of solid waste > 70%
 - d. reduction of energy consumption > 80%
 - e. reduction of waste water > 80%
2. Demonstrate the technical and economical feasibility of the new Digital Textile Finishing technology for industrial speed finishing of textile products, by means of Sun Awning and Tent Cloth as a demonstrator product.
3. Demonstrate the technical and economical potential of the new Digital Textile Finishing technology for new innovate textile product design/development, as strictly controlled deposition of chemicals on substrates allows for completely new functionality and environmental performance, by means of an innovate demonstrator product.
4. Demonstrating a new route to mass customization. This route stops the production of superfluous products because only the product and quantity desired by the customer will be produced. In this way obsolete stock, becoming waste, is prevented.
5. Opening the European market for the Digital Textile Finishing technology on an industrial scale and speed, with an expected medium term market potential of 20 - 50 industrial High speed Digital Finishing machines for printing, and an 800 M€ market size.

So far a first digital printing machine for Sun Awning production (UV machine based upon the Renoir platform) has been realised, tested and is now operational at Ten Cate Protect. Currently (per August 1 2014) approximately 15 km of sun awning cloth has been produced on this machine. Based on the results of sample testing, a first launching customer decided to transfer its full sun awning collection to digital. An intermediate environmental performance assessment based on production experience so far generally supports the anticipated environmental performance improvement mentioned above. A business plan for the digital Sun Awning and Tent Cloth products has been prepared and will be executed in the coming period to further demonstrate economic viability.

Next to the digital printing machine for sun awning, a second machine (Osiris platform) for digital finishing to produce single sided hydrophobic/hydrophilic cloth became recently operational at Ten Cate Protect and is ready for first production tests.

Both new type production platforms will be introduced/launched on the market by Reggiani Macchine S.P.A. A draft business plan for the UV machine has been prepared and will be finalised and executed in the coming period. For the Osiris platform a business plan is currently being drafted that will also be executed in the coming period.

In Q3 2014 a seminar will be held by project partners at Ten Cate Protect to present and demonstrate the technology, products and its environmental and economical potential. A notification on this seminar with more details will soon be presented on the project website.

The information sheet will be published in the [Eco-Innovation website](#). The EACI reserves the right to edit the information sheet for content and length