The advent of globalisation has urged the European textile industries to implement new technologies to maintain the cost-effectiveness of the sector. One such development is the application of thin silane finishes on textiles, a development that has been introduced during the last decade. The extraordinary properties of these (functionalised) finishes include a.o. enhanced abrasion resistance and omniphobicity.

Globalisation has also resulted into an increased awareness about the pollution caused by traditional industrial processes and its impact on the atmosphere. To counteract this evolution there has been a considerable investment in the development of new production processes that deliver similar performances with only a fraction of the emission of the original production process. The curing of coatings by means of UV-light is certainly a major breakthrough that will save tons of CO₂ emission. Although the technique was introduced in the 1960’s in different sectors, the application in the textile coating industry is still in its infancy.

The use of photocurable coatings in textiles is very promising and has already proven to be an eco-friendly alternative to traditional solvent-based processes. Thanks to its low investment on return and the possibility of high production speeds it is very likely to be introduced into the textile market in the near future.

The use of the sol-gel technology in UV-curable hybrid coatings allows to apply the unique performances of sol-gel coatings in an environmentally sound way.

The major advantages of this technology include:

- Energy-efficiency
- High return on investment
- Enhanced abrasion resistance
- High (coating) as well as low viscosity (foulard, spray...) application feasible
- Low VOC emission
- Easy functionalisation (easy clean, UV protection...)
Objective of the project

During the project the application of UV curable sol-gel systems will be evaluated. This includes both the study of traditional sol-gel finishes applied by low viscosity application as well as high-viscosity coating applications such as knife-over-roll which are not accessible with traditional sol-gel systems.

Traditional sol-gel finishes will be modified in order to allow photochemical curing. For the coating application, UV-curable binder systems will be modified by the incorporation of sol-gel silica networks.

In a next phase, the coatings and finishes will be modified in order to obtain different functionalities such as flame retardancy, antimicrobial activity, abrasion resistance and barrier properties. The performance of each of these properties will be compared to the performance of traditionally cured coatings and finishes.

Project consortium

The project consortium is composed of 3 research centres, each playing an active roll within this project that is coordinated by Centexbel.

A users committee is installed to follow up the project and to guarantee that the project consortium will focus on relevant industrial topics. This users committee will consist of textile companies involved in either coating or finishing, suppliers of raw materials... They will be informed about the progress of the project and have the opportunity to conduct full scale tests with the materials under study to evaluate their economic and technical potential.

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End: May 31st, 2012

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