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Coordinator:
ATEVAL

Partners:
INESCOP
INSTITUTO TECNOLÓGICO
DEL CALZADO Y CONEXAS

NEWPORT srl
ATHENEA



Functional textiles and leathers by innovative MLSE™ process



TEXTILEATHER



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PROGRESS

The LIFE TEXTILELEATHER project, which started its activities on 1st June 2014, is led by ATEVAL (the Textile Business Association of the Valencian Region) and developed by a Consortium of five partners, including INESCOP (Spanish Footwear Technology Institute) as Technical Coordinator, CCI (Cluster Calzado Innovation) – a cluster 44 Spanish companies-, the Italian tannery Newport Srl and the Spanish Textile Industry TexAthenea S.L.

AIM



The LIFE TEXTILELEATHER project aims at demonstrating the feasibility of Multiple Laser Surface Enhancement (MLSE™) system - initially developed within the scope of metal industry - as a treatment able to provide textiles and leathers with functional properties. This breakthrough technology results from the hybridization of high voltage, gas plasma combined with laser at atmospheric pressures, and it allows for the deposition of a very thin, although stable, layer of chemical precursors on the material surface.

The MLSE™ technology is a continuous dry process enabling for significant reductions in the environmental impact of leather and textile finishing operations, compared to traditional processes. As a result of the application of MLSE™ technology in above-mentioned finishing operations, water consumption is expected to be reduced by 75%, hazardous chemicals by 90% and energy by 10-15%, thus reducing waste generation when compared with traditional finishing systems.

As a result, a reduction in the textile and leather companies' environmental costs is expected. And last but not least, high added value textiles and leather materials will be obtained, which will provide the European industries with new niche markets.

The following activities have been carried out during the first year of LIFE TEXTILELEATHER project:

Selection of parameters to be optimised in the treatment of textile materials.

This task involved the selection of textiles to be enhanced with MLSE™ technology. Selected materials included fabrics more commonly used for domestic upholstery including: curtains, cushions, tablecloths, etc and footwear (linings, uppers, insoles, etc.). Taking into account the characteristics of these textiles, a series of fundamental parameters have been established for the adaptation of the MLSE™ demonstration plan. Furthermore, the companies have set out the parameters to be finally met by the textile materials with regard to the different intended uses.

Adaptation of MLSE™ technology for textile and leather treatment

Standard textiles and leathers have also been selected for the optimisation of the MLSE™ treatment for the different functional treatments to be achieved.

Process optimisation for textiles and leathers in the pilot plant

Promising results have been obtained so far. Functional properties have been achieved although the process variables are still to be optimised for the different materials under study.

Functional characterisation of textiles and leathers

Standard test methods to assess the functional properties of materials have been established, taking into account the final application of each type of material.

Socioeconomic and environmental impact assessment.

Preliminary indicators on the environmental assessment of MLSE™ hydrophobic treatment on textiles compared with the traditional finishing treatments show savings in energy consumption by 99% and (perfluorinated) hazardous chemicals by 100%, which in turn, implies a reduction of the carbon footprint impact: by 90%.