

ACRÓNIMO / ACRONYM	LIFE ANHIDRA
TÍTULO / PROJECT NAME	UNIQUE AND SUSTAINABLE SYSTEM FOR PRODUCING GARMENTS WITHOUT WATER DISCHARGES
EXPEDIENTE / PROJECT NUMBER	101074372
PROGRAMA / PROGRAMME	LIFE-2021-SAP-ENV (LIFE2027)
PERÍODO EJECUCIÓN / PROJECT DURATION	SEP'22 – FEB'25

MOTIVACIONES / BACKGROUND

Water scarcity is one of the common negative effects of climate change. Many water bodies are at risk of failing to meet the aim of the EU Water Framework Directive (2000/60/EC) to achieve good status. In addition, wastewater discharges continue to be prominent pressures with respect to ecological and chemical status. The continuing presence of a range of pollutants in some of Europe's freshwaters threatens aquatic ecosystems and raises concerns for public health. Over exploitation of resources gives rise to imbalances in water demand and availability and leads to ecosystem disruption.

Water scarcity affects at least 11% of the European population and 17% of the EU territory, mainly in Southern Europe. Around the Mediterranean, some 20% of the population lives under constant water stress and in summer, over 50% of the population is affected by water stress. Water Scarcity is no longer confined to a few corners of Europe and is fast becoming a concern across the EU. By 2030 water stress and scarcity will probably affect half of Europeans river basins. According to the Water Supply and Sanitation Technology Platform (WSSTP), the main problems of water European scenario are:

- Diffuse pollution: affects 90% of river basin districts, 50% of surface water bodies and 33% of groundwater bodies across the EU.
- Europe water demand: stabilise towards 2050.
- Water scarcity is already a serious problem in 11% of EU, grow to 30% in 2030.
- Increasing effects and costs (60%) of climate change due to floods and droughts.

Textile industry is an intensive water consumption industry with 93 billion of m³/year (4% of the total water consumption in the world). The dyeing and textile finishing are the processes most water consumption. Annually, more than 150 billion of garments are manufactured with wastewater (WW) production range of 17,5 – 50 billion of m³/year (19-56% of the total water consumption in the textile industry). Europe represents the 30% of the total textile manufacturing industry. This high demand of water resources should be reduced with technical solutions that makes this sector more sustainable, on the one hand by reducing the use of resources and, on the other hand, by decreasing chemical pollution generated.

More than 40 billion m³ of WW are treated in the EU every year but only 0.964 billion m³ of this water is reused (2.4%). Europe could use 6 times the volume of treated water that is currently used, but awareness of the benefits of this technology is low, and Europe still lacks an adequate supportive framework for water reuse. So, EC has published a proposal for a Regulation of the European Parliament and of the Council on minimum requirements for water reuse (28/5/18).

OBJETIVOS / GOALS

LIFE ANHIDRA proposes the development and validation of an innovative, efficient, and effective solution to water regeneration and reuse of water in situ in textile finishing process. The new concept will allow water reuse in industrial washing machines during 60 operation days, saving up to 21,000 m³ during this period, and 123,408 m³/year in one industrial facility.

The design and construction of the ANHIDRA technology will be carried out, by an upscaling process, as the technology has been previously developed under several R&D actions and tested at smaller scale. This system will be patented internationally with a high replicability potential all over the world. The success of the technology will be supported with a detailed replication and business plans, to reach European textile industries in short-term.

Savings in terms of fresh water used, wastewater generated, energy consumptions and other flow wastes generated during the project will continuously be monitored, and a Life Cycle Analysis will be performed prior the end of the project.

In addition, valorisation of fiber fragments and fiber-like wastes will be explored, based on a circular economy approach. The textile wastes generated by the system will be collected, conditioned, and characterized, prior to investigate their potential processability for textile-based end applications.

The project will contribute to achieve some 2030 Sustainable Development Goals related with Circular Economy:



RESULTADOS ESPERADOS / EXPECTED RESULTS

The project is coordinated by the Spanish company JEANOLOGIA SL, being AITEX and the Portuguese company PIZARRO SA the other partners (beneficiaries). The main results expected in the frame of LIFE ANHIDRA project are:

- Water reuse and savings of 21,000 m³ during 60 operation days, in industrial washing machines. In one industrial facility is expected to reach savings of 123,408 m³/year.
- This new alternative concept of water reuse at close loop is expected to reduce the water consumption in 92%, and wastewater generation at 98% from the conventional textile finishing processes, simultaneously avoiding discharges of emerging pollutants, microfibres and pathogens to the environment.
- Electric energy consumption is expected to be reduced in 15%.
- It's expected the implementation of 36 facilities 3 years after the project and at least 100 systems in the following 5 years after the project at international locations.
- This fact will derive to potential savings of up to 12.34 million m³/year of water (worldwide).
- In addition, ANHIDRA technology will recover textile fibres that normally arrive to WWTPs with wastewater. New routes for valorisation of these fibres will be defined during the project based on a circular economy approach, in order to be used in new added-value applications.

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