

UNIQUE AND SUSTAINABLE SYSTEM FOR PRODUCING GARMENTS WITHOUT WATER DISCHARGES - NEWSLETTER

ISSUE #1, MARCH 2024

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LIFEanhidra



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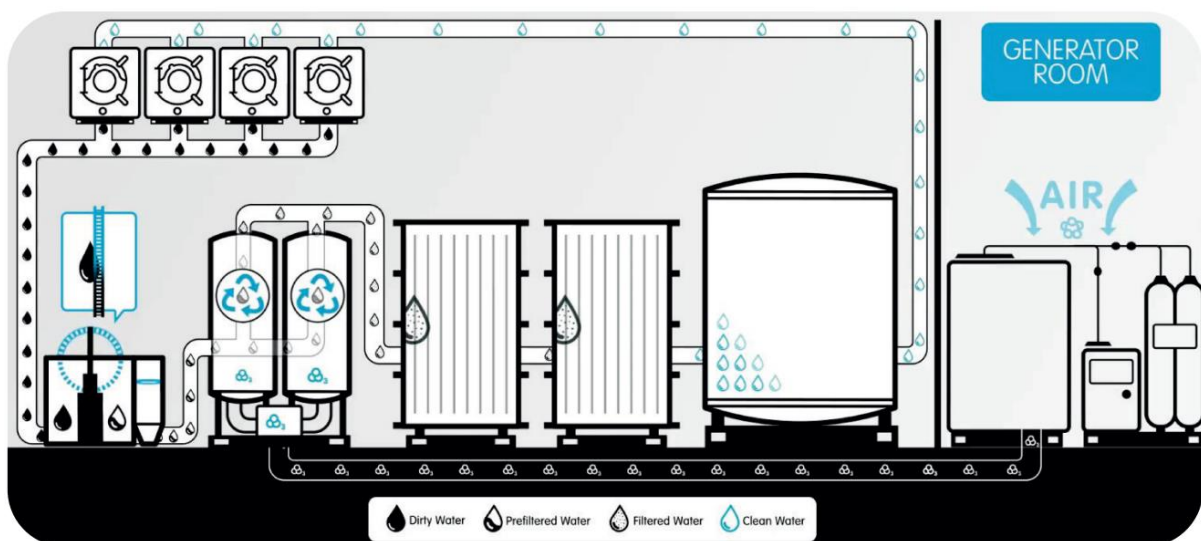
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1. THE LIFE ANHIDRA PROJECT

MAIN OBJECTIVES

LIFE ANHIDRA (September 2022 – February 2025) 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.
- 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 (LCA) will be performed prior the end of the project.
- **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.



EXPECTED RESULTS

- **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 massive 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 water up to 12.34 million m³/year (worldwide)**.
- In addition, **ANHIDRA** technology will recover textile fibres that normally arrive to wastewater treatment plants (WWTPs) together with the water to be treated. **New routes for valorisation of the released fibres** will be defined during the project based on a circular economy approach, to be used in new added-value applications.

2. LIFE ANHIDRA PROGRESS UPDATE

After 18 months, **JEANOLOGIA** is developing and leading the project as expected and according to the initial plan established, to provide a highly accepted solution for water saving in textile industry, being implemented by **PIZARRO**, and validated in terms of LCA and environmental benefits by **AITEX**. All work packages of the project have already started, and no delays have occurred till this moment.

Design and construction of the **ANHIDRA** technology has been successfully developed and the Demo Plant has been completed designed and installed at **PIZARRO's** facilities (Brito, Portugal). At the end of 2023, **ANHIDRA** plant was ready for working connected to real industrial facilities.

- Design of mechanical devices and connections of all components of the system.
- Design of control systems for the management of the plant.
- Construction of the demo plant.
- Remote connection via IoT for assistance and monitoring.

In addition, for the technical validation and demonstration of the **ANHIDRA** technology, the connection of Demo Plant to real finishing processes in real production conditions, as well as the definition of the 'Validation Protocol' have been finished. And these activities are ongoing:

- Validation of **ANHIDRA** in real production conditions, by **JEANOLOGIA** and **PIZARRO**.
- Characterization of fibre waste and definition of possible routes of valorisation, by **AITEX**.
- Approach to the policies and regulations influencing **ANHIDRA**, by **AITEX**.

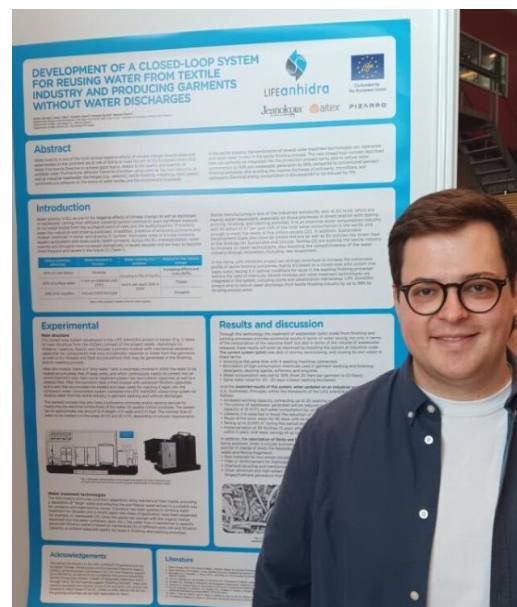
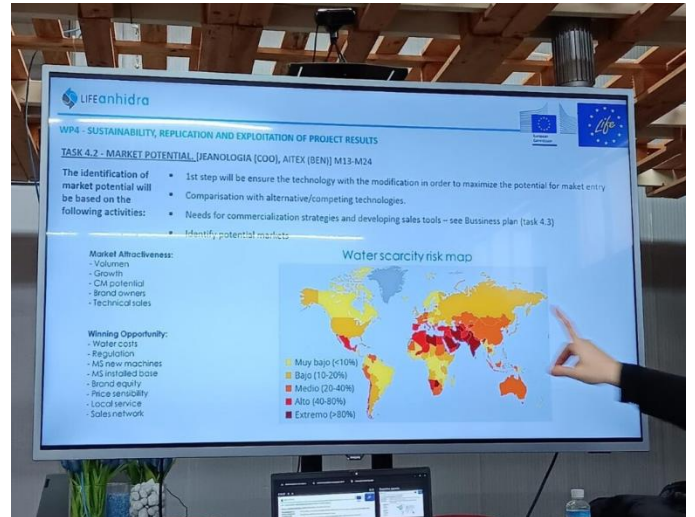


The replication and exploitation tasks are their first stages, working on defining the replication strategy for the new process in other garment finishing industries in key areas and to transfer to other textile subsectors. It will include replicability study, patentability, potential market & business model development. At this time, only patentability actions have been performed, European Patent and extension to Spain and Turkey. Also, US patent is in process.

Textile industry & manufacturing areas worldwide are usually located in high-stressed countries with water scarcity problems.

LCA is being developed with a “gate-to gate” vision, focused on the following indicators: water use (water footprint), energy, greenhouse gas emissions (carbon footprint), impacts on human health, and impacts on ecosystems. At this stage of the project, the preliminary identification of inputs/outputs has been performed, as well as the main KPI data related to the project goals and main expected results.

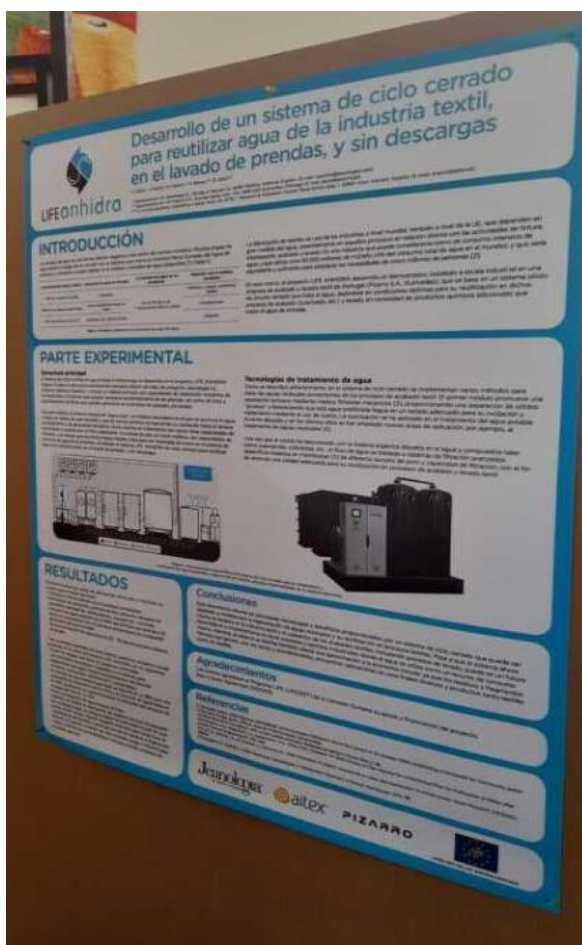
3. ATTENDANCE TO EVENTS



AITEX attended the ADD International Textile Conference during 31st November – 1st December 2023 in Dresden (Germany), as well as the online X Congreso 'Creando Sinergias' UPV on 5th July 2023 (Alcoi, Spain), presenting a couple of posters describing the project objectives, the expected results, and the preliminary trials on valorization of fiber wastes recovered from the ANHIDRA system.

Our partner **PIZARRO** attended the Denims and Jeans India Show, which took place on April 26th and 27th 2023 in Bangalore (India), where they provided a presentation of the **ANHIDRA** project and its related technologies to the audience (more than 1,300 attendees).

India is currently experiencing a fast-growing middle class, as well as some important investment programmes, also being one of the most important countries for European Union trading, including textiles.



AITEX joined the 48th AEQCT Symposium hosted by ATEVAL in Ontinyent (València) on March 16th, 2023. A poster of **LIFE ANHIDRA** project was presented to the attendants. And on November 29th, 2022, **LIFE ANHIDRA** scope and the environmental issue on microplastics and fiber fragments pollution was disseminated by **AITEX** through the oral presentation “Soluciones tecnológicas en el tratamiento de microplásticos en la cadena de valor del textil” during the I Jornada Cátedra UPV Jeanologia MISSION ZERO.

4. MEET OUR CONSORTIUM PARTNERS

LIFE ANHIDRA project (2022 – 2025) is coordinated by the Spanish company **JEANOLOGIA S.L.** (Paterna - València), being partnered by the Spanish researching and innovation center **ASOCIACIÓN DE INVESTIGACIÓN PARA LA INDUSTRIA TEXTIL – AITEX** (Alcoi - Alacant) and the Portuguese company **PIZARRO S.A.** (Brito - Guimarães).

In the past, the same three partners -also under the leading of **JEANOLOGIA-** developed the ancient CIP Eco-Innovation project **MNB ECOFINISHING** (2013 – 2015), focused on micro-nanobubbles and micronization technology applied on garment finishing processes, which was an example of green product & technology

transferred to the market in a successful way, as posted by the CINEA - European Climate, Infrastructure and Environment Executive Agency in its website and Social Media https://cinea.ec.europa.eu/featured-projects/life-eco-finishing_en

We're expecting the same great success for our closed-loop system for re-using water from garment finishing processes. In the meanwhile, you will find below some information about the main tasks which **LIFE ANHIDRA** partners are involved, as well as the description of their activities and services in the frame of the textile industry.



JEANOLOGIA coordinates **LIFE ANHIDRA**, being the leader of WP1 (project management), WP2 (design and construction of the technology) and WP4 (sustainability, replication, and exploitation of project results).

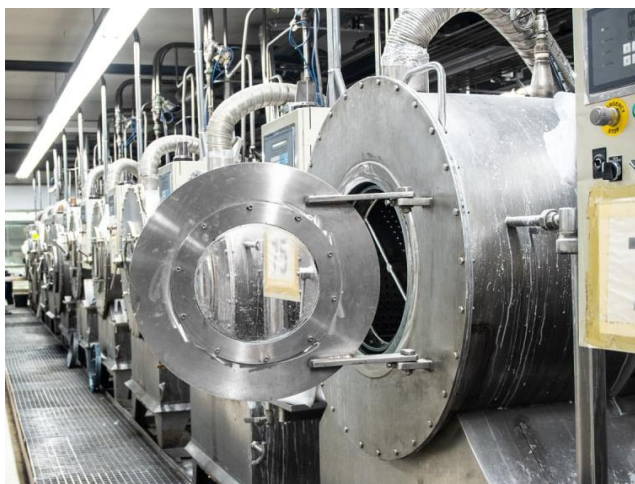
JEANOLOGIA was born in 1994 with the mission of transforming the textile industry, developing technologies and eco-efficient production models. It's built upon ethical and moral principles, focused on high-performance while being environmentally friendly.

+ info: <https://www.jeanologia.com/>

AITEX is leading WP5 (LCA and impact monitoring) and WP6 (dissemination and communication).

AITEX is a research & innovation center which performs characterisation trials and certification of textile materials and articles for a wide range of sectors. Its core objective is to create and transfer knowledge of textiles to the private sector, making the textile industry more competitive with a high added-value factor and solutions.

+ info: <https://www.aitex.es/?lang=en>



PIZARRO is leading WP3 and the technical validation and demonstration of the **ANHIDRA** technology.

It was in 1983 that **PIZARRO** was born, the result of an old and longed-for dream of seeing a company in the denim industry grow, focused on innovation, creativity, and sustainability. It's referenced by the best stylists and designers from around the world, being one of the leading finishing companies. Dedicated to treating garments made in knits and fabrics, specially on Denim.

+ info: <https://pizarro.pt/en>

5. CLUSTERING AND NETWORKING PROJECTS

LIFE ANHIDRA performs some interactions and networking actions with other EU-funded projects focused on water management, wastewater treatment, textile technologies, as well as valorization of waste streams coming from several industries. In this issue #1 of our newsletter, we highlight the projects:

- LIFE RECYCLO <https://www.treewater.fr/en/recyclo>
- REWAFT <https://textilewaterfootprint.eu/>
- LIFE ECODIGESTION 2.0 <https://www.lifecodigestion.com/en/inicio-english/>



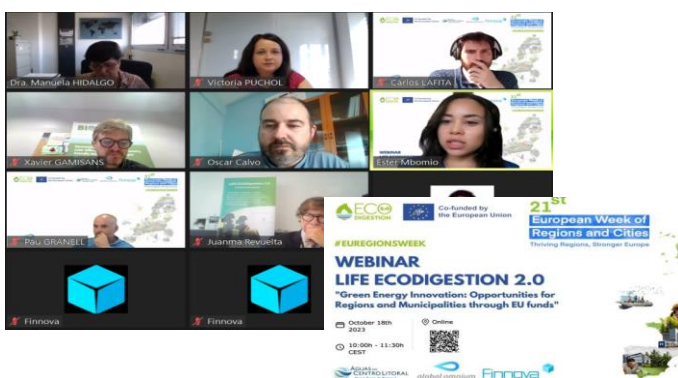
LIFE RECYCLO and **LIFE ANHIDRA** met online in April 2023, sharing the main objectives of each project, as well as the general structure of each system.

LIFE RECYCLO will bring an innovative wastewater recycling solution to the market of the laundry sector. The 3 laundry partners are showcased in this project and demonstrate the efficiency and necessity of the RECYLO process in the laundry sector.



REWAFT and **LIFE ANHIDRA** met in Alcoi (Spain) at EPSA-UPV facilities, in May 2023. Main goals of each project were discussed, as well as some possibilities to disseminate project results in common events.

REWAFT is an Erasmus+ project which aims to raise awareness on the water footprint in the textile sector, as well as on the sustainability skills of students and textile companies regarding the use of water in textiles.



LIFE ANHIDRA was invited to participate in a webinar hosted by LIFE ECODIGESTION 2.0, focused on green energy innovation (October 2023). Possibilities to generate biogas -biomethane- from wastes have inspired **LIFE ANHIDRA** to explore it in WP3.

LIFE ECODIGESTION 2.0 scales an innovative technology for the control and automation of codigestion in WWTPs to produce green energy.

6. UPCOMING EVENTS

LIFE ANHIDRA is expected to participate next months and be disseminated in these events:

- 49th Symposium AEQCT (Terrassa, Spain), in April 11th 2024 <https://www.aeqct.org/noticias/49-simposium-anual-de-la-aeqct/>
- EU Green Week Partner Event (tbc), May 29th – September 1st 2024 https://green-week.event.europa.eu/partner-events_en