



Making bags for transporting fresh water by sea: Tarpaulins are large sheets of strong, flexible, water-resistant material used for protection from extreme conditions. The most common material used to make them is PVC-coated polyester, which is characterized by its low price and good resistance. However, recycling these products represents a major challenge because there are no large-scale commercial solutions for tarpaulin recycling. Companies have been trying for decades to replace PVC-coated fabrics with a polymer that is more recyclable. Although some alternatives are available, they are generally too costly to compete with PVC-coated fabrics and do not fully address stringent safety and recyclability requirements.



The European TARPAULIFE Project aims to demonstrate the possibility of manufacturing large-area polyolefin coated fabrics such as polyethylene and polypropylene that can compete in terms of cost with PVC-coated fabrics while maintaining their properties of strength, flexibility, impermeability and lower environmental impact. This new material will be used to manufacture bags for transporting fresh water by sea, although this innovative, more sustainable and recyclable fabric can also be applied to other products, such as tarpaulins commonly used in lorries and coverings.

Rina Consulting is coordinating this project co-financed by the European LIFE Programme with the participation of the companies Ziplast, Nowa and Giovanardi, and AIMPLAS.



The main result of the project will be a production facility of three-metre-wide polyolefin-coated fabrics with a production capacity of 250,000 m²/year one year after termination of the project, which started in May 2024 and will last for two years. The main application selected is water bags, which represent an innovative way of transporting large amounts of fresh water by sea, as opposed to the usual forms of transport in tankers.

Solving water supply problems in a sustainable way

This technology was developed mainly to transport water from high-production areas that are relatively close to areas with supply problems due to episodes of drought, seasonal increases in demand due to tourism and even to respond to emergency situations. This initiative has already resulted in the REFRESH and XXL-REFRESH Projects financed by the European Commission, in which AIMPLAS, RINA and Ziplast participated, and which successfully tested a floating water bag with a modular design and a zip connection. The aim of the TARPAULIFE Project is to go one step further with the coating material of these polyester bags and replace PVC with polyolefins so they are more sustainable and easier to recycle.



As demonstrators of the project, two 2,500 m³ water bags will therefore be made with the new material for testing in two locations in Europe. Demonstration of the water bag will provide a backup freshwater reservoir in the North Sea off the coast of Iceland and in the Mediterranean.

Thanks to this new production plant for polyolefin-coated fabrics, which will be located at the Ziplast facility in Milan, it is anticipated that more than 100 water bags will be produced three years after project end and more than two million cubic metres of water will be stored at three fresh water storage sites. The proposed

solution will help avoid incineration of more than 2,000 tonnes of PVC and prevent more than 13 tonnes of CO₂ from being released into the environment.



General goals

- **PRODUCTION**
the set-up of a production facility of a mono-material POLYOLEFIN-based coated structural fabrics, width 3 metres, with a production capacity of 250.000 square meters per year already 1 year after the project end.
- **PROTOTYPING**
the prototyping of two 2.5 million litres waterbags made with the new POLYOLEFIN-based coated fabrics and the quantification of the environmental and LCA-LCC benefits compared to the use of PVC-coated fabrics.
- **DEMONSTRATION**
the demonstration of the waterbag to be used as backup freshwater reservoir in two locations

Specific goals

- Processing plant with a new coating machine capable of coating up to a fabric width of 3,000 mm.
- Procurement of equipment: a weaving machine for production of high-strength textiles with a width of 3,000 mm from polyolefin fibres.
- Integration of components and testing: checking and monitoring that the different system components are fully integrated and meet expectations in terms of performance is fundamental.
- Production runs, fixing errors and validation.
- Prototype design.

in Europe, offshore Iceland and in the Mediterranean.

- **EXPLOITATION and REPLICATION**


Exploitation and replication of project results in other sectors, namely for the production of eco-friendly truck tarps and glacier ice covers, and demonstration of sustainability with the quantification of the environmental and LCA-LCC benefits compared to the use of PVC-coated fabrics for all the intended applications.

- **DISSEMINATION & COMMUNICATION**

An effective dissemination and communication of the project results, targeting stakeholders worldwide.

- Procurement of raw materials and ancillary components.
- Production of zip and tarpaulin patterns.
- Waterbag demo under dry conditions.
- Waterbag demo at sea (Northern Europe).
- Waterbag demo in the Mediterranean.
- Economic and environmental sustainability.
- Management of project innovation by using a careful exploitation and IPR management strategy, and ensuring the economic viability of all key project results.
- Studying replication of the developed solutions for different markets and applications. Initial exploitation of the TARPAULIFE results will be in Europe.
- Preparation of communication material.
- Dissemination across different channels.
- Compliance with EU indications in terms of alternative products to PVC and additive-free products.

The project also includes replication of the results in other sectors, namely, the production of eco-friendly truck tarps and glacier tarpaulins, and a demonstration of the sustainability of the new polyolefin fabric coating solution by quantifying the environmental and LCA-LCC benefits compared to the use of PVC-coated fabrics for all intended applications.

The TARPAULIFE Project is co-financed by the European Union through  the LIFE Programme with file number 101147948 – LIFE23-ENV-IT-TARPAULIFE.



Source: TARPAULIFE / Aimplas