TEX DELTA
TEJIDOS TECNICOS NONWOVENS GEOTEXTILES

ECOTEXAGUA
R&D OF ECO-EFFICIENT GEOTEXTILES FOR IRRIGATION AND DRAINAGE

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CDTI EEA-GRANTS

1. MOTIVATIONS FOR THE PROJECT (REASONS FOR THE STUDY).

TEX-DELTA bases its business strategy in the research of differentiating elements, as quality and as a continuous researching and development line for new products and processes. The innovation in geotextiles is targeted to different sectors as civil work, construction, agriculture, gardening and applications for the erosion and environment control. The goal is to provide solutions to customers' necessities.

The investing growth in R&D projects is increasingly higher and the company is becoming a reference in its field. The R&D project management carried out by the company, shows the importance with the connection between the customers' necessities, shown through the commercial service, and the capacity from the engineers and qualified staff to research and develop the required solutions.

The company stands out by offering to its customers the optimal solution to their problems, the minimum possible cost, the guarantee of obtaining optimal results and, because of the long experience and knowledge in this field, reducing uncertainty.

The markets in which the company trade, they increasingly demand systems able to improve the water management, as well as lower cost solutions in terms of application and maintenance.

This new product is focussed on covering the needs of the specific sector of construction, where new products are always demanded. On the one hand, the big horizontal irrigation installations needed more efficient techniques to reduce the water consumption. On the other hand, vertical gardens, which have an increasing demand at the moment, they need cost effective solutions, with a low maintenance cost and an efficient use of water. Finally, in civil works sector, the environmental issues are increasingly influential, demanding new systems to collect liquid residues. Therefore, taking into account the needs and demands, TEX-DELTA was decided to undertake a new project in order to develop a new geotextile combined with a variable pipeline system that allows an efficient irrigation or liquid drainage depending on the final use. The pipeline type varies depending on the final purpose: flexible for irrigation and rigid for drainage.

As pointed before, the final product has two final applications: can be used as irrigate system, horizontally and vertically, and can be used as a liquid drainage system for residues.

This project was undertaken under clear commercial and strategic motivations. This new geotextile developed product allows liquids to be distributed efficiently and provides added value for the customer, making easy and cost effective the management of water or residues in a wide range of final uses.

Although the main reasons to undertake this project were environmental type, and both application have benefits for the environment, the commercial benefits were also influential. This new solution provides new

possibilities in vertical and horizontal gardens in architecture, making possible a better thermal insulation in buildings and therefore, is an advantage from competence in this market.

2. OBJECTIVES.

TEX-DELTA carried out this project in order to develop a new product for irrigation, providing a uniform an efficient distribution of water in both horizontal and vertical gardens, and also for residues management, collecting and draining liquid residues in specific areas.

The product aimed to irrigation is composed by an impermeable material (the pipeline), which is used as water conduit, and a geotextile (enveloping the pipeline) used as water distributor, through its absorbent properties, making the area where the fabric is, a wet area. The pipeline system in this irrigation system is characterised by being a perforated pipeline, using this perforations to feed the textile with the water.

The product used as drainage system is characterised as being a continuous liquid draining mechanism, avoiding the residues accumulations. Its composition consists in a geotextile, which uses its absorbent properties to absorb the liquid residue, and an impermeable polymer below in order to avoid the residue to trespass the textile to the ground.

Although the development implies two different functions, it is based on the same principle. The project has consisted in develop two textiles surfaces, sewn each other, and introduce the perforated pipeline between them.

The project was carried out by only one milestone in which the following tasks were realized: A study of the state of the art about the irrigation systems and drainage systems to prevent residues to filtering in the ground in landfills was completed. Subsequently, the material selection and the product development were undertaken. Then, all the tests and proves were carried out in order to ensure the adequate quality in the product. With the results, an evaluation was carried out comparing the results obtained with objectives in the project and expectations. Finally, the conclusions were established.

The technological innovation allowed a new way of irrigation and drainage, being able to work in this two different tasks:

- Efficient irrigation management: The developed geotextile has been aimed to manage efficiently in these two main scenarios: The first one is to be applied in horizontal gardens as well as vertical gardens in architectonical purposes. The second scenario is to be applied in desert areas as underground irrigation system to avoid the water loss by evaporation.

- Residues collector: The same system described before for irrigation, can be used for the residues collecting, adding an impermeable polymer that avoids the residue to filter into the ground. In this process, the residue is absorbed by the geotextile and conducted to a specific place in which that residue can be adequately treated.

3. OBTAINED RESULTS

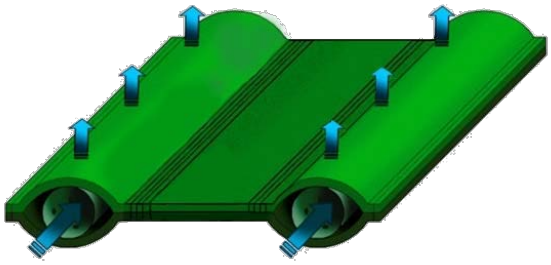
Form a technical point of view, the goal has been totally achieved, because both textile and pipeline system work with the needed synergy to generate a satisfactory wetting for irrigate without wasting water, and also to effectively drain liquids avoiding the filtering to the ground.

Form the commercial point of view, the product allows the company to offer an innovative system to irrigate and valid for vertical and horizontal gardens in architecture, increasing efficiency and representing a cost effective solution. At the same time, its use as residues collector provides an easy and effective solution to avoid environmental risks. Therefore, in both cases the product provides solutions and an added value for the market, which fulfils the initial goal.

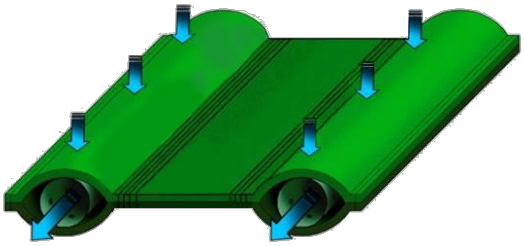
From the environmental point of view, a better use of water in irrigation and the improvement of the efficiency, as well as a system that avoids liquid residues in landfills to filter into ground, have been all achieved.

At strategy level, the product developed in this project allows the company to diversify and strengthen its position as a geotextiles solution provider. The acceptance of this new product by the market may trigger the development of new products in the same line and for other sectors.

The developed product in this project CDTI EEA-Grants provides efficient management in irrigation and liquid residues drainage.



Irrigation



Drainage

The new developed product consist in a new geotextile compound which combines the use of textiles to distribute or collect the liquid, and the use of a pipeline system as a water feeding (in irrigation) or liquid residues evacuator. The whole system consists in two textiles surfaces, sewn each other, and the pipeline between them. As the pipeline is perforated, it allows the system to provide or collect water/liquid depending on the situation.

The advantages or improvements provided by this new product are diverse; for instance, it allows an adequate management and efficient distribution of the water in irrigation installations because of reducing water wastes. At the same time, the versatility of the system provides different mounting possibilities for horizontal and vertical gardens. On the other hand, it is also design to work as liquid collector, making it especially interesting to be used in liquid residues collecting in areas where landfills are located and there is a high risk of filtration to the ground. The product can be installed quickly, is cost effective and do not require a significant maintenance cost, being especially interesting in fields like civil works or agriculture. Therefore, the product is competitive, versatile and easy to work with, besides of providing solutions to real problems in construction/agriculture sectors and being beneficial for the environment.

The new product is therefore, a new and beneficial product for companies related with construction sector and for the environment. Also is competitive product that provides a cost effective solution with low maintenance.