

G E L Y
Geothermal Pipes

GEOHERMAL COLLECTOR PIPE WITH MAGNETOACTIVE THERMALLY CONDUCTIVE FILLERS AND GEOMETRICAL FEATURES TO INCREASE THE HEAT DIFFERENCE, THE ENERGETIC BENEFIT AND THE OVERALL SYSTEM PERFORMANCE

PROJECT PARTNERS



ELYSEE IRRIGATION LTD

A manufacturing company of plastic pipes and fittings for water supply, irrigation, sewage, and energy. Elysee, is one of the largest plastic industries in Cyprus

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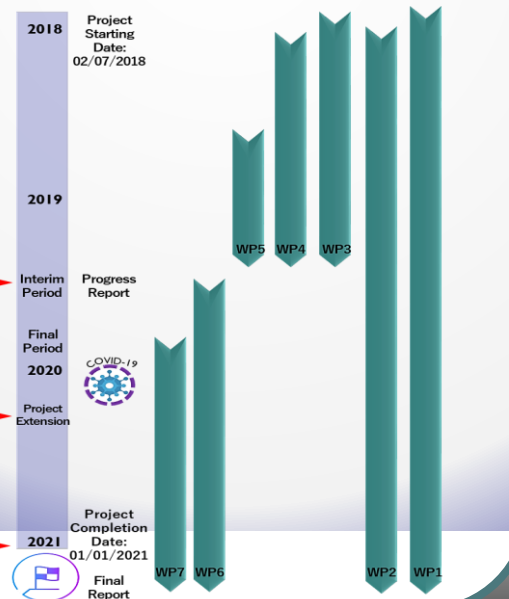
UNIVERSITY OF CYPRUS UCY-MME

The Department of Mechanical and Manufacturing Engineering at the University of Cyprus demonstrates significant research activities in Materials Science

The project is co-funded by the European Regional Development Fund and the Research Promotion Foundation of Cyprus

Project – Time Frame

- ✓ **WP1.** Project Management
- ✓ **WP2.** Dissemination Activities
- ✓ **WP3.** Synthesis, characterization, and Incorporation of magnetoactive (nano)fillers into HDPE samples
- ✓ **WP4.** Design the internal surface texture and the external shape of GELY pipes and production of mockups
- ✓ **WP5.** Simulation study using computational fluid dynamics to select the optimum combination of material structure and geometry
- ✓ **WP6.** Design, construction and integration of the radially magnetic field system and experimental die into an extrusion machine as well as production of pipes
- ✓ **WP7.** Demonstration and evaluation of GELY pipes in real conditions



Aim of the project

The development of a tailor-made geothermal collector pipe with unique

- ✓ Materials' Composition
- ✓ Shape

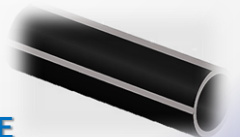
...by modifying the properties of the currently used conventional High-Density Polyethylene (HDPE) Pipes

- ✓ Chemical
- ✓ Physical
- ✓ Thermal – The GELY project has deeply investigated potential routes to increase the typical HDPE thermal conductivity

Achievements

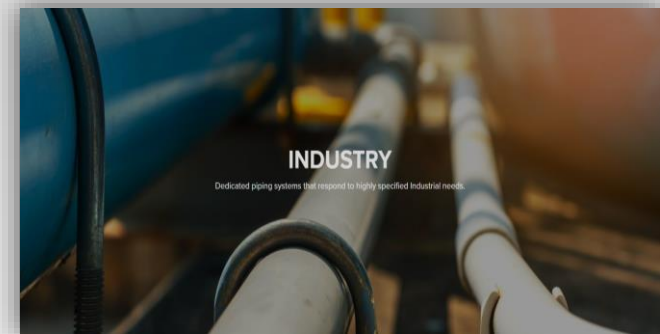
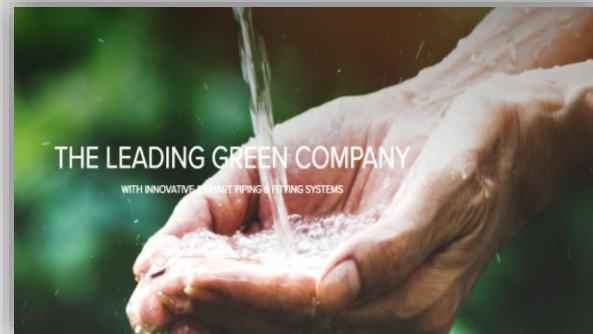
- ✓ A novel raw material that includes thermally conductive nanofibers has been successfully introduced into the extrusion line
- ✓ The production of GELY pipes is achieved
- ✓ Highly-Enhanced thermal conductivity, about 125 % improvement over conventional HDPE 100 has been reached
- ✓ 88 % of the available ΔT is acquired
- ✓ Mechanical testing according to EN12201 Standard
- ✓ Preliminary heat transfer tests are very promising to cover a new geothermal piping solution

Elysee's new potential market product – GELY PIPE



Project website: <https://elysee.com.cy/gely-es>





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