

DEVELOPING HIGH PERFORMANCE HEAT EXCHANGERS FOR GEOTHERMALS

Industrial challenges



Project GeoHex aims to develop heat exchanger (HX) materials, addressing both the improvements in the anti-scaling and anti-corrosion properties as well as the heat transfer performance of the HX material, leading to more efficient and cost-effective systems.



Technical objectives

1

Develop tools to characterise bubble droplet dynamics, using both numerical simulation and the development of an image processing algorithm

2

Develop materials for 3 different heat transfer mechanisms used in heat exchangers:

- Single phase heat transfer
- Condensing surface
- Boiling surface

3

Develop a sustainability model for GeoHex using parametric lifecycle assessment (LCA) and cost model of the GeoHex materials (to be developed in this project) to identify the environmental and cost performance of the materials

4

Develop a knowledge based engineering (KBE) tool combined with a multicriteria Decision-Support System (DSS) incorporating all the models and experimental results from the project.

5

Demonstrate the scalability and manufacturability of six prototype GeoHex materials.

Benefits

Maximising energy transfer and efficiency with innovative materials



Improving environmental footprint



Impact

To significantly reduce the cost of a geothermal plant



To contribute towards strengthening the EU leadership on renewables



Consortium

UK

TWI Ltd
Technovative Solutions
University of Leicester

NORWAY

Flowphys

ITALY

Spike Renewables

ICELAND

ON
University of Iceland
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