Maria del Pilar Alvarez Gallardo

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Personal information:

Maria was born in 1986 in Michoacan, Mexico. She has a degree on Biology with a minor in Natural Resources from the Autonomous University of Guadalajara (Mexico); during University, Maria worked as an intern in different areas of expertise within Biology such as restoration projects in the jungle of the Mexican Pacific, Aquaponics and Aquaculture Industry, Biodiversity Conservation with the Guadalajara Zoo, and research projects to safeguard an endemic fish traditionally used as a biomarker for agricultural pollution from which her Bachelor Thesis was inspired. After that, Maria worked as Environmental Inspector for Natural Protected Areas and Industries in her state.

In 2011, Maria joined the Erasmus Mundus Master Programme in Industrial Ecology (MIND) where she spent her first year at the University of Graz in Austria and the second one at Delft University of Technology and Leiden University in The Netherlands. During that time, she had the opportunity to obtain a globalized view and understanding on our Environment and the pressure that it's under. During her last year at MIND, Maria did an Internship with SHELL, where she worked in a project of sustainable households, specifically with Heat and Energy related topics and from which she developed her Master Thesis.

Title of Thesis: Assessing the Performance of Ground Source Heat Pumps in neighboring medium-size households – A case study in The Hague, Netherlands.

Abstract:

Until now, exploitation of geothermal shallow energy using a Ground Source Heat Pump (GSHP) has generally been limited to large commercial / industrial units.

This project examined the geological characteristics of the case study as determined by a Thermal Response Test (TRT) where parameters such as the thermal conductivity, the thermal resistance and the thermal diffusivity of the ground were obtained. Furthermore, the heat requirements of the test house were calculated with real data obtained during a year between 2012 and 2013 in order to determine the size of the system that would be required for each one of the houses assuming they all have the same demand throughout the year.

Calculations of the length required of every Borehole Heat Exchanger (BHE) and the distance between them were made for the area of each house assuming no thermal interference and a proposed design of borehole arrangement is suggested for the test house.