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Sustainable Energy Competence (SENCE)

Project 1

***Analysis of the technical, economical and ecological
feasibility of monovalent horizontal geothermal heating
systems with particular reference to two typical tourist
lodges in the Araucanía Andina***

by

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ABSTRACT

Tourism is an important commercial sector in Chile. Most of the tourists travelling to Chile are concerned about the nature and culture of their destination as well as the impact the tourism causes on them. Yet Chile's houses and tourist lodges do not meet the latest developments regarding energy efficiency and eco-friendliness which affects many tourists. Therefore the Chilean government initiated a project (FONDEF) investigating on solutions for sustainable and energy efficient tourism. In the course of that the heating of the tourist dwellings plays an important role. One possibility that features a sustainable alternative is the geothermal energy offering renewable energy minimal interfering with the environment.

Therefore this elaboration investigates on the technical, economical as well as ecological possibilities of a monovalent horizontal geothermal heating system for two typical tourist lodges in the region of Araucanía Andina. The study combines the local conditions with calculation methods according to European norms.

It shows that in general the system is technically practicable in the region. Regarding ecological issues it is in most angles eco-friendlier than the existing heating systems. Economically the geothermal energy needs a certain operating time due to its high initial costs to be competitive. To have the edge over the existing systems it needs an annual occupancy of about 22 % respectively 40 % in these examples.

Although the study displays that geothermal energy has mainly two entry barriers – initial price and Chile's legislation – it is the best option in the context of the FONDEF-project. Heating with geothermal energy is a step in the right direction offering clean renewable energy for the tourists minimal interfering with the environment at a competitive price. Moreover the results show that the same system can also be implemented in family homes in Chile's rural areas. Taking into account that the region has severe air pollution problems caused by the current heating systems the geothermal system offers a win-win-situation for all involved parties as it is more economical and eco-friendly than the existing heating systems.