

Using Facilities And Potential Of Geothermal Resources In The Canakkale Province - NW Turkey

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Turkey, due to its geological location, has a rich potential in point of geothermal resources. Çanakkale province is located northwestern (NW) part of Turkey and it has important geothermal fields in terms of geothermal energy potential. Geothermal resources reach to the surface both effects of past volcanic activity and extensions of fault zones associated with complex tectonic systems in the region.

The aim of this study is to summarize hydrogeochemical characteristics, using facilities and potential of hot springs and spas located in the Çanakkale province. There are 13 geothermal fields in the region and the surface temperatures of hot springs are ranging between 28 centigrade degree and 175 centigrade degree. Hydrogeochemical compositions of thermal water display variable chemical compositions. Na, Ca, SO₄, HCO₃ and Cl are the dominant ions in these waters. Thermal waters of Tuzla and Kestanbol geothermal fields which is located the near coastal area can be noted NaCl type. Because these two geothermal waters have high TDS values, scaling problems are seen around the hot springs and pipelines. Geothermal waters in the province are meteoric origin according to oxygen-18, deuterium and tritium isotopes data. Long underground residence times of these waters and its temperatures have caused both more water - rock interaction and low tritium values.

Geothermal energy is utilized in many areas in Turkey today. It is generally used for space heating, balneotherapy and electricity generation. Explorations of geothermal resources and investments in geothermal energy sector have risen rapidly in the recent years particularly in western Turkey. High-temperature geothermal fields are generally located in this region related to the Aegean Graben System and the North Anotalian Fault Zone. All geothermal power plants in Turkey are located in this region. Considering the Çanakkale province, most geothermal fields are suitable for multipurpose usage but many of them have been still used only for spa tourism. Residential heating and greenhouse activities do not exist in the region yet. However, the only geothermal power plant which is settled in NW Turkey is located in Tuzla geothermal field (7.5 MW capacity). This area is both the most high-temperature area in the region and one of the most important geothermal fields in Turkey. Very little thermal centers in Turkey have thermal water potential of the coastal area like Çanakkale province. Climatic features of this area allows both thermal and sea tourism applications in all season of a year such as open-air curing, heliotherapy and thalassotherapy. Çanakkale province is located in "Troy North Aegean Culture and Thermal Tourism Development Zone". This area is being planned within the framework of health, thermal and rural tourism by the Republic of Turkey Ministry of Culture and Tourism.

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