

Use of geothermal energy and seawater for heating and cooling of the new terminal building in the airport of Thessaloniki.

Dimitrios Mendrinou and Constantine Karytsas

*Geothermal Department, Centre for Renewable Energy Sources, 19th Km Marathon Ave,
19009 Pikermi-Attica, Greece*

Abstract

A system of water source heat pumps using as a heat source both geothermal water of 42°C and seawater of 15°C during winter and 25°C seawater as a heat sink during summer can cover 8 MW_{th} and 16.800 MWh_{th} heating and 7MW_c cooling loads of the new terminal building of the airport “Makedonia” of Thessaloniki. The system will operate with a net seasonal performance factor (SPF) of 4,3 provided that a centralized energy management system and inverters regulate all pumps and fans. Energy costs amount at 0,015 €/kWh (annual operation and maintenance costs only), or at 0,028 €/kWh including the amortization of the equipment supplying energy to the building.

Keywords: *Heat Pumps, Groundwater, Seawater, Heating, Cooling*