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Free cooling potential of Turkey for datacenters

Gul Nihal Gugul

Selcuk University, Turkey

The energy consumption in data centers for cooling is increasing rapidly. The heat released from equipment in data centers is discharged into the room and room has to be kept at acceptable temperatures. To reduce the energy consumption for cooling in cold regions, free cooling technology is more efficient instead of conventional systems. It is favorable to know the free cooling potential of a location before the installation of the free cooling system. In this study free cooling potential of Turkey is investigated for six cities which are Ankara, Antalya, İzmir, Erzurum, Konya, Trabzon and Şanlıurfa respectively according to supply air temperatures from 15 °C to 23 °C. Then Power Usage Effectiveness (PUE) value of a data center with a free cooling chiller is calculated for each city by using the energy consumption measurements of cabinets conducted in a datacenter in Ankara, Turkey. Calculations show that a free cooling system is convenient for Erzurum, Ankara, and Konya with PUE values 1.23, 1.37 and 1.37.

gul.gugul@selcuk.edu.tr