ENVIRONMENTAL THERMAL ENERGY SOURCE

Definition

Environmental thermal energy source refers to the availability of very low enthalpy of air (aerothermal), water (hydrothermal) and ground (geothermal) that can be commonly exploited as a heat source by convertible heat pump systems. This energy can be used either for air conditioning or producing the hot water. Its benefits include zero CO_2 emissions, inexhaustible source of energy, independence from external suppliers and low heating costs. Preconditions are large radiators for a low temperature system and good insulation of the building.

Ground-sourced energy can be utilised via heat pumps in two different ways. 1. Heat close to the surface is used (an uniformed year-round temperature) via a surface collector installed as a heating coil at a depth of 1.5 m extracts heat from the ground. 2. Heat recovery is possible with a space-saving geothermal probe. The geothermal heat is removed with special ground probes that go as far as 100metres deep into the earth (the area with the all-year-constant temperature of 10 °C).

Groundwater-source energy relies on the constant temperature of the groundwater. Exploitation is possible with a well.

Ambient-air-sourced energy can be utilized with heat pumps for heating purposes.

Related terms

Geothermal energy

Keywords

Air-source heat pumps, Ground coupled heat pumps, Ground- source heat exchangers, Surface water heat pumps

Figure 21a Air source heat pump, Ferrara. (Photo: M. Bottarelli 2017)

Figure 21b Water heat exchanger using a pond. (Photo: http24)

Source

http25: www.ehpa.org (European Heat Pump Association)

http26: http://egec.info/ (European Geothermal Energy Council)

Somogyi V., Sebestyén V., Nagy G. 2017: Scientific achievements and regulation of shallow geothermal systems in six European countries – A review. Renewable and Sustainable Energy Reviews, 68: 934–952.

Yang H., Cui P., Fang Z. 2010: Vertical-borehole ground-coupled heat pumps: A review of models and systems. Applied Energy, 87(1): 16–27.

Translations	
Bosnia and Herzegovina Izvori toplotne energije u prirodnom okruženju/okolišu Bulgarian Източник на термална енергия от ОС Croatian Toplinski izvor energije iz okoliša Czech Zdroj tepelné energie z životního prostředí Danish Miljøtermisk energiressource Dutch Omgevingswarmte Esperanto Fonto de varma energio el medio *(grunto,akvo,aero)* Estonian Maasoojuspump Finish Maalämpö French Source d'énergie thermale environnementale German Lantentwärmenutzung Greek Περιβαλλοντική θερμική Ενέργεια Hebrew סביבתי-תרמי אנרגיה מקור Hungarian Környezethő energiaforrás	Italian Fonte energetica da risorsa termale Sorgente di energia termica naturale Islandic /not used Latvian Termālie vides enerģijas avoti Lithuanian Aplinkos šiluminės energijos šaltinis Montenegrin Toplotni izvori iz životne sredine Polish Źródło energii cieplnej otoczenia np. grunt, woda, powietrze Portuguese Fonte de energia térmica ambiental Romanian Sursă de energie termală a mediului Russian Источник экологической тепловой энергии Slovenian Toplotni vir iz okolja Serbian Амбијент у својству топлотног извора Spanish Energia termica ambiental *(hidro-termica, aerotermica o geotermica)* Swedish Miljömässig termisk energikälla