Volume 1: Heating and Cooling with Ground-Source Heat Pumps in Moderate and Cold Climates: Fundamentals and Design Principles.

1. Introduction. 2. Outlook for Building Heating and Cooling Loads, and Simulation Tools. 3. Conventional Building HVAC Systems. 4. Geothermal Energy Resources. 5. Ground/Soil Types and Thermo-Physical Properties. 6. Determination of Ground/Soil Effective Thermal Conductivity. 7. Classifications of Ground-Source Heat Pump Systems. 8. Geothermal Heat Pumps. 9. Refrigerant-to-Air Condensers. 10. Air-to-Refrigerant Evaporators. 11. Closed-Loop (Indirect, Secondary Fluid) Ground-Source Heat Pump Systems. 12. Vertical Closed-Loop (Indirect, Secondary Fluid) Ground-Source Heat Pump Systems. 13. Heat Transfer. 14. Horizontal Closed-Loop (Indirect, Secondary Fluid) Ground-Source Heat Pump Systems. 15. Closed-Loop Direct Expansion (Mono-Fluid) Ground-Source Heat Pump Systems. 16. Closed-Loop Vertical Thermo-Syphon Ground-Source Heat Pump Systems. 17. Open-Loop Groundwater Heat Pump Systems. 18. Open-Loop, and Dual-and Multiple-Well Groundwater Heat Pump Systems. 19. Open-Loop Single-Well (Standing Column) Groundwater Heat Pump Systems. 20. Surface Water Ground-Source Heat Pump Systems. 21. Advantages and Limitations of Ground-Source Heat Pump Systems. 22. Future R&D Requirements.

Volume 2: Heating and Cooling with Ground-Source Heat Pumps in Moderate and Cold Climates: Applications and Cases Studies.

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