Heating & Cooling with Ground Source Systems

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Why Include Cooling?

- Improved Efficiency
- Lower Installed Cost
- More Bang for your Buck
- Reduced Plant Space (over conventional)
- No External Equipment
- Inter Seasonal Energy Storage
How Active Cooling Works
How Passive Cooling Works
For Example….

- A School in The Midlands
- 100kW Peak Heating
- 170,800 kWh per Year
- 20kW Peak Cooling
- 19,600 kWh per Year
- Thermal Conductivity of 2.1 W/mK
- Undisturbed Ground Temp of 9.8 °C
- Vertical Boreholes
- Cooling Omitted - 2,508m
- Cooling Included - 2,256m
- Approximate Cost Saving £14,000
- 7% Project Cost Saving
- Maximum Loop Temp of 12 °C so Passive Cooling is an option
For Example….

Heating Only

Heating & Cooling
For Example….

- A School in The Midlands
- 100kW Peak Heating
- 170,800 kWh per Year
- 80kW Peak Cooling
- 78,400 kWh per Year
- Thermal Conductivity of 2.1 W/mK
- Undisturbed Ground Temp of 9.8 °C
- Vertical Boreholes

- Cooling Omitted - 2,508m
- Cooling Included - 1,536m
- Approximate Cost Saving £39,000
- 10% Project Cost Saving
- Maximum Loop Temp of 25 °C so Passive Cooling is not an option unless the loop is oversized
For Example:

Heating Only

Heating & Cooling
In Summary...

01  Grab Cooling Whenever You Can!

02  Other Heat Recovery Also Works

03  Don’t Try to Design These Without Proper Software

04  Explore Passive & Active Options as Appropriate
Questions…..

and thank you
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