

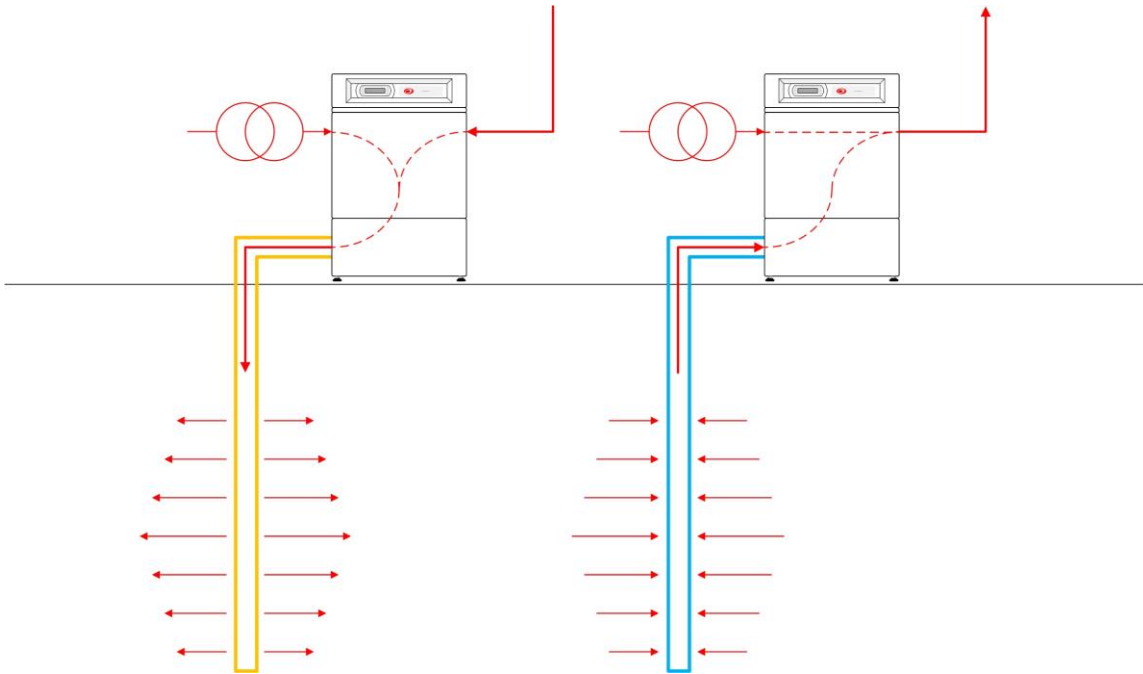
Ground Source Heat Pump Association Webinar Series 2020

Heating & Cooling with Ground Source Systems

16th July 2020

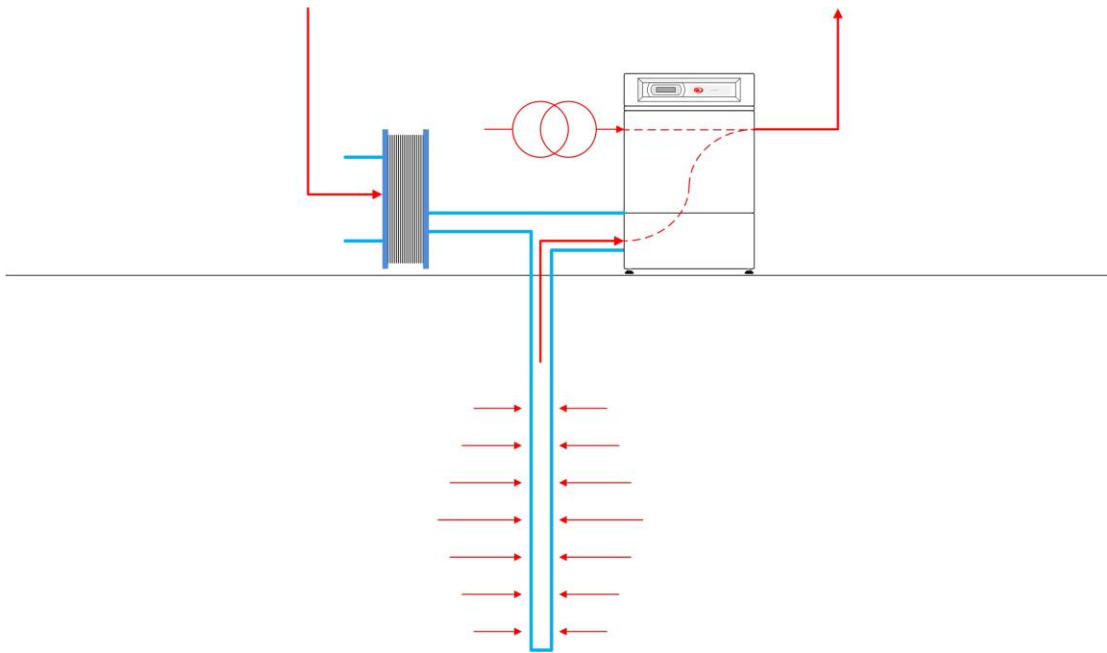
Why Include Cooling?

- ▶ 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

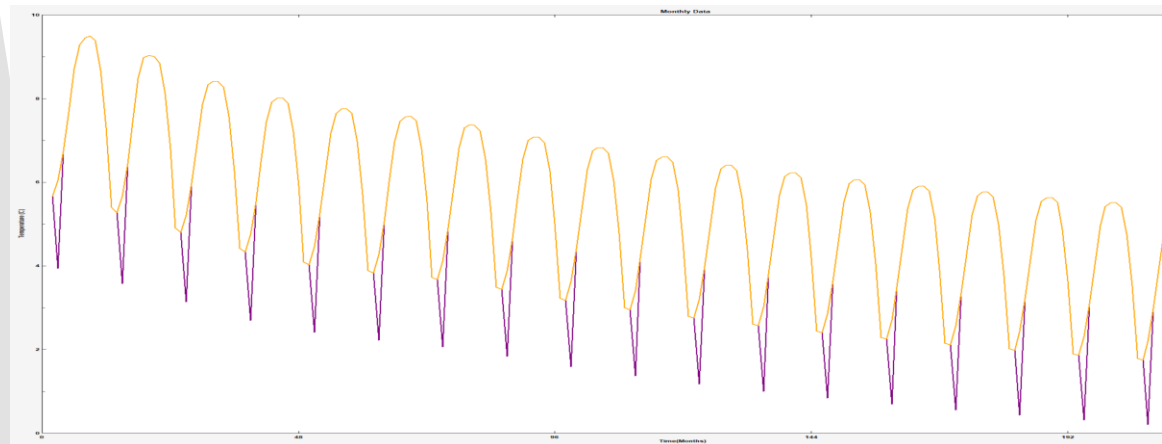


For Example....

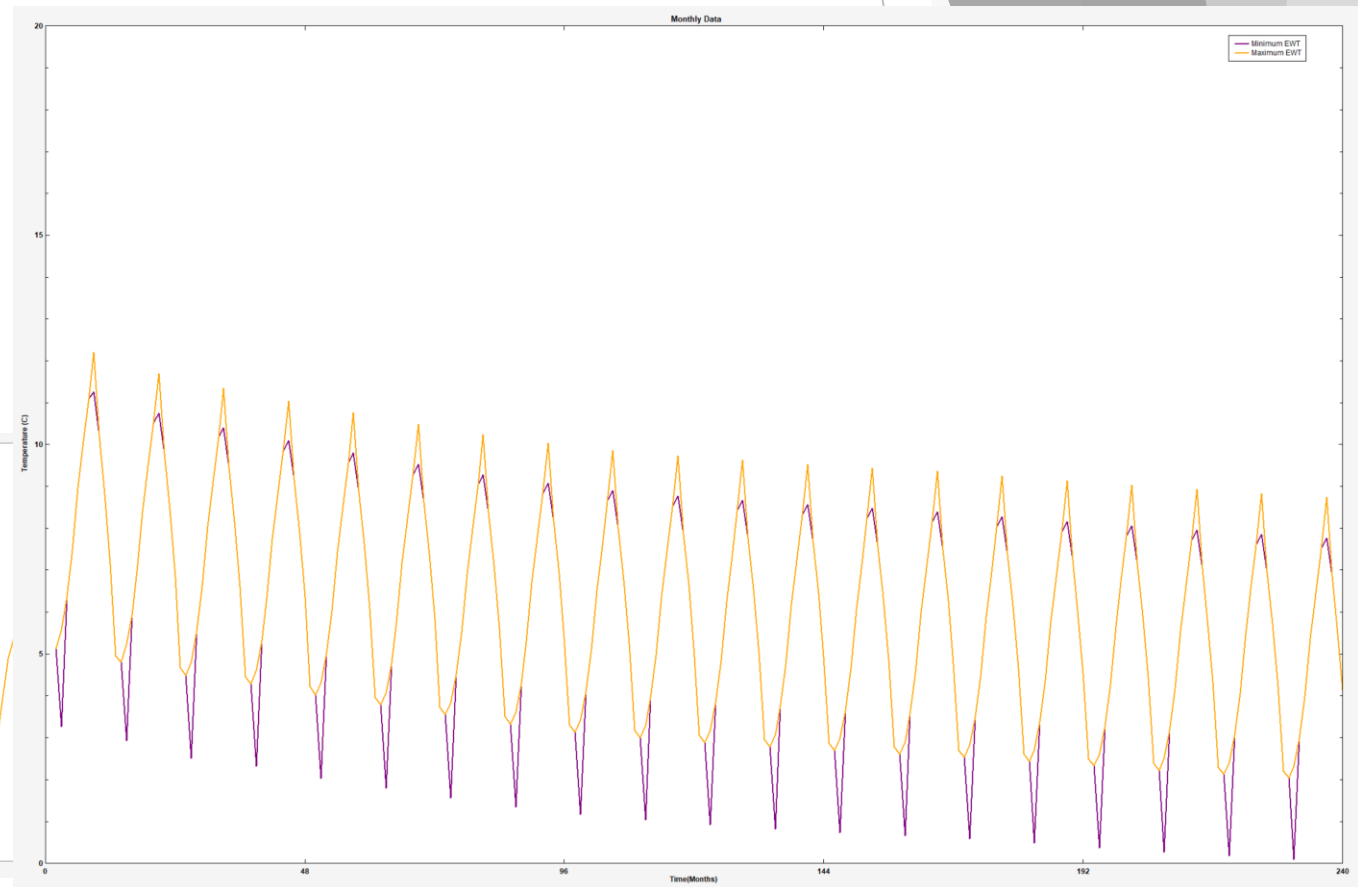
- ▶ A School in The Midlands
- ▶ 100kW Peak Heating
- ▶ 170,800 kWh per Year
- ▶ 20kW Peak Cooling
- ▶ 19,600 kWh per Year
- ▶ Thermal Conductivity of 2.1 W/mK
- ▶ Undisturbed Ground Temp of 9.8 °C
- ▶ Vertical Boreholes
- ▶ Cooling Omitted - 2,508m
- ▶ Cooling Included - 2,256m
- ▶ Approximate Cost 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



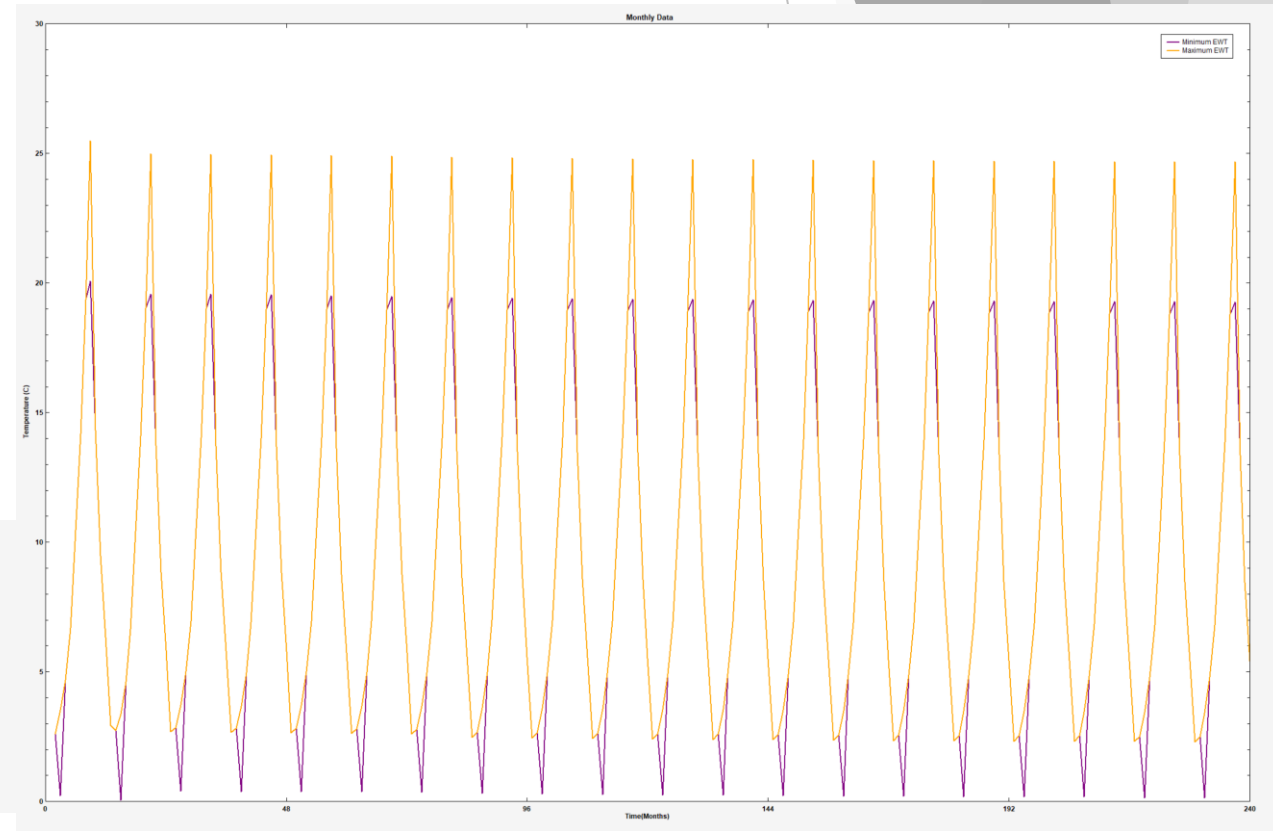
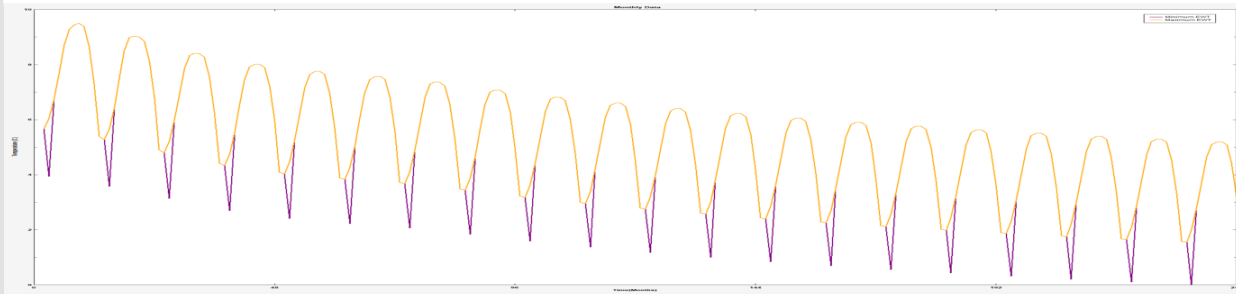
For Example....

- ▶ 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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