Ground Source Heat Pump Association Webinar Series 2020

16th July –	Heat recovery in GSHP systems, direct cooling vs heat pump cooling, Chris Davidson – Genius Energy Labs
23rd July -	The importance of flow temperatures on heat pump performance Ken Kneale – Solid Energy
30th July-	Heat pumps in the rural environment Shane McDonald, Calibrate Energy
6th August -	Lessons learned from 20 years of open-loop systems in the UK John Findlay, Carbon Zero

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4th & 5th Generation District Heat Networks

9th July 2020

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What is a Heat Network?

- A heat network is a distribution system of insulated pipes that takes heat from a central source and delivers it to a number of domestic or non-domestic buildings.
- Heat networks form an important part of the government's plans to reduce carbon & NO_2 emissions
- 4th Generation
  - 50 - 60°C flow temp
  - Good for centralised heat pump plant
  - Other technologies can attach too
  - Low carbon enabler
- 5th Generation
  - Ambient loops – heating and cooling
  - 5 - 20°C
  - Can re-cycle any waste heat above 20°C

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4th Generation Example

- North Aston Estate, Oxfordshire
- 26 leased homes. Heated with oil & electric
- Low EPC = homes cannot be re-rented
- Solution:
  - Centralised 360kW heat pump energy centre
  - Horizontal loop ground collector (rural location)
  - New heat network serving each house with HIU
  - Heat included in rent using a ‘fair use’ factor
- Landlord receives non-dom RHI for 20 years
- Tenants benefit from clean heat (clean air) and no increase in heat price (where boilers are used)

- Flow/return temp 60/40°C
- Some fabric upgrades
- Multiple heat pumps allows more people to join later
- Carbon saved 128te CO_2/yr or 82% of oil baseline

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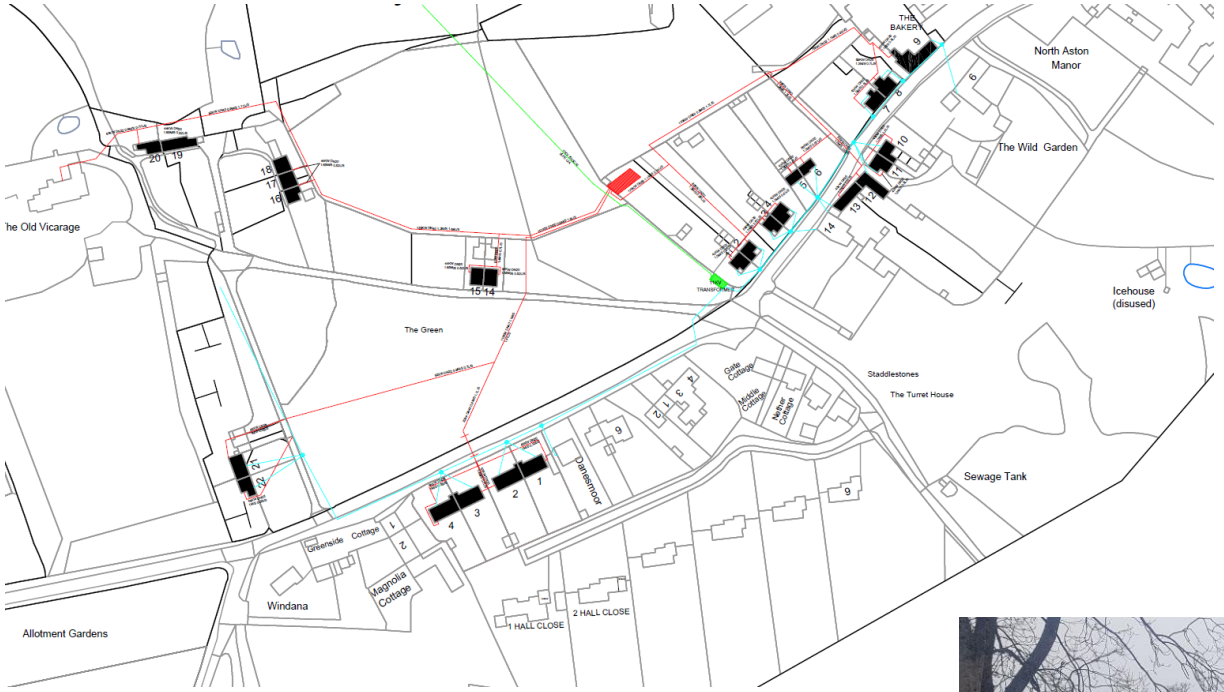
4th Generation Example



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5th Generation Example

- Block of 70 flats had individual gas boilers
- Sheltered housing
- Ambient loop serving each flat with brine
- 6kW heat pump per flat
- Minimal heat loss from external runners and risers
- Brine temp c.8°C
- Tenants billed via heat meter & heat price
- Carbon saved 57te CO_2/yr or 72% of gas baseline

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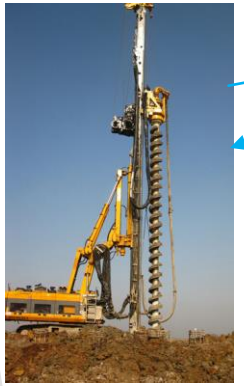
5th Generation in More Detail

5 - 20°C
Heat rejection and extraction
Cooling and heating
Individual heat pumps provide what the building needs
Negligible network losses



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Which Network Where?

- Site and Customer Specific – don't dismiss one or the other
- Consider if heat & cool is needed
- Consider building types and ages – old buildings may need higher temps than new buildings
- Consider space requirements for heat pumps & thermal stores
- Flexibility for Expansion
- Consider grants and incentives
- Investigate other local networks for hooking up to

- Heat pumps are the only low carbon, zero emissions heat & cool solution for buildings
- Available NOW!

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Government Support

- RHI ends
  - March 2021 for heat pumps <100kW
  - March 2022 for domestic projects of all types
  - March 2022 for heat pumps >100kW
- HNIP finishes March 2022

WHAT NEXT?

- Future heat strategy
- **Green Heat Networks [2022 - 2025]**
  - **£270m to be invested enabling new and existing heat networks to be low carbon and transitioning away from gas-fired communal heating to a system using low carbon generation [March 2020 Budget]**
- Heat Networks Industry Council – driving up to £50bn in sector investment

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Questions…..

and thank you

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