

Ground Source Heat Pump Association Conference 2021

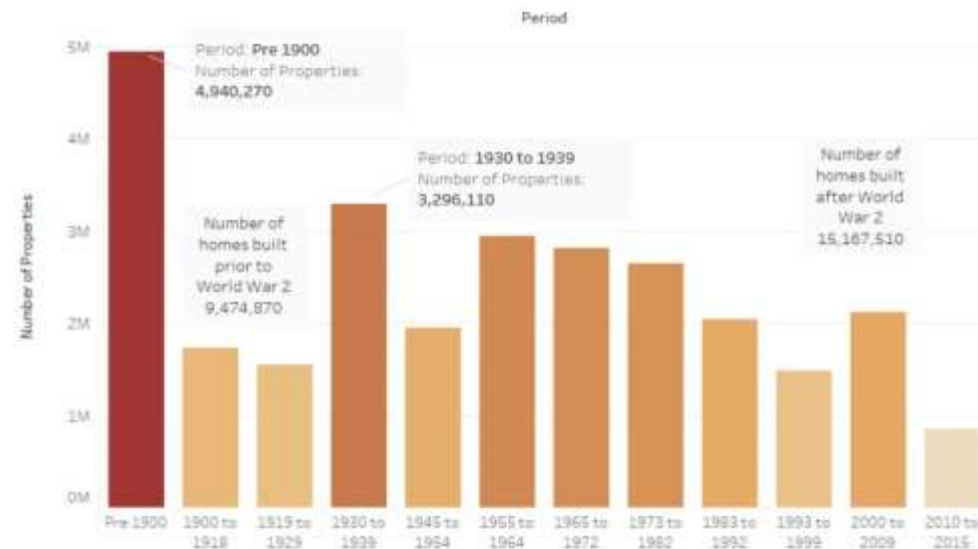
# Heat Pumps in Retrofit Situations

22<sup>nd</sup> October 2021

# Background

- ▶ A long history of building in the UK, 1,000s years +
- ▶ Many existing buildings will be with us for years to come
- ▶ New builds have improved building regs
  - ▶ Commercial & domestic
- ▶ Do we ignore existing buildings?
  - ▶ Or say they cannot use heat pumps?

Homes in England and Wales by construction period



# Background

- ▶ New builds - built to modern building regs, high standards of fabric and air tightness
- ▶ New new builds - future homes standard, maximum flow temperature 55° C, super low heat demand
- ▶ Cooling may be required
- ▶ Old buildings - not so!
  - ▶ 82/71° C flow/return
  - ▶ Small rads
  - ▶ Leaky windows and roofs
  - ▶ Small diameter pipework
  - ▶ Uninsulated pipework
  - ▶ Pumps
  - ▶ Hot water storage

# But....it is happening!

- ▶ Leisure centres, council offices, schools, colleges, offices, universities, hospitals, etc
- ▶ Individual homes
- ▶ Social housing
- ▶ PSDS is a driver
- ▶ Consultations on off-gas grid buildings 2024 onwards

# Got an Old Building?? The Best Approach

- ▶ Keeps an open mind
- ▶ Treat the building or site as a whole
- ▶ Treat each building individually
- ▶ Ask the occupants
- ▶ Change the operating regime
- ▶ Obtain O&M manuals
- ▶ Detailed surveys of pump duties, AHU duties, radiator schedules, etc.
- ▶ Speak to equipment manufacturers
- ▶ Analyse energy data - HH available?



## Examples - radiators



# Examples – Pool Water Heat Exchanger



FG160-5115-5



# Examples – Air Handlers and Hot Water

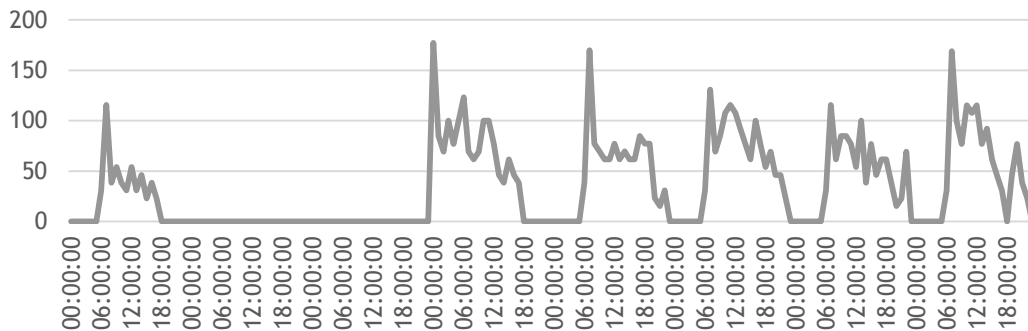




# Case Study – FE College, Gloucestershire



kW demand \*\*\* College May 2019



- ▶ 400kW GSHP x 2
- ▶ 2 buildings connected
- ▶ AHU batteries changed
- ▶ Hysopt confirmed no rad changes
- ▶ Gas boiler back up
- ▶ New indirect DHW

## Other Considerations

- ▶ Space - replace in plant room or separate energy centre?
- ▶ Back up plant
- ▶ Low or high temperatures?
- ▶ Metering is a recommended
  - ▶ Establish hourly operation
  - ▶ Monitor performance, temperatures, etc
- ▶ Use of specialist software for simulation
- ▶ Baseline the occupant comfort and review afterwards

# Questions.....

and thank you  
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