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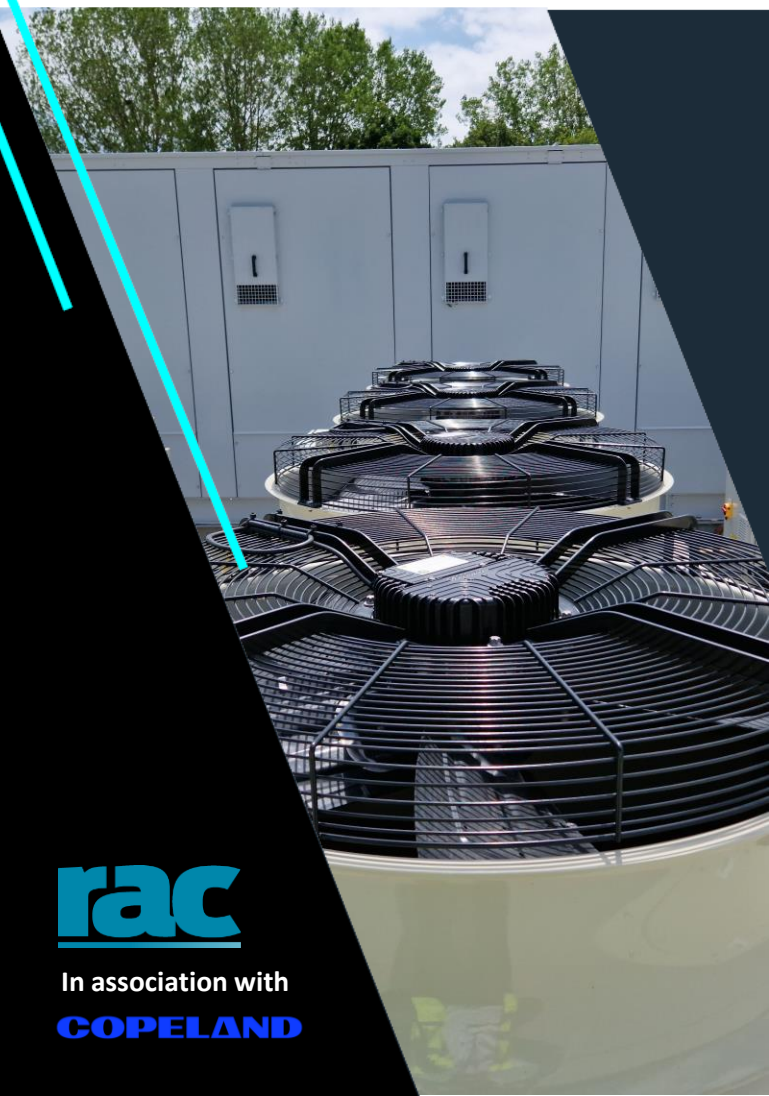
The **Future** of Retail Heat Pumps.

#StoreOfTheFutureSeminar





Jon Ward
Design Manager



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History of a Heat Pump

- Heat pump technology dates back to 1856 when Peter Von Rittinger introduced it for use in salt marshes
- By 1945, John Summer pioneered its first large-scale use in the UK
- Today, we're seeing a renaissance of this age-old technology
- Several challenges exist within the building services industry surrounding de-carbonisation & energy reductions

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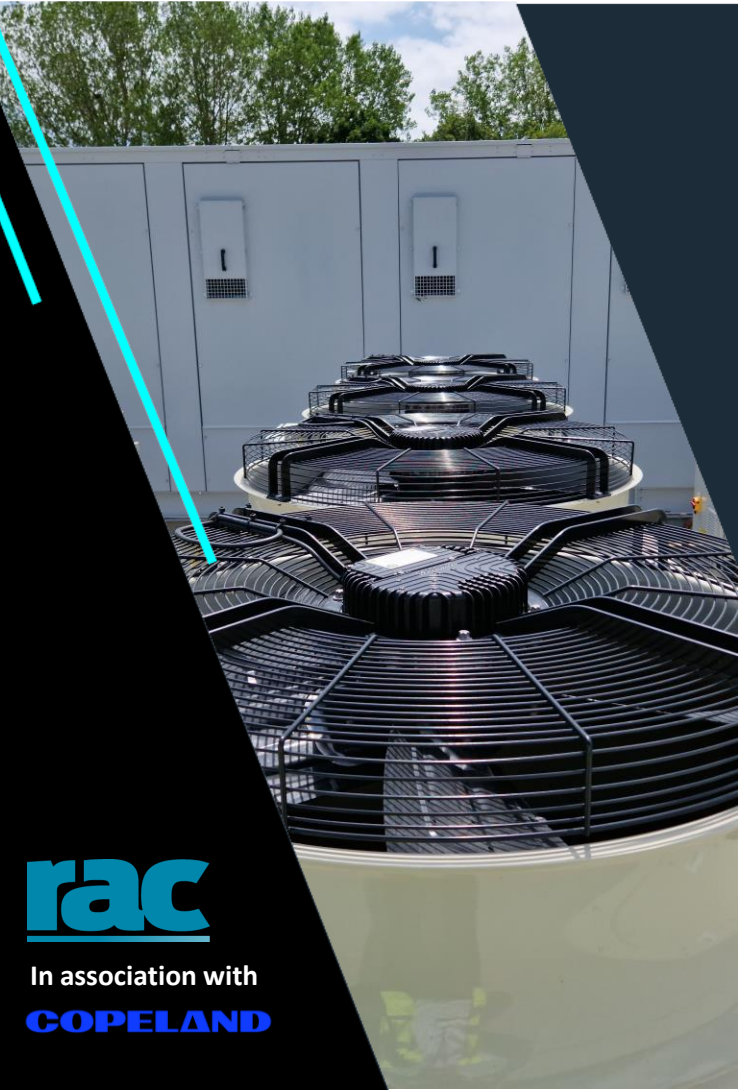


The Challenge

- Transition away from non-renewable energy sources
- Decarbonise the store
- Achieve maximum efficiency with an optimal COP
- Lower the store's total CO₂e emissions
- Harness waste heat from other processes
- Supply 100% of the heating demand at an ambient -5°C
- Modular design
- Achieve water temperatures of 55°C flow and 30°C return

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The Proposal

- Importance of proper equipment selection
- Heat pump selection criteria
- Sizing
- The control system

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The Solution

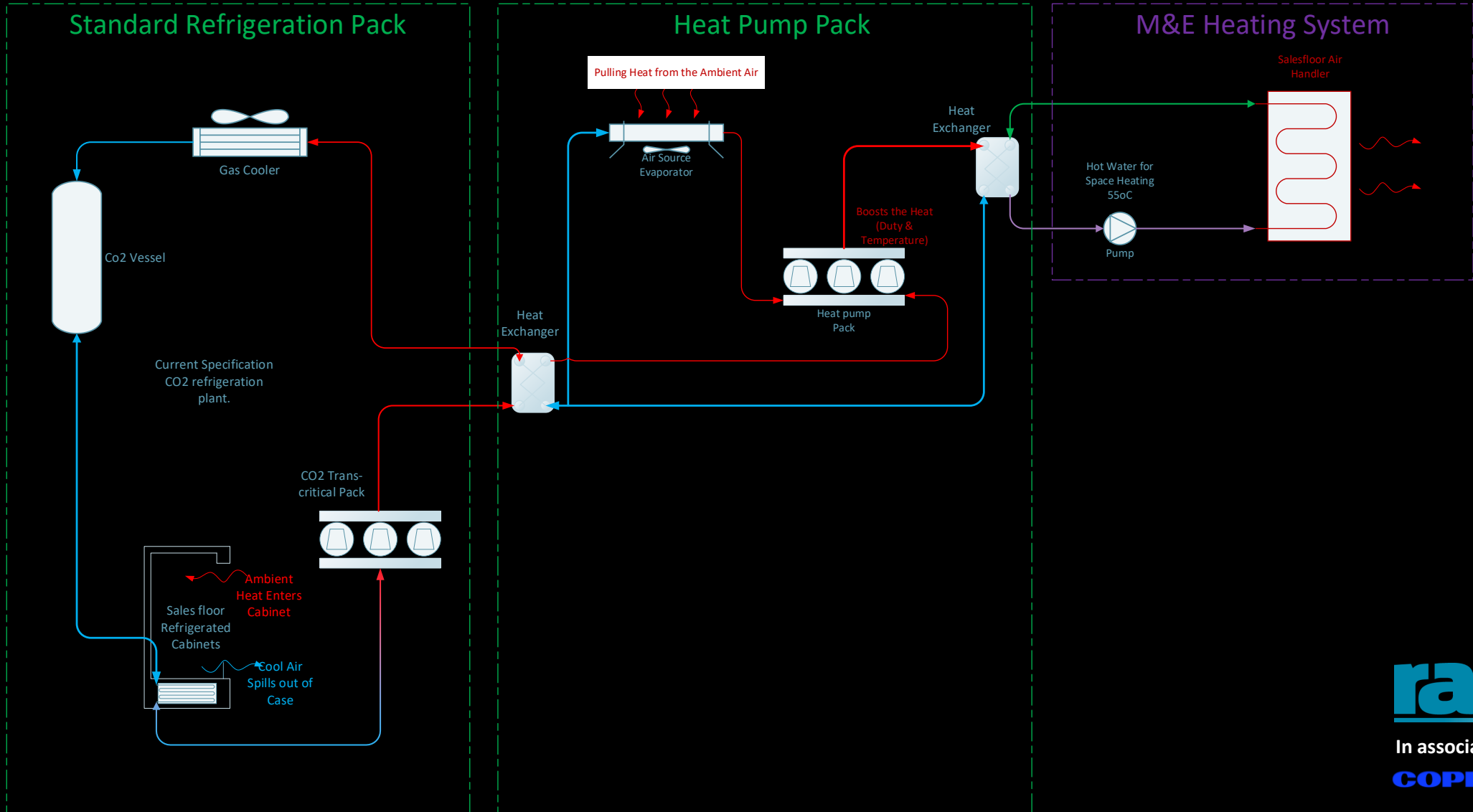
- To minimise natural gas usage, the site's heating will use waste heat from refrigeration, enhanced by a Dual Source Heat Pump. This meets the store's temperature and duty demands.
- If there's a deficit, energy will be drawn from the air down to -5°C using an air side evaporator.
- This heat pump system also cuts the main refrigeration CO2 pack's energy use, increasing savings.

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The Solution





Trial Results



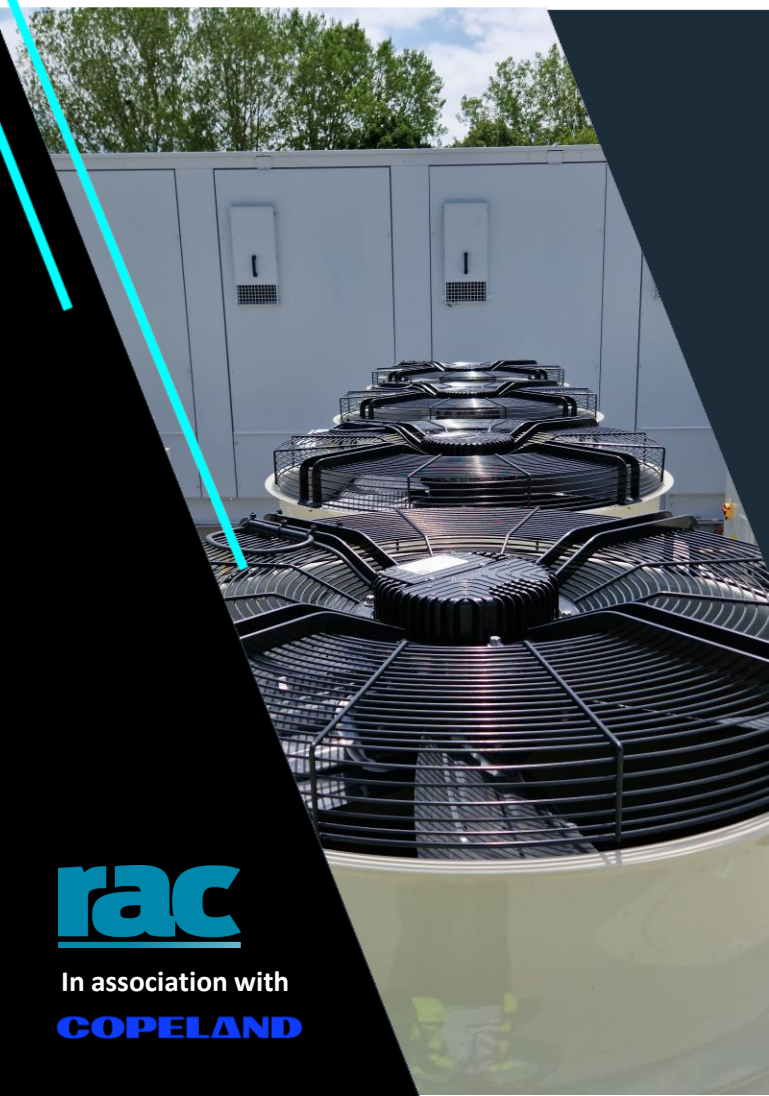
Heat pump performance

t.CO2e Saving 57
% Saving 25%

Heat Pump	
COP	3.47

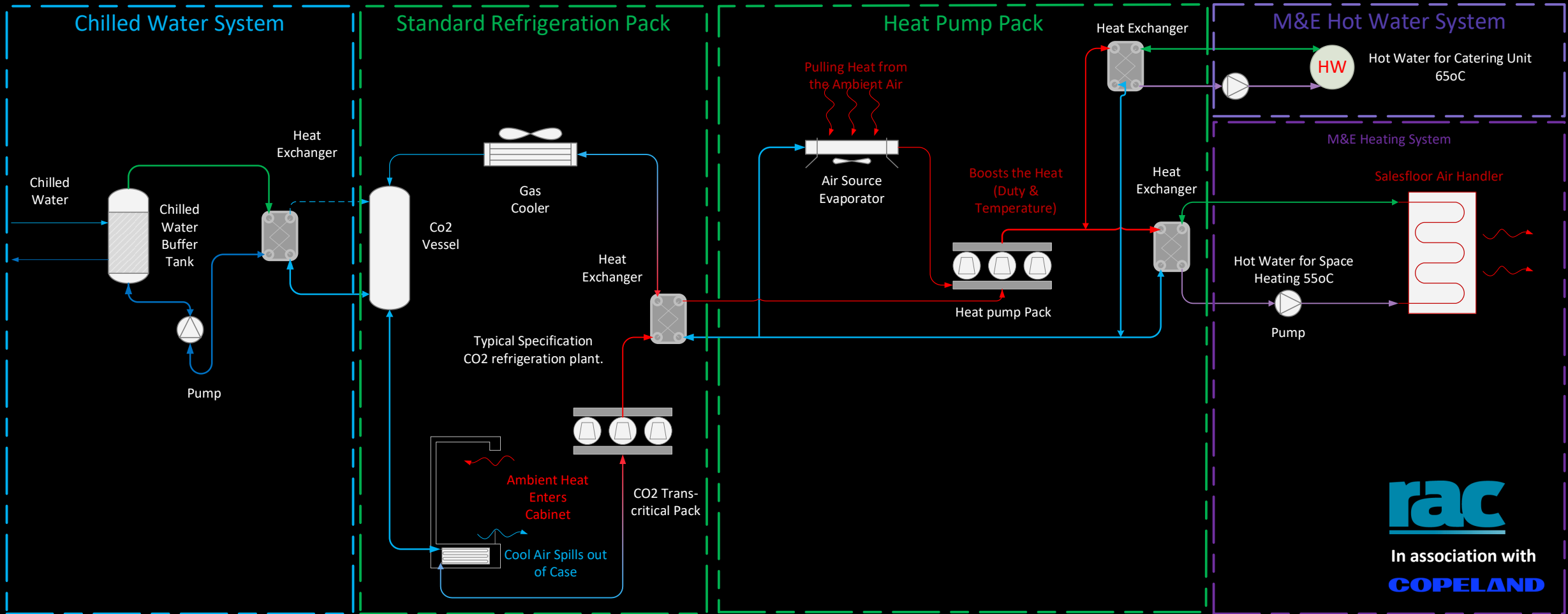
In this trial, the refrigeration system was linked to a heat pump that captured the waste heat from the refrigeration cycle. This connection lowered the condensing temperature of the CO2 booster system, resulting in an energy savings of approximately 12-14%.

Combined (Pack & HP)	
COP	4.45





Next Generation



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Heat Pumps Benefits

- Supply all the heating requirements of the store
- Reduce the reliance on non-renewable energy sources
- De-carbonisation of stores
- Reduce the total Co2e figure for the store / project
- Utilise as much waste heat from the refrigeration process

The logo for ADA, featuring the letters 'A', 'D', and 'A' in a bold, blue, sans-serif font. The 'D' is stylized with a curved line through it, and the 'A's have horizontal bars.



Thank you
for listening.

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