

Project Overview

The need to decarbonise heating demands technologies that go far beyond the best performance associated with fossil fuel systems, but without the cost, complexity and constraints associated with many renewable energy systems. The high temperature air source heatpump is just such a solution. It is compact, doesn't need fuel deliveries or constant attendance and has minimal environmental impact.

Neatpump
High Temperature Air Source Heatpump

The air source heatpump development has been integrated with the district heating design. Through extensive modelling, it has been demonstrated that the high temperature air source heatpump can deliver effective and affordable heating to existing social housing. The result will be a 53% drop in carbon footprint, dropping even further as the grid decarbonises.

A+++	Packages using renewables
A++ Neatpump	Heat pumps (renewable) Best biomass boiler (renewable)
A+	Gas cogeneration
A	Condensing gas boilers
B	
C	Non-condensing gas boilers
D	Electric resistance

EC Heating & Cooling Strategy 2016

The impact will be a generation of cleaner, lower cost heating for householders.

Ambient Temperature (°C)	-10	-5	0	3	5	10	15	20
Duty (kW)	278.0	312.8	353.3	380.7	399.6	451.3	509.0	569.7
COSP	1.919	2.142	2.371	2.513	2.603	2.840	3.085	3.322

COSP based on water on at 40°C to 60°C

COSP achieved at Ofgem required EN 14511 conditions of water on at +30°C, off at +35°C and +7°C air on temperature is 4.4 (COSP of 2.9 is required to be eligible for the Renewable Heat Incentive).

Advanced heatpump technology delivering low carbon heat at higher temperatures, is available now.

Dave Pearson
Star Renewable Energy



Integrated Heatpump Solutions

The Neatpump air source heatpump is part of an affordable, low carbon heating solution that has been developed by Star Renewable Energy in collaboration with partner organisations from the housing sector, installers and engineering consultants. As an integrated solution it has great potential for deployment in a wide range of applications.



Star contribution

Following successes with water source heatpumps at 90°C, the team also brought skills in hot gas defrost to create a heat pump like no other. Temperature and efficiency barriers are broken with this design. In-house controls enable maximum seasonal efficiency and remote monitoring.

GHA contribution

As one of the largest social landlords in the UK, GHA drive for lower cost, lower carbon solutions for their customers. They were able to assemble a team and drive the initial assessment and will lead the deployment project.



Scottish Gas contribution

Project implementation and "wet system" design are significant factors in a superior system. The team bring their design, project management and commercial skills to enable a project like this to get off the ground.



WSP Parsons Brinckerhoff contribution

Engineering consultants WSP Parsons Brinckerhoff recognised from the outset that utilising low district heating temperatures would be key to success. Their system modelling expertise developed a fully integrated system design, not only to maximise heatpump efficiency but also to deliver effective heating within the practical constraints of retrofitting to existing housing stock.

