

DISTRICT HEAT PUMPS

Over 50% of our society's energy use is for heating.

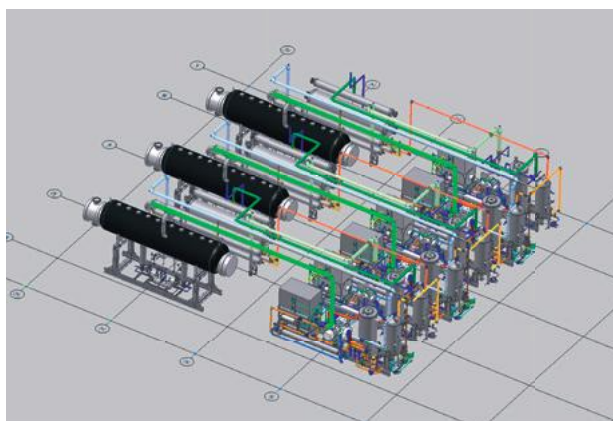
It is therefore no surprise that the focus is shifting from the production of renewable electricity to the production of renewable heating.

However before making "once in a generation" decisions to opt for virgin biomass, long term dependence on gas CHP (local or centralised), or energy to waste (that could have been optimised for electricity production), modular district size heatpumps deserve consideration.

Neatpumps offer a proven technology that builds on over 42 years of experience within Star Refrigeration. District heatpumps are also not a new idea, with significant examples dating back to before mid 20th Century.

As we enter a new age of energy consciousness, Neatpumps offer a proven technology with zero local carbon or particulate emissions, fewer planning hurdles, potentially zero carbon (but certainly 40% less than burning gas), zero road transport and thermal buffering of intermittent renewable electricity supply.

The renewable heat incentive makes Neatpumps even more financially viable although they are not subsidy dependent. With feed temperatures of 90C achieved using zero ozone depleting but more importantly zero global warming potential working fluids, the case for renewable heating, with district heatpumps has never been simpler.



Datacentre/reservoir/river etc.

**Neatpump**
www.neatpumps.com



THE CARBON CASE:

| | NATURAL GAS | DISTRICT HEATPUMPS* |
|------------------------|-------------|-----------------------------------|
| Carbon content (g/kWh) | 270 | 132 |
| | | 0 (if renewable electricity used) |

* Assumes COP=4.0 and electrical CO2 of 530g/kWh

THE RAW ENERGY CASE OF HEAT DELIVERY:

| | LOCAL COMBUSTION* | DISTRICT HEATPUMPS** |
|---------------------------|-------------------|----------------------|
| Gas consumption (kWh/kWh) | 117 | 50 |

* Assumes boiler efficiency of 85% ** Assumes COP=4.0 and gas fired electrical generation/distribution efficiency of 50%

THE UNSUPPORTED FINANCIAL CASE OF HEAT DELIVERY:

| | LOCAL COMBUSTION* | DISTRICT HEATPUMPS** |
|------------------------|-------------------|----------------------|
| Cost (£) | £0.035 | £0.0225 |
| Break even point (yrs) | 0% | 6.4 *** |

* Assumes boiler efficiency of 85% and cost of gas as £0.03/kWh ** Assumes COP=4.0 and electricity cost of £0.09/kWh

*** Assumes cost of heatpump £400/kW and 5000 hrs utilisation/year

THE RHI SUPPORTED FINANCIAL CASE OF HEAT DELIVERY:

| | LOCAL COMBUSTION* | DISTRICT HEATPUMPS** |
|------------------------|-------------------|----------------------|
| Cost (£) | £0.035 | Minus £0.0125 |
| Break even point (yrs) | 0% | 1.68 *** |

* Assumes boiler efficiency of 85% and cost of gas as £0.03/kWh ** Assumes COP=4.0 and electricity cost of £0.09/kWh and

RHI of £0.035/kWh *** Assumes cost of heatpump £400/kW and 5000 hrs utilisation/year and RHI

**USING THIS SOLUTION,
A TOWN CAN EVEN BE
HEATED WITH ZERO
CARBON EMISSIONS**

