Field Dynamics

THIS BOILER IS ACTUALLY AN EV

WELL, IT'S NOT ACTUALLY A BOILER BUT A HEAT INTERFACE UNIT (HIU) AND, OBVIOUSLY, IT'S NOT AN EV... BUT IT KIND OF IS.

Read Field Dynamics' latest thought leadership piece, written by Ben Allan, on the future of heating.

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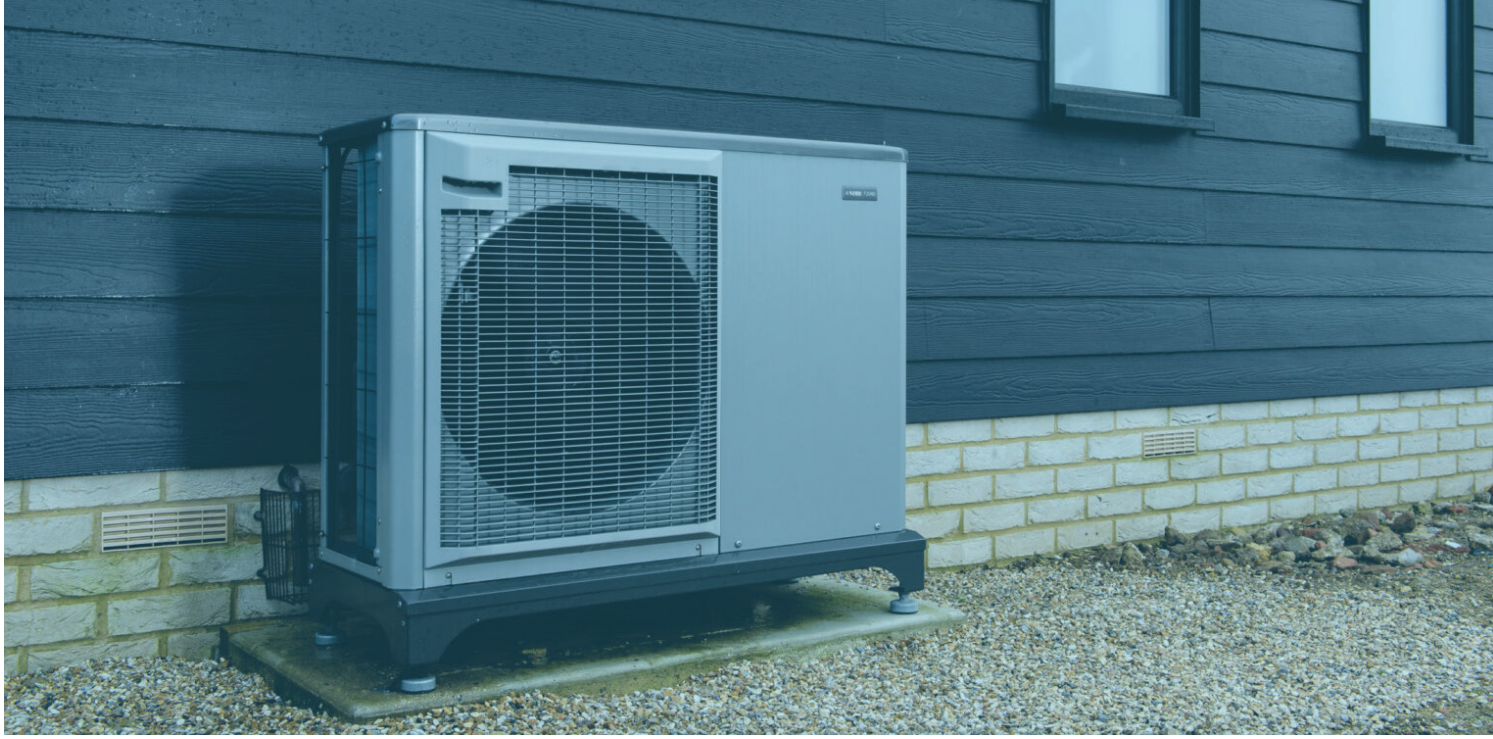
The fundamental challenge we have for net zero is speed. Today, we have all the technology that we need, it can and will be improved, but it's within our grasp. What we don't have is a clear and agreed path to adopt those technologies at the rate that our commitments require. In particular, we don't have a way to move millions of drivers and home-owners across to the brave new net zero world.

In ground transport, this is less of a challenge. As EVs drop in price, scale in production, and the supporting infrastructure improves there are less obstacles in the way of people going electric. In the car market, manufacturers are now producing products that are very easy to own. If you buy a BMW, Hyundai, KIA or any number of other hatchbacks, you can buy the same model as before but this time with electric power. This makes it extremely easy for most drivers to transition.

In heating it's a very different position, we don't have the equivalent of an EV – a solution that people understand and can transition to in a relatively simple manner. Without a 'Heating EV', the heating of buildings, which accounts for over 30% of our carbon emissions, will struggle to gain the pace that it needs.

A heat interface unit (HIU) from idealheating.com/environmental/hiu



HEAT PUMPS

What we do have are heat pumps – a solution that the government is pushing hard. They're, on the face of it, an excellent replacement for gas boilers.

They capture the ambient heat that surrounds us (in the air or in the ground), concentrate it, and then feed it into our heating systems. This is a super-efficient process with, on average, 4kWh of heat added from just 1kWh of electricity added to the system.

However, heat pumps come with a number of challenges that are as much about complexity as they are about cost. They work best when they produce water cooler than our systems are used to (40-50°C vs our usual 70-80°C). Usually this means that a certain level of household efficiency improvement is required before they can be installed.

They also need more space. Outside they're large units that need space to circulate the air and must be a certain distance from a neighbour's boundaries. Inside, when they are providing hot water, they need a large hot water tank – goodbye to all those toilets under the stairs.

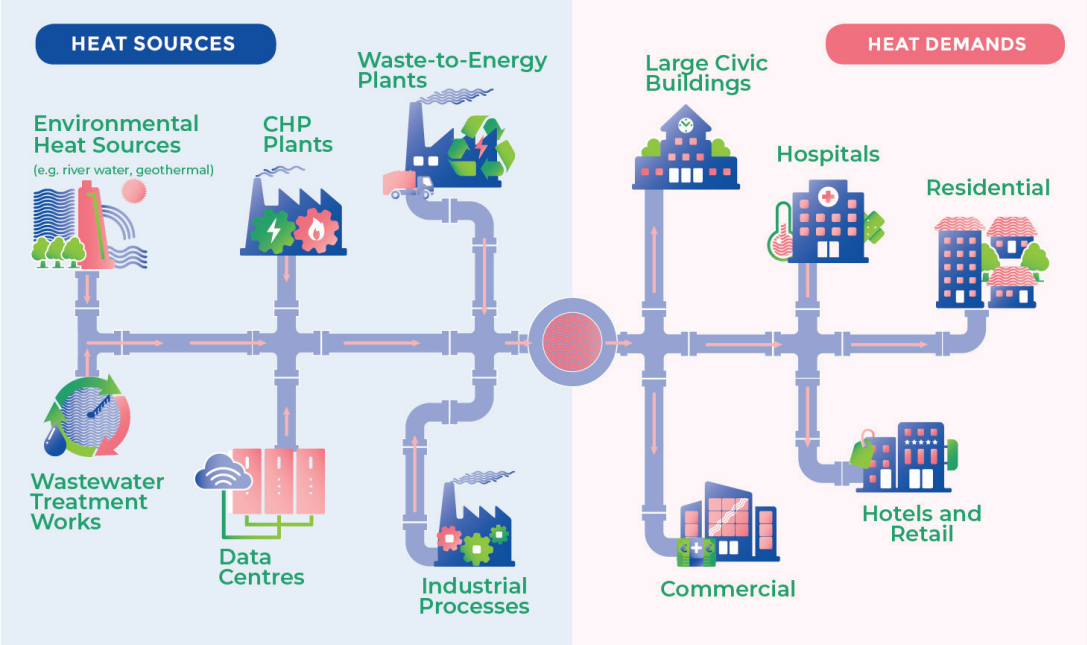
Finally cost-wise, even though they are reducing in costs, the installation will be around £10,000 plus any household efficiency improvement costs. So, complex to think about and expensive to deliver – a 'Heating EV' this is not.

DISTRICT HEATING

There's a different solution that has been around for years and 68% of Danes use it for heating their homes; District Heating.

In this case the heat is generated centrally, often at a waste plant, and then pumped around in insulated hot water pipes buried under the road. The systemic beauty of this solution is that the complex challenge of creating heat in a clean fashion is managed by a large central plant.

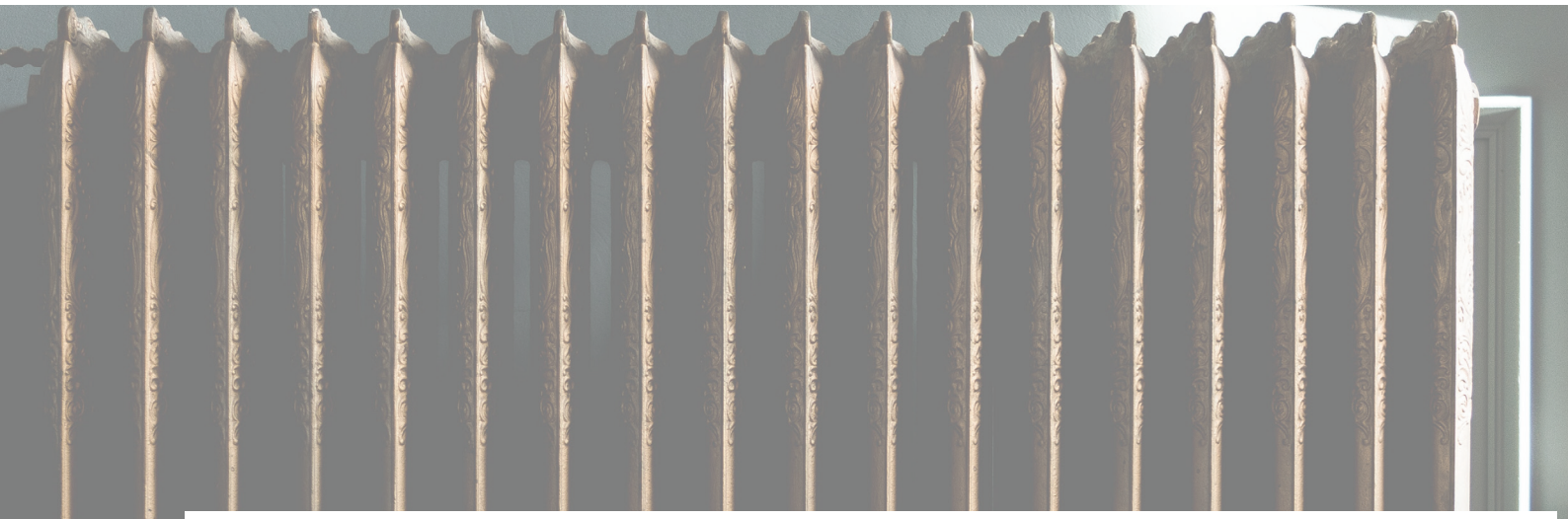
The latest incinerators, Energy Recovery Facilities (ERF), are quoting 80%+ efficiency and in future, as the network develops, can be supplemented by large plants of clean heat such as heat pumps.



Examples of heat supply and demand. Image is from guidetodistrictheating.eu/about/what-is-district-heating/ a European project promoting the roll-out of 4th Generation District Heating and Cooling (4DHC) across North-West Europe

This leads to the second significant part of the solution – simplicity. With the complexity now centralised, the connection to the household is greatly simplified.

Essentially a hot pipe, around 80C, is offered to the household and all that's needed is a heat exchanger, about the size of a brick, to transfer that heat to the household heating and hot water. Because they are so simple, the heat exchanger units or Heat Interface Units (HIU) are low in cost, simple to install, simple to understand and fast to deploy.



IS DISTRICT HEATING A HEATING EV?

It's true that district heating networks need significant investment, the civil engineering is considerable, and they are not appropriate for all environments. Equally, the necessary regulatory frameworks are only just catching up.

However, their huge advantage of offering householders a 'no brainer approach' path to transition make this a truly compelling way forward. A bit like switching cars from a Corsa to an e-Corsa – a Heating EV.

For more information about Field Dynamics and our work, please contact us.

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