



The Greening of Data Centres

Liquid Cooling for a True Circular Economy





4%

Global power consumption is a large and continuously increasing climate challenge.

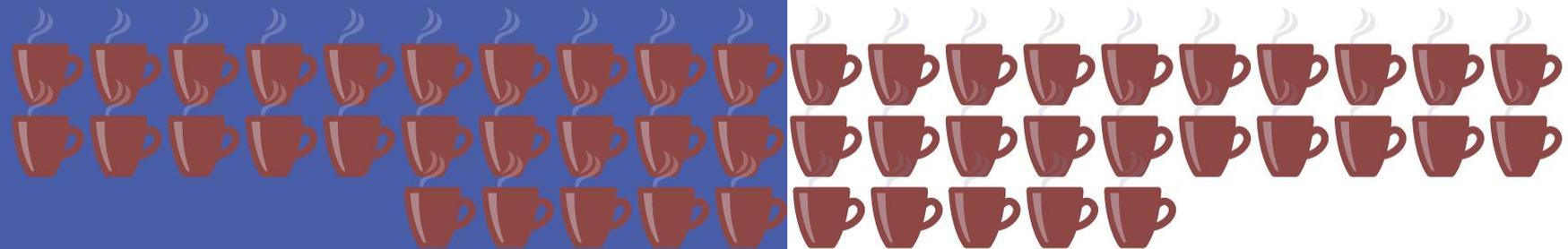
Today, up to 4% of the consumption is caused by data centres – leading to massive CO₂ emissions.

A carbon footprint equivalent to that of the whole world's air traffic.



We all utilise data centres:
For our smartphones, tablets, streaming,
the internet and all other services in
the cloud.

Streaming only one movie requires as much power
and generates CO₂ emissions equal to
boiling 16 litres of water – equivalent to at least
50 cups of coffee.





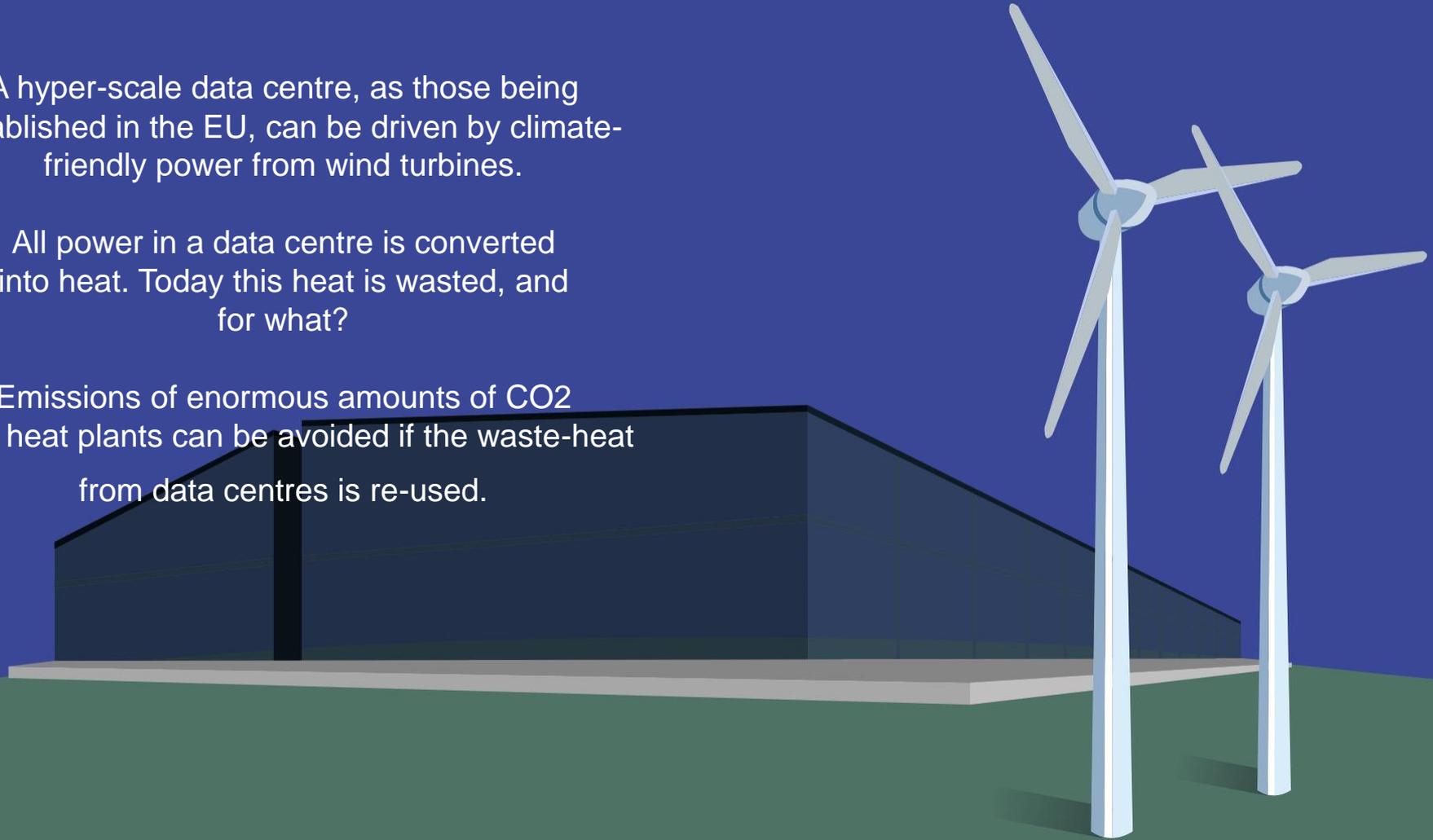
20%

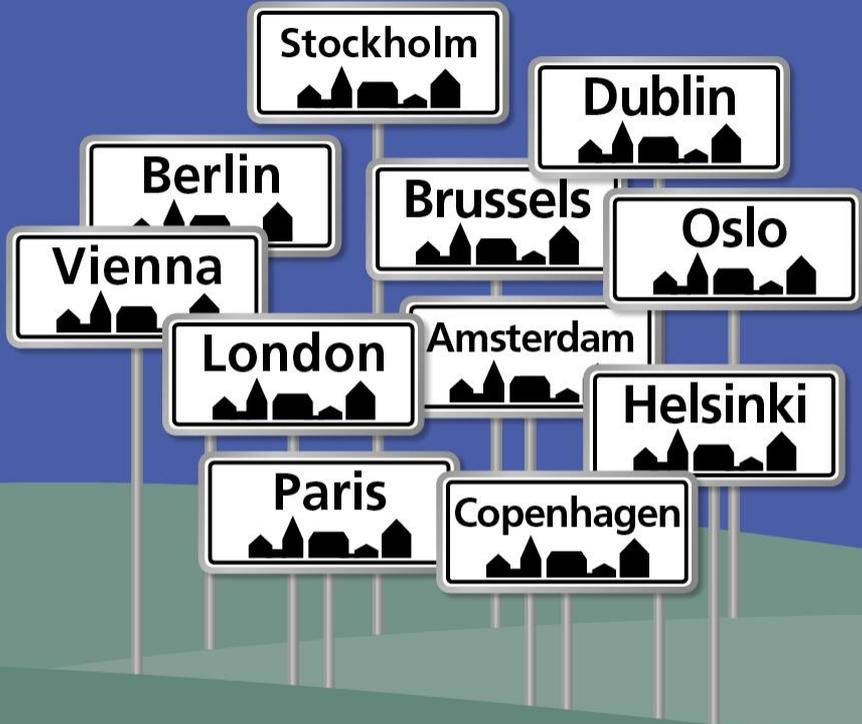
According to a projection by eurostat, it is estimated that by 2030 approx. 20% of the EU's power will be consumed by data centres.

A hyper-scale data centre, as those being established in the EU, can be driven by climate-friendly power from wind turbines.

All power in a data centre is converted into heat. Today this heat is wasted, and for what?

Emissions of enormous amounts of CO₂ from heat plants can be avoided if the waste-heat from data centres is re-used.



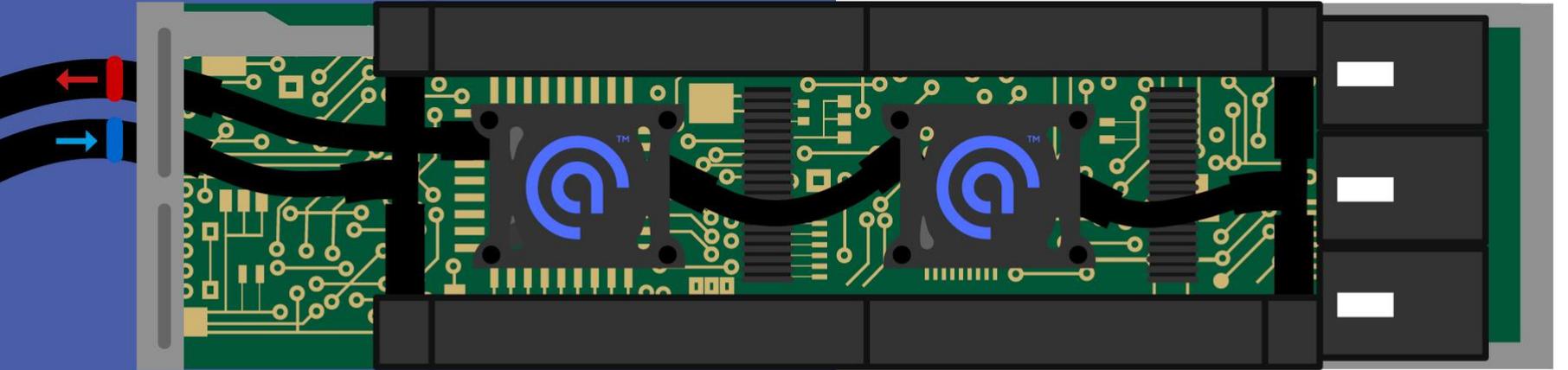


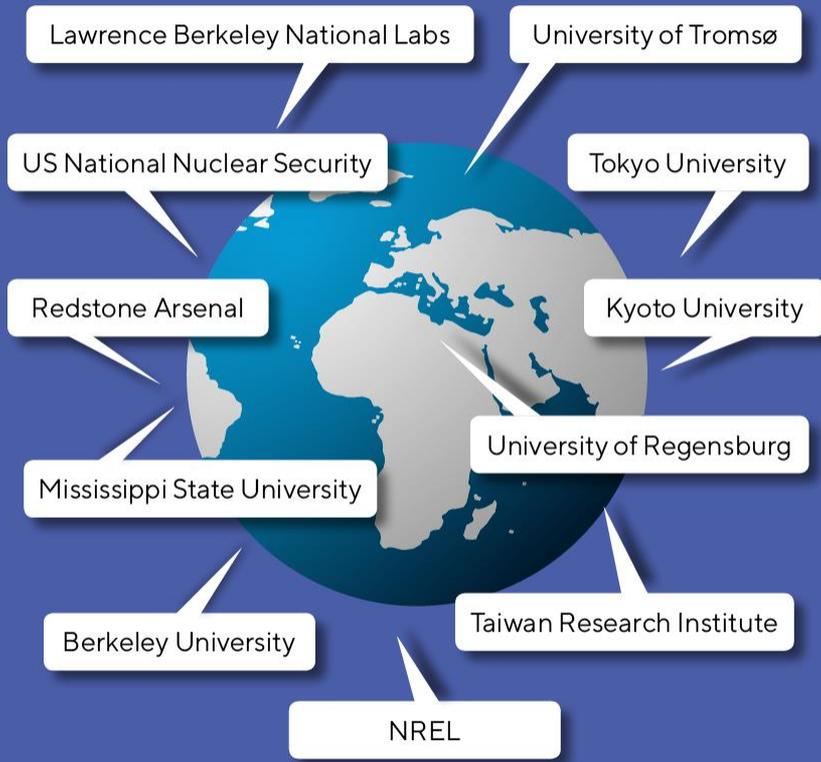
Asetek's Liquid Cooling can change this and create a more climate-friendly solution. We can – without the utilisation of energy-consuming and costly heat pumps – recover the heat and send out 60° C hot water to district heating networks by utilising Liquid Cooling directly on the processors.

With the waste-heat from data centres within the EU alone, we can heat up these 11 European capitals at the same time.

50%

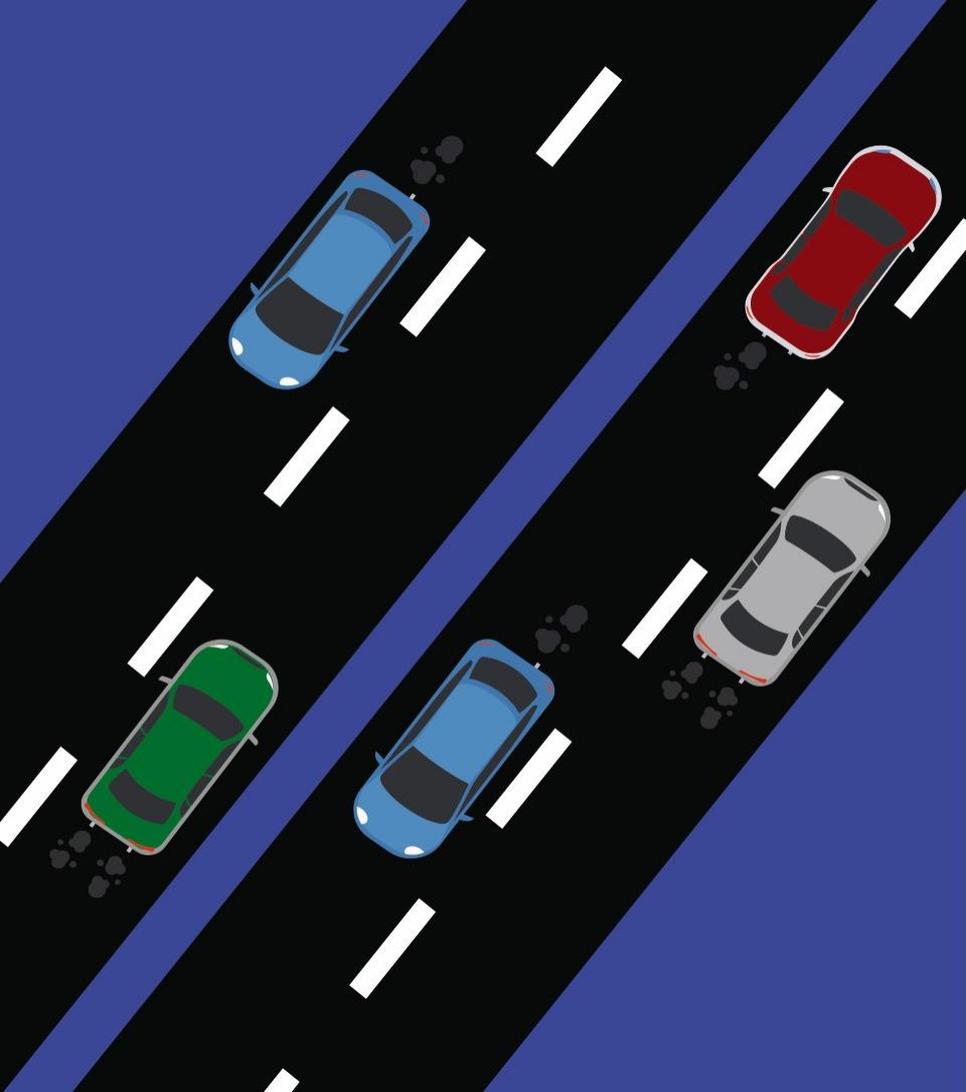
On a global scale, Asetek's patented technology can reduce data centres' power consumption by up to 50% by water-cooling the servers' processors directly, rather than air-cooling the room containing the servers.





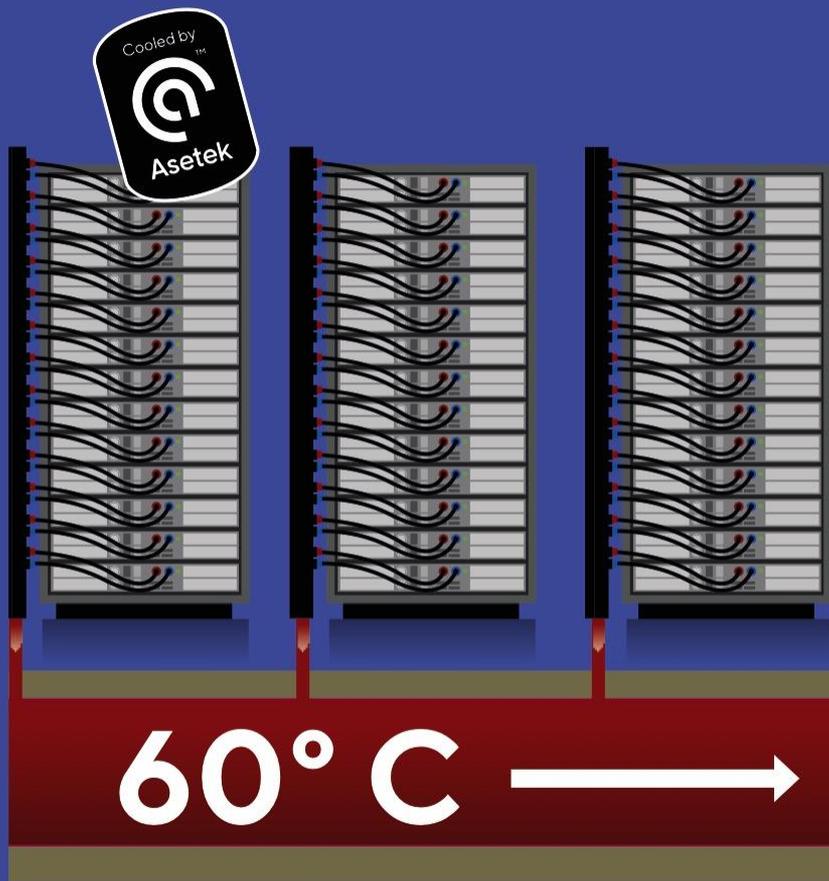
Today, some of the largest and most prestigious supercomputers in the world already use our Liquid Cooling technology.

Among our customers are several American and Far Eastern universities and governmental institutions as well as more than 6 million PC owners.



Cars and trucks are subject to stringent EU requirements for reducing their negative environmental impact.

However, when new data centres are planned and built, no meaningful EU-wide requirements for reducing their power consumption or improving waste-heat re-use have been set forth.



With Asetek's Liquid Cooling technology, 75% of the total power consumption of data centres can be recovered as 60° C hot water. And up to 25% of the total power consumption can be saved.

Within the EU, we must reduce our carbon footprint by 55% by 2030. Recovering the heat from the data centres in EU alone will enable a reduction of 4%.

By way of comparison, changing to electric cars will result in a reduction of 1.5%.



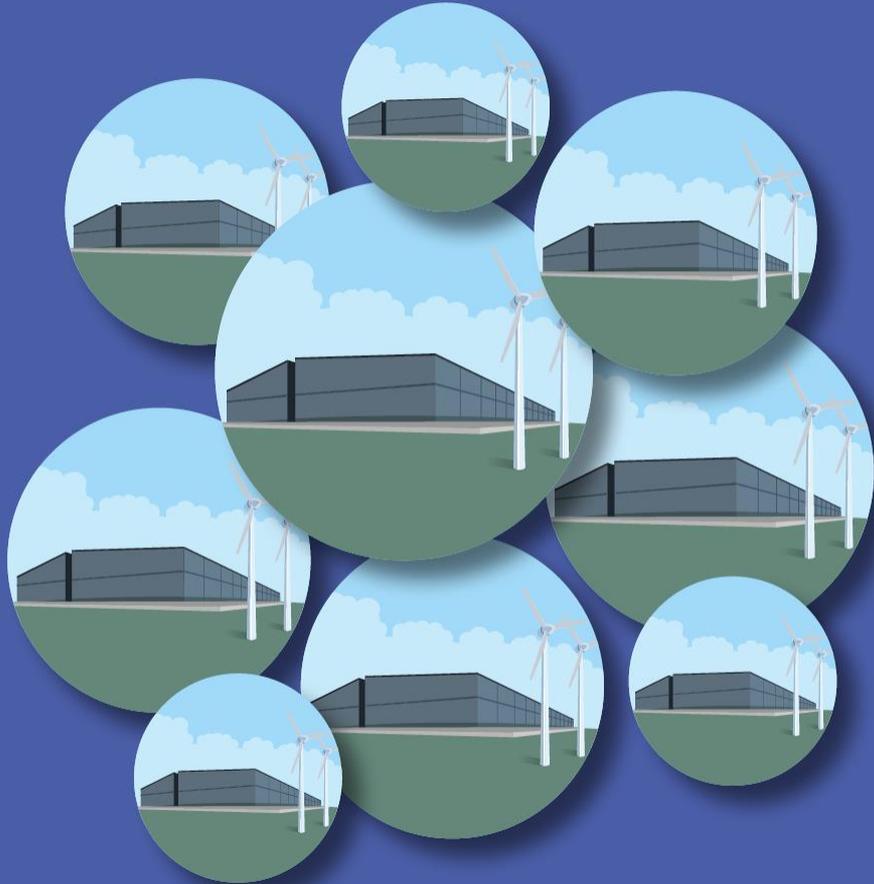
Data Centre operators are aware that Liquid Cooling is the climate-friendly solution of the future. But they do not act on it until decisive policy change mandates meaningful environmental requirements.

On 4 April 2019, Microsoft recognised its waiting position on its news-site:



Part of the reason Microsoft hasn't adopted liquid cooling in its Azure data-centers is likely due to it waiting on the standardization of such technologies".

*Brandon Rubenstein,
Microsoft manager - server development,
predicts that rack-level Liquid Cooling could be
standardized in as little as one
or two years...*



Measures to improve waste-heat re-use of data centres:

- physical location of a data centres < 30km from the next district-heating network
- strengthen de-centralised heat-grids
- > 60% of the total electric power consumption need to be supplied as 60°C waste-water without the need of additional, artificial heating (i.e. heat-pumps)
- servers to be sold in the EU need to be designed in such a way that they can be used for waste-heat re-use (Liquid Cooling)
- power plants, utility companies and local governments have to accept supply water (waste water) from data centres at 60°C

These measures are reasonably easy to implement and the technology is readily available.



Does it work?

YES – Asetek’s own climate friendly mini data centre already sells 60° C hot water to the district heating network of the third largest city of Denmark, Aalborg.

In the future, the heat from our cooling water, which previously was wasted, will be re-used in some of Aalborg’s more than 100,000 connected households.

... eliminating significant amounts of emitted CO₂.

**ASETEK-RESPONSIBLE
CLIMATE POLICY FOR DATA
CENTERS**



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