

HPE IT Sustainability Services

Data Center Heat Recovery

Unleash the hidden value in your data center with heat recovery



Hewlett Packard
Enterprise



The emerging trend of energy reuse in data centers

As global demand for cloud services, AI, and digital infrastructure continues to surge, data centers are experiencing a parallel surge in energy consumption. This reality has pushed data center operators to explore innovative ways to reduce their carbon footprint. Hence, energy reuse is an innovative approach to turn heat that would otherwise be rejected as waste into an opportunity.

The era of energy reuse in data centers is here. By treating data center heat as a resource instead of waste, the industry has the potential to redefine its relationship with energy, communities, and the environment. As data centers continue to grow, reusing the energy released in the form of heat will not only reduce the environmental impact but also create new economic value, setting a benchmark for sustainable innovation in the digital age.

HPE IT Sustainability Services—Data Center Heat Recovery offering

Energy reuse starts with capturing the heat produced by IT equipment, so that it can be used elsewhere. Here is how the entire process typically unfolds:

- Data center cooling systems capture the heat released by IT equipment, either from the air or directly from the surface of their electronics.
- Heat Recovery: The heat is transferred to another fluid stream, to preserve the integrity and reliability of the data center cooling system while making the heat available for reuse.
- Redistribution: The energy is then redirected to nearby buildings, industrial processes, or district heating systems.

HPE is now making it easy to redirect the heat from the datacenter to where it will be reused with the introduction of a heat recovery unit (HRU), developed by HPE in partnership with Danfoss, as displayed in Figure 1.

Nowadays we consider “free cooling” a lost opportunity, as good as burying recyclable materials. Heat released from IT equipment need not be waste.

There are several opportunities open to use this heat because Direct Liquid Cooled (DLC) equipment already supplies high quality heat. Even when air cooled equipment is used, we can increase the quality of the heat by adding a heat pump.

You already paid for the electrical energy consumed by your IT equipment, so why throw it away? With an HRU you can capture this energy released as heat and provide it to a different user, monetizing the, otherwise wasted, heat as a heat source income.

The HRU can be deployed in any data center, and HPE can deliver all the services needed to make its deployment easy for you. In case your data is running out of capacity or becoming obsolete, you should consider deploying your IT infrastructure inside an HPE Performance Optimized Data Center (HPE POD).

With HPE POD adding the HRU requires minimum effort because we already include, in the cooling system, machinery and controls which make the addition of the HRU even easier.

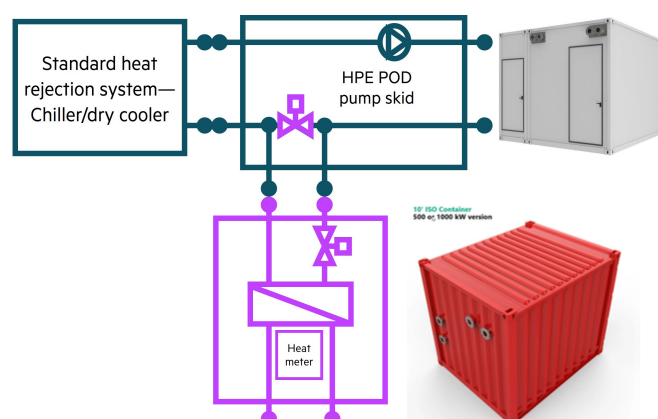


Figure 1. Heat recovery unit

We also have HPE POD modules engineered to support Direct Liquid Cooled (DLC) IT equipment, which increases the opportunity for heat reuse by supplying the heat at a higher temperature.

If you still prefer air-cooled IT systems, the close-coupled air-cooling method used in our IT modules (Figure 2) will help you recover heat better and be more efficient. Thanks to this design, distribution of air is facilitated by its nature, cold air goes down, hot air rises, which helps minimize fan energy and increase the temperature at which the heat is recovered.

IT Sustainability just got easier and better with Data Center Heat Recovery and HPE POD: you can now easily reuse the heat produced by your IT infrastructure and minimize the energy needed to provide cooling at the same time!

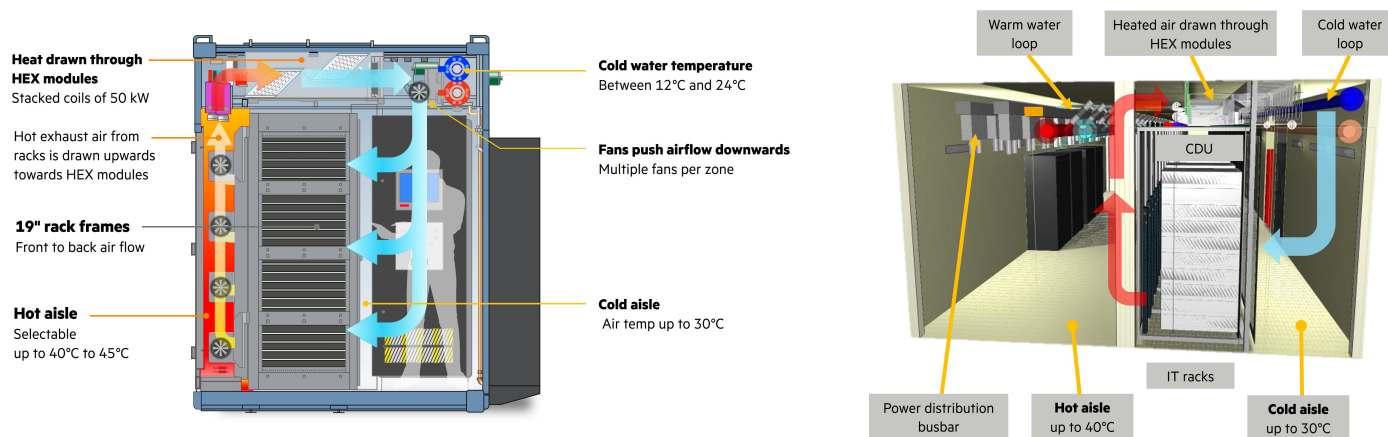


Figure 2. Close coupled cooling side view and DLC cooling side view

The need for a collaborative approach

The challenge of data center energy reuse requires a collaborative effort. Tech companies, data center operators, and policymakers all need to work together to implement sustainable solutions. Hewlett Packard Enterprise helps organizations with their end-to-end IT journey. Within that, there are comprehensive sustainable IT solutions from servers, storage, and networks to data center modernization with modular performance-optimized data centers. Danfoss is one of the most advanced technology providers of heat management solutions including oil-free Turbocor® compressors used in highly efficient heat pumps.

HPE and Danfoss combined their engineering brain trust to introduce the first industrial off-the-shelf heat recovery module that is a systematic approach to help organizations meet their sustainability objectives at enterprise level.

The Data Center Heat Recovery offering aims to capture the heat generated by data centers and repurpose it for various applications such as heating buildings or powering industrial processes to reduce operational costs and environment impact.

When required, HPE also leverages heat-pumps powered by efficient Danfoss technology to deliver the heat at higher temperature and make it fit for purpose for various applications, supply a factory with heat and warm water, or it can be exported to neighboring homes, public areas, and industries through a district heating system. It is a smart alternative to burning fossil fuel which reduces the carbon footprint; lowers energy costs; and accelerates transition to green energy system.





Service benefits

- Environmental impact
 - Reduces carbon emissions
 - Supports renewable energy goals
 - Improves compliance with environmental impact
- Economic advantages
 - Lowers operational cost
 - Generates revenue streams through heat sales
- Societal value
 - Reuses heat that would otherwise be rejected as waste
 - Creates sustainable partnerships with communities

Why HPE?

- HPE helps build the technologies of the future: We have designed services specifically based on modern hybrid cloud and data center environments to create a future-ready infrastructure in your organization.
- HPE can help you plan, design, and transform your approach to data center facilities: Our consistent global delivery across products and services families translates into cost-efficient, reliable, and flexible data center expertise for you. It also means that our team of experts delivers solutions across the world—for critical data center issues.
- HPE sees the big picture: We take a macro view of the IT and data center frameworks implemented across the organization, with a clear understanding of how every component comes together.
- HPE IT Sustainability and Data Center services is our professional consulting organization solely focused on data center services. HPE is an industry leader within the areas of data center strategies planning, design, construction, commissioning, and migration planning for next-generation data centers. As our capabilities span the entire data center lifecycle we take care of data centers in operation. We create operational procedures, maintenance, and staffing plans.
- Integrated IT and data center facility solutions:
 - From brick and mortar to cloud, an end-to-end unified approach, including IT and facilities
 - Anticipation of IT trends forms an essential part of data center design
 - Support over the entire data center lifecycle, from strategy to operation and maintenance



- Know-how and experience from data center design and implementation projects worldwide:
 - HPE has designed more than 40 tier IV data centers and 7 million m² of data center white space¹
 - Innovative concepts and ideas focused exclusively on data center design
 - Most HPE data center engineers are Uptime Institute accredited
 - HPE ranked #3 in the top 60 Data Center Engineering firms for 2024²

¹ Based on HPE Data Center Facilities reference cases database

² [bdcnetwork.com/home/news/55246166/top-60-data-center-engineering-firms-for-2024](https://www.bdcnetwork.com/home/news/55246166/top-60-data-center-engineering-firms-for-2024)

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