

Turn your
waste heat
into financial
gains and lower
emissions



Why waste heat

Why waste heat?

Waste heat recovery is not just about saving energy; it's about transforming unused energy into a valuable resource. By reusing excess heat, you can reduce your reliance on conventional energy sources, significantly cut operational costs and comply with environmental regulations.

Waste heat recovery can be as simple as reusing excess heat to heat your on-site facilities. Or you can maximize the full potential of your excess heat through sector coupling. In this brochure, we'll highlight how sector coupling and taking a "reduce, reuse, re-source" approach to energy usage can help you achieve your operating cost and decarbonization goals.



Good for the environment and your bottom line

Whether you're a plant operator, a building owner or a utility manager, and whether you're working with construction, industrial processes or food and beverage manufacturing, waste heat recovery makes good business sense. And by implementing sector coupling, you can unlock its full potential, and:

- Reduce operational costs
- Boost energy efficiency
- Meet decarbonization goals
- Increase compliance with environmental legislation
- Improve energy security

And, if you're looking for a reliable partner to begin your waste heat recovery journey...

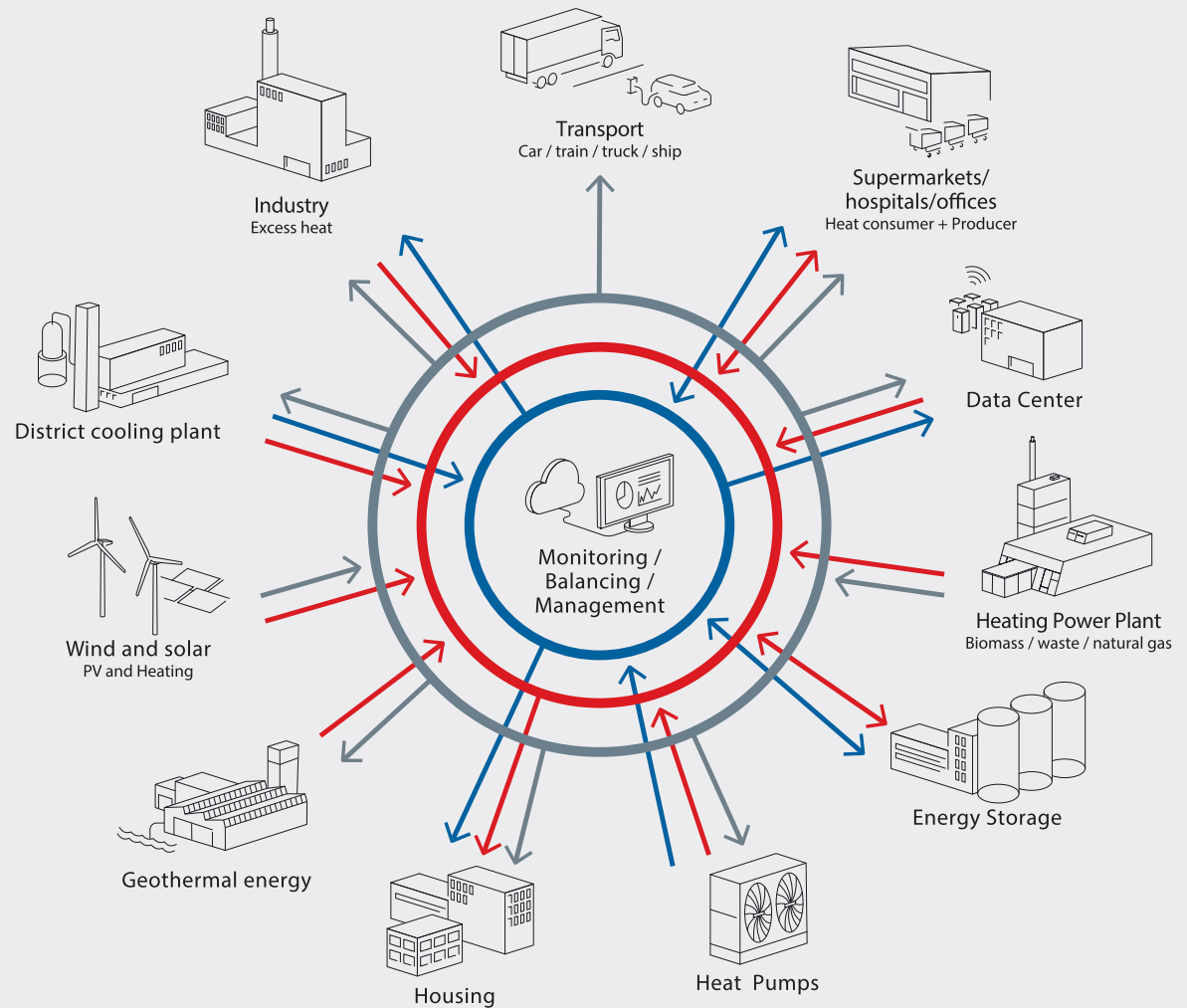


Sector integration

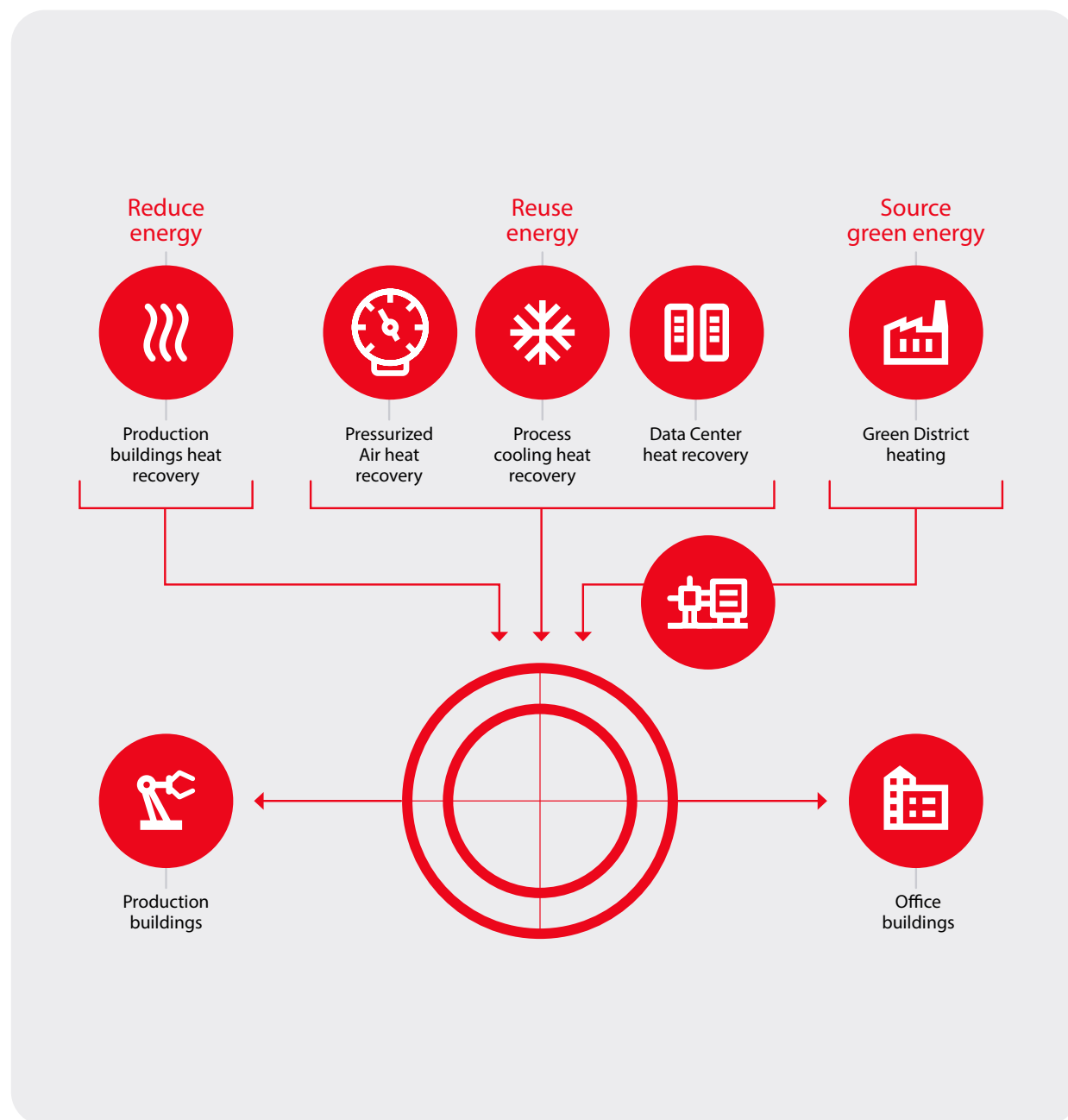
Combine systems for greater efficiency

Sector coupling, or sector integration, involves combining two or more supply and demand systems, such as heating and cooling, repurposing excess energy from one system to power the other. It is called sector coupling or sector integration, and it Sector coupling is a pivotal strategy for maximizing efficiency, energy reuse and decarbonizing by sourcing green energy in a holistic manner.

It can help you reduce carbon emissions, enhance system reliability, resiliency, stabilize energy supply and address the intermittent availability of renewables.



○ Cooling grid ○ Heating Grid ○ Electrical Grid

**Reduce, reuse and re-source**

Reduce, reuse and re-source your energy supply

Whether you're aiming to meet global climate targets, lower your CO₂ tax liability, reduce your operating costs, or achieve other sustainability goals, sector coupling helps you effectively reduce CO₂ emissions through waste heat recovery. This helps you reduce, reuse, and re-source your energy consumption and lower your dependency on fossil fuels.

Reduce energy consumption

Heat recovery allows you to reuse energy already present in your system, reducing the need to supply additional energy to your facility. When combined with other measures — such as using energy only when needed and adjusting temperature settings for greater efficiency — it can help you significantly reduce your reliance on energy from fossil fuels.



Maximize your resource efficiency

By reusing energy, you can maximize resource efficiency...

Reuse waste heat

By reusing energy, you can maximize resource efficiency. For instance, you can repurpose the heat that would normally be rejected through cooling towers to heat your facility or the processes that take place in it. This could include capturing heat from ambient air or excess heat from industrial processes. When your supply exceeds demand, you can either feed the surplus energy into the grid — essentially becoming an energy provider — or store it using an energy storage solution, saving it for times when your demand is higher than your supply.

Re-source power supply with renewables

The final step to ensure maximum decarbonization via heat recovery and heating electrification, integrating renewable energy sources such as solar and wind into district heating and cooling systems is key to achieving a more sustainable energy system. This approach reduces environmental impact by offering a cleaner energy supply. Sector integration ensures these renewable sources are used efficiently, supporting sustainability efforts while mitigating the variability of solar and wind energy by complementing them with other technologies or storage solutions.



Legislation

And comply with EU legislation

EU legislation is also paving the way for waste heat recovery by setting standards, providing incentives and creating opportunities for businesses and municipalities alike.

Two directives in particular highlight the importance of waste heat recovery and sector coupling in saving energy and meeting efficiency targets.



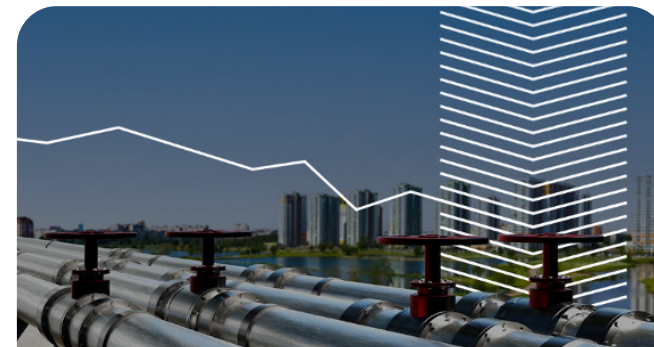
The 2023 Energy Efficiency Directive

The 2023 Energy Efficiency Directive (EED) is a cornerstone of the EU's ambitious plan to reduce energy consumption by 32.5% by 2030.

It recognizes waste heat as a valuable resource that can significantly contribute to energy savings.

The EED mandates cost-benefit analyses for cogeneration and waste heat recovery potential, ensuring these strategies are economically viable and effectively implemented.

It also refers to mandatory Heat Plans for Municipalities, in order to fully utilize the available free energy.

[Find out more](#)

The Renewable Energy Directive III

The Renewable Energy Directive III (RED III) aims to significantly increase the share of renewable energy in the EU's overall energy consumption to 42.5% by 2030, with an additional indicative target of 2.5%. This percent growth is critical to the resulting decarbonization of heat recovery and heating electrification projects.

RED includes specific provisions for shared energy communities, consisting of individuals, businesses and local authorities collaborating to produce, consume and manage renewable energy collectively.

It provides a supportive regulatory framework and incentives, including simplified procedures for small-scale renewable energy projects and mechanisms to facilitate the integration of renewable energy, such as waste heat, into local grids.

[Find out more](#)

Integrated systems can help you

Want to make sector coupling a reality at your facility?

Danfoss is your ideal partner in realizing the full potential of sector coupling and minimize your operating costs. With our proven track record and a comprehensive portfolio of high-efficiency solutions, we can help you design and implement an integrated energy system that maximizes heat recovery and accelerates your decarbonization journey.

The Danfoss Heat Recovery Station plays a key role in capturing excess heat from industrial facilities. When connected to district energy networks, heat pumps elevate this heat for broader urban use. These facilities benefit from enhanced cooling efficiency, while energy companies utilize the recovered heat for sustainable heating. This collaboration improves efficiency, reduces costs, and strengthens system resilience and sustainability.



Ready to get started with **sector coupling**?

Contact Sector Coupling Solutions
to learn more about your options.

[Contact us here](#)



Green resolution in Ringsted, Denmark:

Innovative heat recovery system
enables 97% fossil-free heating in
Danish town, powering 7,000 homes
and boosting efficiency by 21%.

[Read more here](#)



Danish Hospital undergoes green transformation:

Sector coupling is expected to help
Sønderborg hospital cut 28,300 MWh
energy yearly and sell 15,800 MWh
excess heat—enough to supply 877
average Danish households.

[Read more here](#)



Greener heat, smarter solutions:

Flue gas heat recovery saves 1,500
MWh annually, powering 150 house-
holds with sustainable energy in the
Danish town of Frederikshavn.

[Read more here](#)

Further information available on
Danfoss' website: danfoss.com

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