Leipziger Stadtwerke

Opportunities for waste heat utilisation

More efficiency through cooperation
with the Leipziger Stadtwerke

30. September 2022

Motivation

Without an energy transition in the heating sector, the target set by the federal German government of climate neutrality by 2045 cannot be achieved. In particular, the city of Leipzig, with its exclamation of a climate emergency, is showing that there is a need for action. We at the Leipziger Stadtwerke want to facilitate the jump to an urban transition in energy and, above all, heating.

Alongside efforts to set up our production park in a resource-saving and sustainable way, innovative technologies which make use of synergies, such as the use of urban waste heat, are of great significance to us.

1 What actually is waste heat?

Many processes in industry and trade are associated with the high energy requirements needed to manufacture certain products, process and finish materials or provide services.

In the value-added chain, the applied and converted energy is mostly not completely utilised. The generated by-product of thermal losses is referred to as waste heat. This heat is of no use to its original purpose of further utilisation of energy, and thus goes mostly unused, and may even be released into the environment with further auxiliary energy.

Waste heat is produced in the most diverse range of areas; whether it's due to the energy-intensive provision of auxiliary media, e.g. steam, hot water and compressed air, or due to the cooling required in operation for certain processes and systems.

However, rendering this "excess" energy useful can, in certain circumstances, significantly optimise operational costs and provide further operational benefits.

2 More energy-efficient with the Leipziger Stadtwerke

With the clear aim of future climate-neutral district heating, we at Leipziger Stadtwerke strive to constantly increase the proportion of renewable heat and previously unused waste heat. Within the scope of energy transition, "efficiency first" is the prime directive before we can look to expand renewable energies. That is because the cleanest kilowatt-hour is the one which does not even have to be produced. We are already investigating and planning the integration of industrial waste heat into Leipzig's district heating. You will find further information on the current project at:
https://zukunft-fernwaerme.de/industrielle-abwaerme-west/

As a local authority energy service provider – alongside the options of integration into the central district heating grid system – we would like to expand our radius of investigation and application to decentralised residential area and object solutions in order to be able to serve an extensive bandwidth of external consumer points to suit each individual application.

We would therefore very much relish the opportunity to be able to discuss possible potential waste heat together with you, and investigate the option of secondary utilisation of it with external waste heat extraction.

3 Benefits for companies of extraction of waste heat

The external utilisation of waste heat gives you the option of opening up a further source of income, and sustainably making usable waste heat for external heat supply.

The use of the synergy of waste heat and heat requirement provides you with:

- An increase in energy efficiency
- Lower operating costs thanks to the reduction of recooling requirements
- Fewer CO_2 emissions and a green reputation
- Income from the delivery of waste heat
- Investments for energy efficiency measures which are eligible for subsidies
- Local authority cooperation in order to achieve the climate goals of the city of Leipzig

4 The path to external waste heat utilisation

The technical and economic viability differs from case to case, and depends heavily on the local framework conditions and the given parameters of the processes. Solutions for utilisation of an external waste heat source therefore have to be developed and investigated for each specific company on an individual basis.

An initial appraisal and analysis can be carried out with the following steps:

1. Prior investigations and implementations

- Have investigations already been made with regard to waste heat utilisation?
  - If so: What was implemented?
  - If not: Why was the matter not pursued further?

2. Localisation of waste heat

- Which energy flows and consumptions are in place?
  - Where are the presumed potential sources of waste heat?
  - Where is cooling performed and where is heat given off?
- How is the heat given off? / How is cooling performed?
  - Direct or indirect heat emission/cooling?
  - To which carrier medium?

3. Parameters of waste heat

- Which temperatures does the source of waste heat have?
- Which flows of power, mass and volume are in place?
- When and for how long are the systems with waste heat operated?

A little bit of assistance – Examples of typical sources of waste heat:
Air compressors, drying and hot air processes, flue gases, waste steam, water vapours, waste water, galvanic baths, furnace cooling, motor cooling, IT cooling

In the attached check list/Excel file, you can make entries and make a rough estimate as to how much waste heat is available.

In the process, we closely follow the guideline for waste heat utilisation of the Sächsiche Energieagentur GmbH (SAENA).

What's the next step?

After you have sent us your check list, we start assessing the waste heat potential and check the technical side and suitability of the location for external waste heat utilisation.

If basic suitability is to be assumed, we would then seek to enter into a detailed preliminary investigation with you, and discuss the technical and economic framework conditions for checking viability.

5 Contact

Please send us your completed check list by e-mail. Please do not hesitate to contact us with any questions.

Together we can make Leipzig climate-neutral!

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