Bytes2Heat: Where Waste Heat meets Purpose

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Note: The images used are sourced from the Microsoft Office archive, Unsplash, Pexels, and Pixabay
With GPT - powered AI innovation, needed data center capacities increase. Therefore, the world of data centers is getting even bigger.
While operating, data centers generate an immense amount of waste heat, which is often released into the environment without being utilized.
Thus, data centers offer great potential for green heat, and the pressure to utilize it is increasing. This is where Bytes2Heat comes into play.

Increasing waste heat from DC

Unused waste heat offers increasing potential

Pressure for utilisation increases

European Green Deal
EED

National climate targets and legislation

Increasing pressure on data centers & heat customers

Bytes2Heat = Solution
The mission of **Bytes2Heat** is to make waste heat from data centers usable and to resolve existing challenges so waste is put to good use.

### Challenges

#### Technical barriers
- e.g. too low waste heat temperatures as well as the need for 24/365 heat extraction

#### Economic barriers
- e.g., high investment requirements outside the actual core business

#### Lack of communication
- e.g., lack of clarity about possible matches for different stakeholder needs

#### Legal barriers
- e.g. concern about dependencies and legal and tax disadvantages

### Mission

Bytes2Heat aims to help make waste heat from data centers economically viable and overcome existing barriers.
For Bytes2Heat, a competent team and network of experts comes together to harness the heat-power of data centers.

**Project consortium**

- **Christian Noll**, Executive Board
- **Mira Weber**, Project manager
- **Dr. Tobias Finke**, Entrepreneur in Residence
- **Prof. Dr. Peter Radgen**, Institute for Energy Economics and Rational Use of Energy
- **Prof. Daniela Winkler**, Institute of Economics and Law
- **Stefan Scherz**, Managing partner

**Project partner**

- **André Martin & Till Boeder**
- **Jörg Saar & Markus Lempp**
- **Marcus Siepe & Melina Shaffu**
- **Gunnar Wilhelm & Nico Köllner**
- **Dr. Dieter Thiel**
- **Patricia Friedek-Angelucci & Franziska Chelvier**

**Expert network**

...and many more
This team conducted numerous interviews and workshops to find innovative solutions for resolving challenges of waste heat utilization.

Timeline of the Bytes2Heat innovation workshops

- Interviews from April 2021
- Communication October 2021
- Business economy December 2021
- Technology February 2022
- Prototyping April 2022
- Law December 2022

Innovation Workshops
Based on the solutions outlined, the project team is currently developing different tools, pilot projects and the Bytes2Heat-platform.

- **Matching tool**
- **Quick check profitability**
- **Best practice overview**
- **Pilot projects**

And many more tools
With our Bytes2Heat matching tool we enable you to find the perfect waste heat partner by bringing together source and sink.

Try our matching tool first! To do so, sign up for our Bytes2Heat newsletter in order not to miss the launch! Simply send an email to mira.weber@deneff.org
With our Bytes2Heat **quick check**, the profitability of potential waste heat recovery projects can be quickly calculated.

Try our quick check first! To do so, sign up for our Bytes2Heat newsletter in order not to miss the launch! Simply send an email to mira.weber@deneff.org
The **best practice overview** shows how waste heat from data centers can be used. With 99 examples from all over the world:

- Germany: 37
- Sweden: 15
- Finland: 9
- Netherlands: 6
- USA: 5
- Denmark: 5
- France: 5
- Switzerland: 4
- Norway: 3
- Great Britain: 3
- Austria: 1
- Canada: 2
- Ireland: 2
- Japan: 1
- South Korea: 1

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Our heatmap shows that the possibilities for utilizing waste heat from data centers are diverse with no limits to creativity.

Bytes2Heat Heatmap
From algae cultivation to zoo heating, there could be an application for everyone

- train station heating
- gymnasium heating
- hot water preparation
- hotel heating
- cheese production
- dried fruit production
- fish farming
- greenhouse heating
Best-Practice Insights: most examples have more than 4 MW IT power, 20-30°C waste heat and 50-70°C utilization temperatures

**IT Power**

Most data center waste heat examples in our overview have an **IT power** of more than 4 MW (n=31)

**Waste Heat Temperature**

Waste heat temperature typically ranges from 20-30 °C in the examples we have identified (n=24)

**Utilization Temperature**

The utilization temperature for waste heat from data centers is commonly between 50-70 °C (n=19)
Best-Practice Overview Launch
Register now for the presentation on May 17th, 2023 from 3:30 PM to 4:30 PM to get more insights
These and many other tools are published on the Bytes2Heat platform. Subscribe now to make sure you don't miss anything.
Pilot projects that Bytes2Heat initiates will also be announced on this platform – e.g. heating neighborhoods with waste heat

Possible use of waste heat in the neighborhood

Let’s unlock the power of waste heat from data centers together!
Contact persons

We look forward to your questions and suggestions. Please contact us!

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