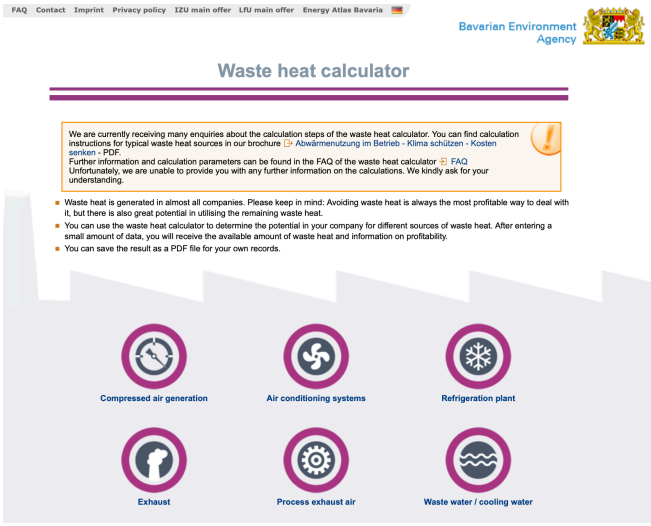
BACKGROUND INFORMATION FOR WORKSHOP FACILITATORS

Waste Heat Calculator



"Utilized waste heat helps to reduce CO2 emissions and conserve resources. The waste heat calculator helps companies to optimize the energy efficiency of their operations."

Claus Kumutat, President of the State Office for the Environment (LfU)

TOOLBOX CATEGORIES

Helping companies quantify their recoverable waste heat and evaluate the economic viability of waste heat recovery methods to enhance energy efficiency and reduce costs.

Country: Germany
Category: Technical
Media: Application
Source: https://www.umweltpakt.bayern.de/abwaermerechner/index.php?set_language=en

Introduction:

The Bayerisches Landesamt für Umwelt's Waste Heat Calculator is a valuable application for the energy industry and industrial stakeholders in Germany, aiming to enhance energy efficiency and financial performance. This tool enables companies to identify and quantify their waste heat potential, providing insights into the profitability of using this otherwise lost energy source. By entering minimal data, users can quickly determine the available amount of waste heat and receive detailed information on its economic benefits. This application is instrumental in supporting the heating transition by promoting the utilization of waste heat, thereby reducing energy consumption and costs. The results, which can be saved as a PDF, make it easy for businesses to incorporate waste heat recovery into their sustainability strategies.

PROJECT OVERVIEW

Title: Waste Heat Calculator developed by the Bavarian State Office for the Environment
Objective: The Waste Heat Calculator is particularly useful for companies aiming to reduce their energy costs and carbon footprint by making better use of their waste heat. It is also valuable for initial feasibility studies when considering investments in waste heat recovery technologies.
Duration: 2014 - now
Partners:

- Bayerisches Landesamt für Umwelt (LfU)
- EU-Consult GmbH - Ingenieurbüro für Energie- und Umwelttechnik

Approach: The waste heat calculator provides an initial estimation of the technically usable amount of waste heat depending on a previously selected type of use. The usable waste heat potential can vary depending on the operational conditions. Simplifications had to be made for the calculations stored. The calculations are therefore based on common systems and their applications in practice. This also applies to the temperature and power ranges of the systems. The tool's data foundation includes industry standards and guidelines, such as those from the VDI (Association of German Engineers) and it allows for detailed customization based on real-world operational conditions, such as partial load operations and the efficiency of specific recovery systems.

TOOL EVALUATION

How to Use

1. **Data Input**: Start by entering specific information about your company's waste heat sources. This includes data on energy consumption, operational hours and the type of waste heat (e.g., exhaust gases, cooling water).
2. **Calculation Modules**: The calculator features several modules corresponding to different types of waste heat sources, such as:
   - Compressed air generation
   - Air conditioning systems
   - Refrigeration systems
   - Exhaust gases
   - Process exhaust air
   - Wastewater or cooling water
3. **Calculation Process**: After inputting your data, the tool will perform calculations to estimate the recoverable amount of waste heat and its economic potential. The tool provides results that include the total recoverable heat, potential savings and a preliminary economic assessment.
4. **Output and Analysis**: The results are presented in a detailed report format, which can be saved as a PDF. The report will show the expected profitability, potential energy savings and possible return on investment.

Key Benefits

- The tool helps businesses determine whether investing in waste heat recovery systems would be economically viable, providing clear indicators such as potential savings and payback periods.
- With a simple interface and step-by-step guidance, the calculator makes it easy for users to input their data and understand the results.
- It considers various factors like full load hours, energy costs and the specific characteristics of different types of waste heat.

Cost Aspects

- The Tool is free of charge - implementing the recommendations, such as installing new equipment or retrofitting existing systems, can involve significant capital expenditure.
- Users may need to invest time and resources in gathering detailed operational data to input into the tool accurately.
- No information regarding costs to build waste heat calculator published.

Evaluation

- **Challenges:** Investment costs are estimated based on German prices and may vary from one country to another. Accurate input data is crucial for reliable results and the detailed operational data needed might not be readily available, which could complicate the initial setup.While the tool provides extensive data, interpreting the results to make informed decisions may require some understanding of energy systems and economic analysis.
- **Success Factors:** Data availability and a practical to obtain an initial assessment of potentials.

MORE INFORMATION FOR WORKSHOP PREPARATION

Contact: oekoenergie@lfu.bayern.de
Willingness to engage in dialogue or workshop participation: No answer yet.
Possible support within REDI4heat: -
Similar Approaches in the Toolbox: **Waste Heat Manual** and **Emb3rs - Heat and Cold matching Platform**