



University of Stuttgart

**Institute for Energy Economics and Rational
Energy Use (IER)**

Introduction:

Optimizing energy efficiency and reducing CO₂ emissions are crucial goals in the industrial sector. The electroplating industry is a significant energy consumer and emits substantial amounts of waste heat. This master's thesis is conducted in close collaboration with an industrial partner and aims to optimize heat recovery from electroplating exhaust air by implementing a closed-loop system combined with a heat pump. The electroplating facility operates two exhaust air systems, with only one currently equipped with a heat recovery system.

Tasks:

1. Integration of the second exhaust air system:

- Developing a concept for integrating the second exhaust air system into the existing heat recovery system

2. Efficiency improvement using heat pumps:

- Evaluating various heat pump technologies for their suitability in the electroplating industry
- Implementing a suitable heat pump solution to enhance the efficiency of the heat recovery system

3. Concept development:

- Elaborating a detailed concept for the technical feasibility of the optimized heat recovery system
- Considering framework conditions such as the integration of a heat storage system and other infrastructural requirements
- Analyzing the economic viability of the system, taking into account investment costs, operating costs, and potential savings
- Assessing the CO₂ reduction potential compared to conventional heat recovery systems

Profile & Qualifications:

- Ability to work in a structured manner
- Proficiency in MS Office (Word + Excel) and optionally Python
- Solid research skills
- Interest in the field of energy efficiency in Industry

**Master's Thesis in
Collaboration with Industrial
Partner**

**„Optimization of Heat
Recovery from
Electroplating Exhaust Air
using Closed-loop System
+ Heat Pump“**

Then we look forward to receiving your application!
Please send us your application documents
including the following:

- Resume/CV
- Current transcript of records (Bachelor/Master)
- Any certificates/letters of recommendation if available

Contact

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