



EINSTEIN – Thermal energy audits for Industry and service companies like hospitals, hotels, commercial centres, office buildings, and sport facilities

What is Einstein all about?

The Einstein tool kit, which is an open-source software, provides the possibility for thermal energy efficiency improvements and the implementation of renewable energy within industrial processes, in different industry sectors. Further EINSTEIN gives you support in thermal energy audits for non-industrial applications like hospitals, hotels, commercial centres, office buildings, sport facilities etc. Its software tool is integrated into the Einstein Audit Methodology, which is specially designed for industrial processes with a high demand of thermal energy.

Why should I join the Einstein audit procedure?

- If you want your company to reduce operating costs
- If you are looking for a comprehensive solution for energy efficiency and the integration of renewable energy for your company

What are the main steps of the Einstein audit procedure?

1. Data acquisition and visualization of the status quo
2. Energy demand reduction through process optimisation
3. Heat recovery through an intelligent combinations of heat exchangers, estimated through the pinch analysis
4. Integration of renewable energy sources and high technology equipment, such as
 - solar heating and cooling,
 - heat pump technologies,
 - CHP systems,
 - efficient boilers and burners,
 - efficient office buildings and production halls

Which benefits can I expect from the audit?

- Energy audits on **different levels of detail**
- **Fast estimation** of the saving potential
- Integral solutions for efficient industrial thermal energy supply by renewable energy sources
- Heat recovery by an optimized heat exchanger network
- Audits in companies that are financially supported by the project
- **Contacts** to thermal energy experts
- **Cost minimisation**, due to energy demand reduction
- **Public reputation**, due to environmental friendly measures
- **Long term evaluation** of the implemented measures
- Possibility for **benchmarking** and **best practice** analysis
- **Huge experience**, due to former case studies and audits
- **Co-funded audit** for the first audits with a newly developed tool

What is my contribution to the procedure?

- In general, you should try to provide a contact member of your company, who is responsible to make sure that, through the whole audit procedure, information and data can be interchanged without any problems.
- The expenditure of time for the audit will be approximately 50 hours for the energy consultants – your time contribution depend on existing data
- The visit of the company will take place on one day
- The company will agree to fill in a questionnaire about the audit and software tool
- The company agree to publish the energy data and results anonymously on the EINSTEIN web site based on a confidential agreement (if desired)

Two examples of the case studies out of former energy audits with the EINSTEIN methodology and software tool:

Case Study 1

Sector: Metal surface treatment

Product: Electroplating and powder coating of metals

Processes:

- NiCr electroplating
- Zn electroplating
- Manual electroplating and powder coating

Evaluation and comparison of the alternatives:

- Heat recovery of the waste heat from the cooling devices
- implementation of a high-temperature heat-pump for heat recovery of the waste heat from the air compressors
- the integration of solar thermal flat plat collectors for the powder coating process



Case Study 2

Sector: Brewery

Product: Beer

Processes:

- Heating of hot water from temperature 15 °C to 80 °C
- Brew house processes and fermentation processes
- Packaging processes like filling, and bottle and crate washer

Evaluation and comparison of the alternatives:

- Increasing of the boiler efficiency by optimization of the economizer
- Heat recovery of the condensate from the brewing process
- Adsorption cooling by waste heat for the fermentation process

