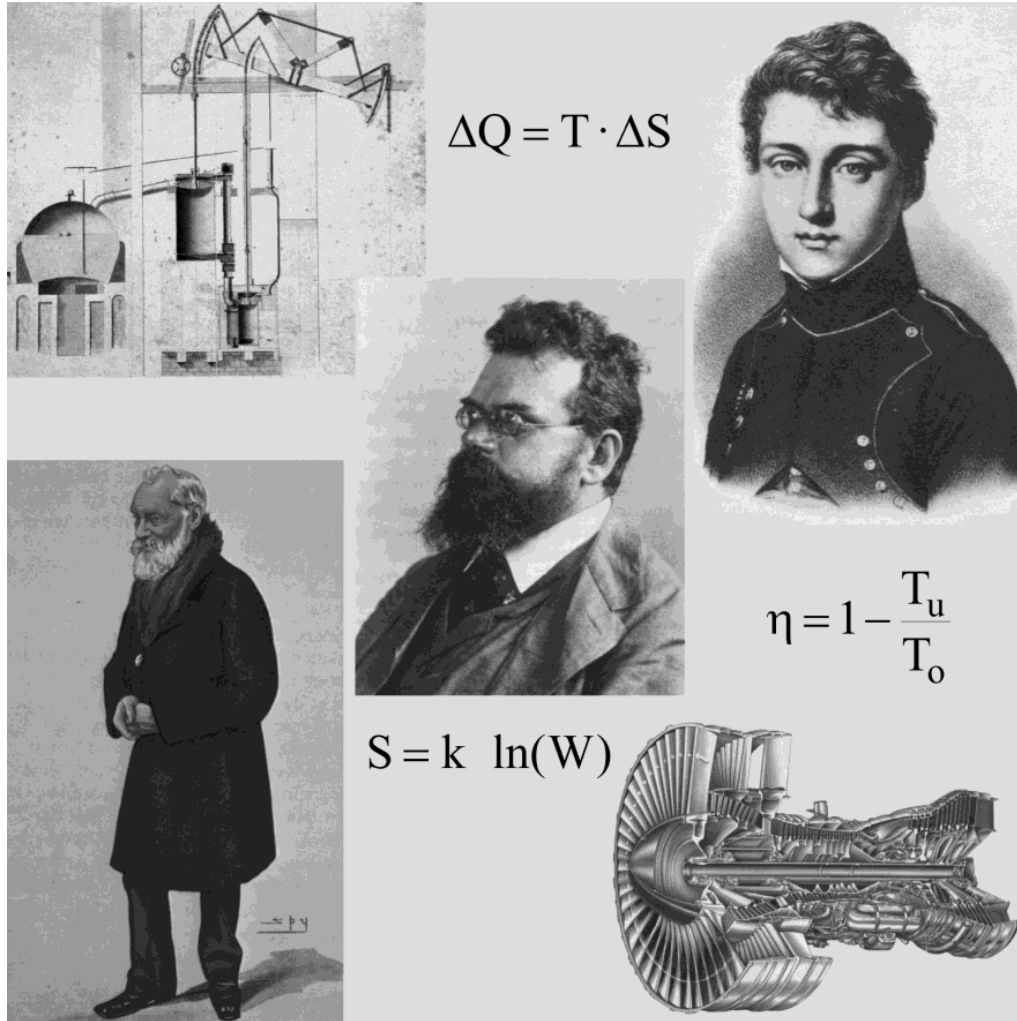


Thermodynamics of energy conversion and storage



Prof. Dr. Andreas Züttel
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Thermodynamics of energy conversion and storage

Course (Tu, 16:00 – 18:00)

- 1) Introduction
- 2) Energy demand
- 3) Resources
- 4) Carnot Cycle
- 5) Combustion engines (Piston)
- 6) Turbines
- 7) Nuclear reactors
- 8) Renewable Energy
- 9) Hydropower
- 10) Windpower
- 11) Photovoltaics
- 12) Geothermal power
- 13) Thermoelectricity and Tidal power
- 14) Energy storage

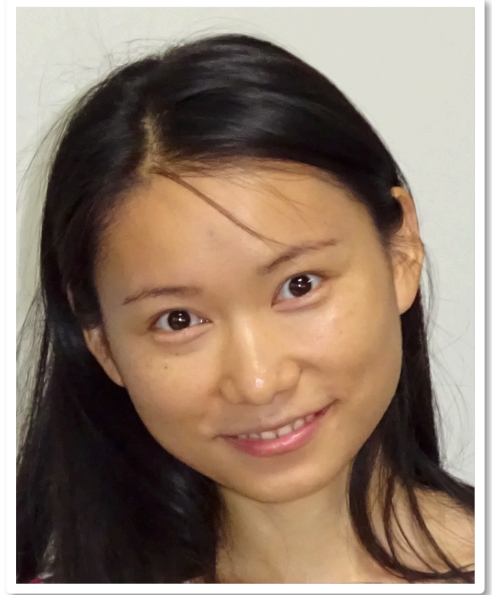
Thermodynamics of energy conversion and storage

Exercises

Tu, 18:00 – 19:00

Questions during the course

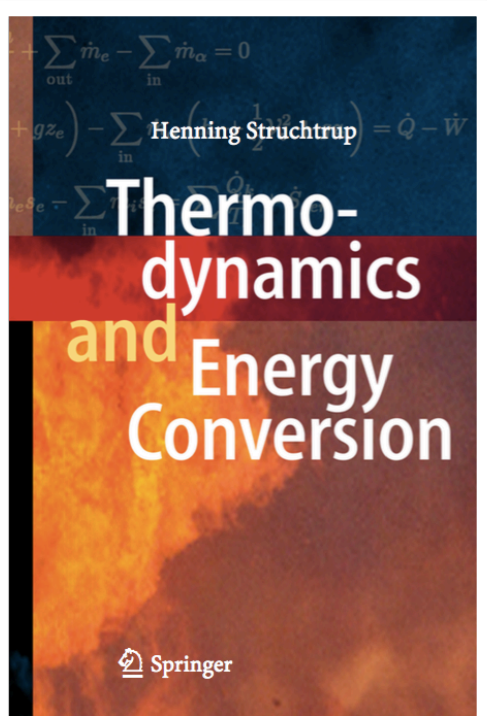
Solutions 1 week after the exercises



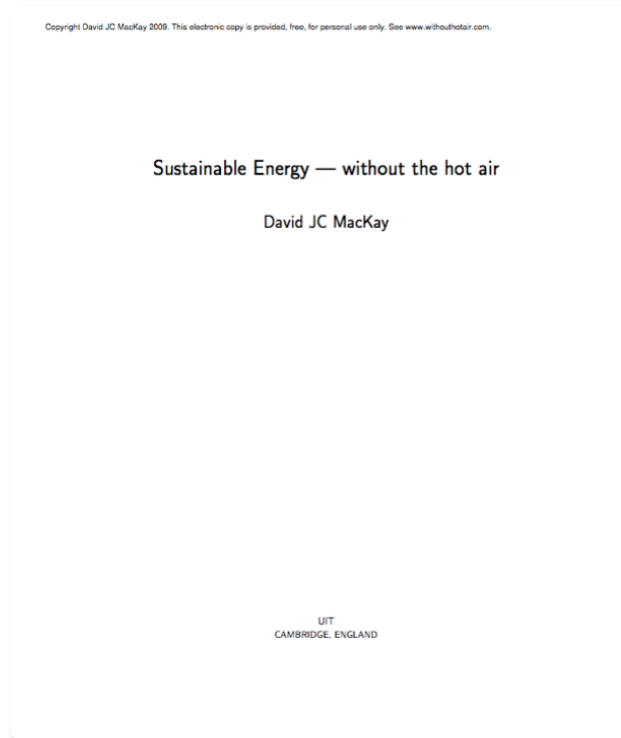
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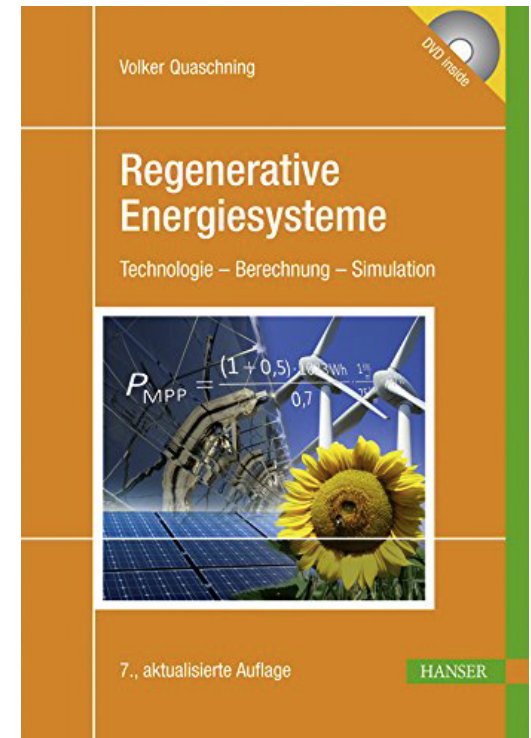
LITERATURE



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<https://www.lehmanns.de/shop/technik/32249702-9783446443334-regenerative-energiesysteme>

Summary

The course is an introduction to the energy conversion. It focuses on the thermodynamics of the engines and systems for the conversion of energy from fossil fuels and renewable resources. The relevant aspects of modern energy conversion are treated and the potentials and limitations are estimated.

Learning Outcomes

By the end of the course, the student must be able to:

- **Work out / Determine the potential and limitations of the resources**
- **Describe the various energy conversion technologies**
- **Explain the thermodynamics of the energy conversion devices**
- **Analyze the relevant chemical reactions**
- **Compare technologies and estimate the potential**
- **Assess / Evaluate the performance of various energy conversion technologies**