Zero-Emission-Campus –
Successes and experiences of the
Environmental Campus Birkenfeld

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Panel 'Institutional greenhouse gas reduction strategies'
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Environmental Campus Birkenfeld (ECB)

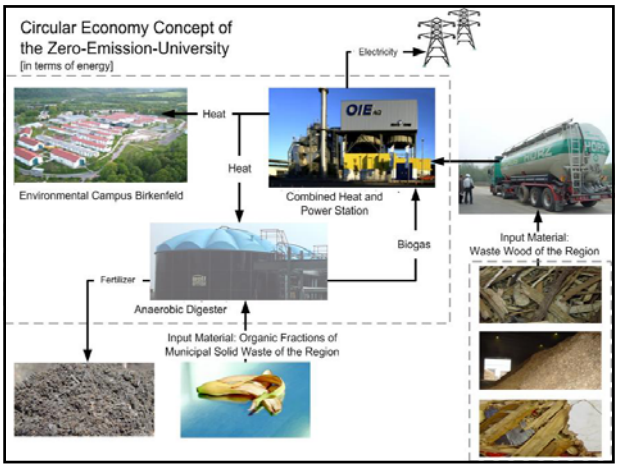
ECB – Facts and Figures

Year of foundation:	1996
Total area:	10 ha
Effective area/buildings:	17.000 qm
Bachelor Courses:	10
Master Courses:	8
Students in 2007:	2.100
Students dormitories in 2007:	500
Professors and lecturers:	51
Scientific and administrative staff:	80
Research Income in 2006:	2.700.000 €

Ecological Campus Conception

- Zero-Emission Heat and Energy Concept
- Energy Efficient Building Conception
- Active and Passive Utilisation of Solar Energy
- New: Zero-Emission Water Concept
- Educational Aspects and Programs

Neighbouring Eco-Industrial Park



Zero-Emission Heat and Energy Concept

- Heat and Electricity demand is covered by neighbouring Combined Biomass Heat and Power Station
- Electricity Demand: 1.000 MWh/a

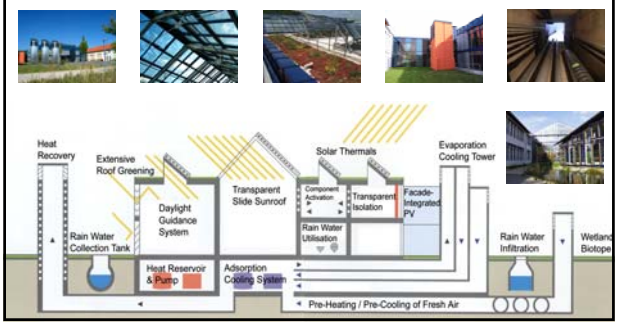
➔ Abatement Potential per anno: 550 t CO_{2e}
Based on the German Energy Mix: 550 g/kWh CO_{2e}

- Heat Demand in total: 2.000 MWh/a

➔ Abatement Potential per anno: 500 t CO_{2e}
Based on the German Heat Generation Mix and 250 g/kWh CO_{2e}

- Heat Demand Adsorption Cooling: 142 MWh/a
  - Covered by Solar Thermal : 21 MWh/a

Flowchart Ecological Concept



Active Solar Energy Utilisation

- Adsorptions Cooling System supported by Solar Thermal Installations (roof and facade-integrated)
- Daylight Guidance System
- Facade Integrated Photovoltaic [P=19 kW_{peak} / 6-7 MWh/a]
- Roof top PV [UCB Facility Management ltd]


Solar Energy Utilisation

Photovoltaic: Facade-Integrated & Art

Solar Thermal Applications

Solar Thermal supporting Adsorption Cooling System

Solar Thermal Warm Water Application

Other Innovations

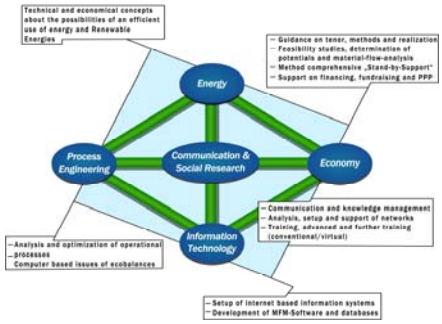
- Zero-Heat-Energy Student Dormitory [Passive House Standard]
- Modular Boarding House [Timber frame – less embedded energy]

Key Ideas of the ECB

- Interdisciplinary Education for Sustainable Development based on a sound knowledge in the specific study courses
- Applied Research for Sustainability
- Project based Learning in Small Learning Groups
- International Research and Education Networks
- Residential Campus: Living, Learning, Working



Institute for applied Material Flow Management



Educational Aspects and Programs

- Environmental Technologies are part of the curricula
- Web-based performance monitoring
- Information-Displays in the central buildings
- Student are working hands-on [e.g. EMS]



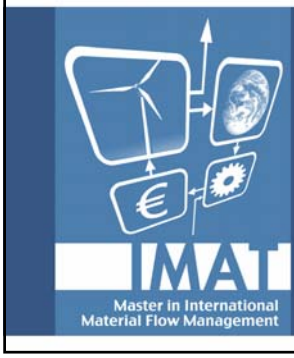

Scope of studies in Birkenfeld

Environmental Technology

- Mechanical Engineering
- Process Engineering
- Environmental Planning
- Applied Computer Science
- New Media

Environmental Management and Law

- Environmental Management and Business Administration
- Business and Environmental Law
- European Business Law
- Material Flow Management



German Degree

Master of Science in International Material Flow Management (MSc) at ECB

German-Japanese Dual Degree

Master of Engineering in International Material Flow Management (MEng) at ECB combined with Master of Science in Co-Operation Policy (MSc ICP) at APU, Beppu Japan

Info: www.imat-master.com

Thank you for your attention

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