

## ENERGY AND RESSOURCE EFFICIENCY & EFFECTIVEBESS IN MANUFATURING

PD Dr.-Ing. Christoph Herrmann



Science for Sustainability –  
Driver for a Common Future

Second German-Indian Conference  
on Research for Sustainability

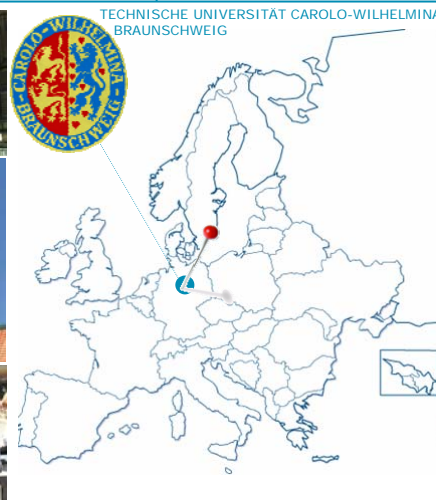
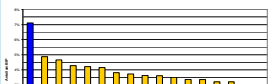
Bonn, Germany, 27 and 28 April 2009



Product and Life Cycle  
Management  
TU Braunschweig  
www.lwf.tu-bs.de

- > Founded in 1745
- > 12.500 Students
- > 2.600 University staff
- > 1.600 Scientists
- > 6 Faculties
- > 10 Central Service Units
- > 60 Degree programs
- > 110 Institutes
- > 200 Mio. Euro Budget

www.tu-braunschweig.de



[Eurostat 2002] R&D intensity in European Regions (share on GDP). **The German Braunschweig region** leads with 7.1%, ahead of Northern Finland (4,2%) and the East of England (3.9%).



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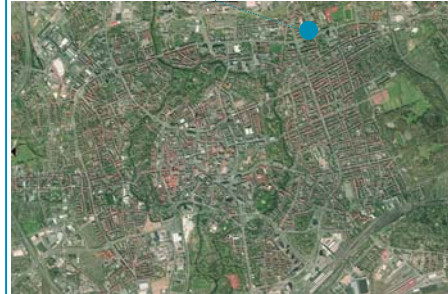
**IWF**

- > Managing Board:
  - > Prof. Dr.-Ing. Dr. h.c. J. Hesselbach
  - > Dr.-Ing. H.-W. Hoffmeister
  - > PD Dr.-Ing. C. Herrmann
  - > Dr.-Ing. A. Raatz
- > 3 Departments:
  - > Production Automation and Machine Tools
  - > Production Technology
  - > Product and Life Cycle Management
- > 12 Lecturers
- > 40 Researchers
- > 19 Technical staff
- > Approx. 90 Graduate students per year
- > 3 Degree programs
- > 4 Mio. Euro annual budget



**IWF**

INSTITUTE OF MACHINE TOOLS AND PRODUCTION TECHNOLOGY



Product and Life Cycle Management  
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**IWF**



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RENEWABLE ENERGY SYSTEMS

>Solar systems for steam and/or electricity generation



Gardhia Solar

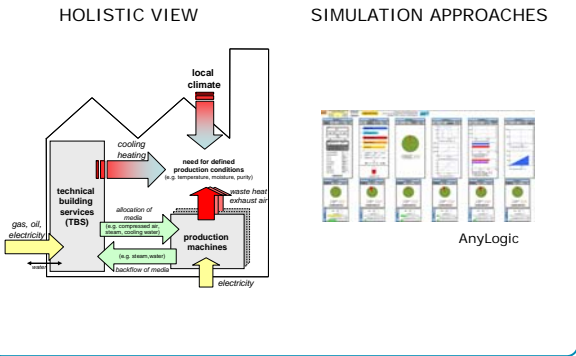
>Wind systems for electricity generation



VENCO Power

ENERGY EFFICIENT/EFFECTIVE PRODUCTION SYSTEM

>Dynamic and complex impacts and interdependencies of internal and external influences (e.g. production machines, weather)



ZERO EMISSION MANUFACTURING SIGHTS

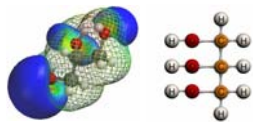


RENEWABLE ENERGY SYSTEMS

>Plant oil for lubricants, e.g. rapeseed or oil palm

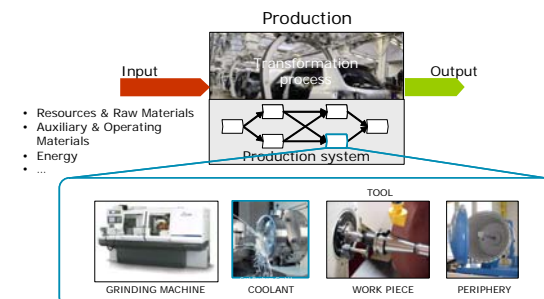


>Other bio-based materials for lubricants, e.g. technical animal fat or glycerol



RESOURCE EFFICIENT/EFFECTIVE PRODUCTION SYSTEM

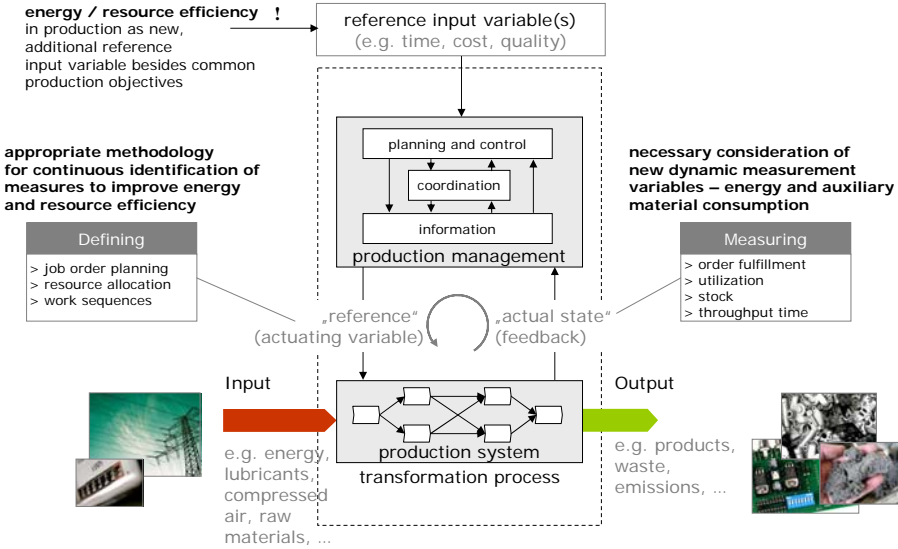
>Integrated Assessment: Technology, Economy (Life Cycle Cost), Ecology (Life Cycle Assessment)



ZERO EMISSION ZERO WASTE MANUFACTURING SIGHTS



CONTROL LOOP OF PRODUCTION





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