Energy Efficiency in the Print and Media Industry

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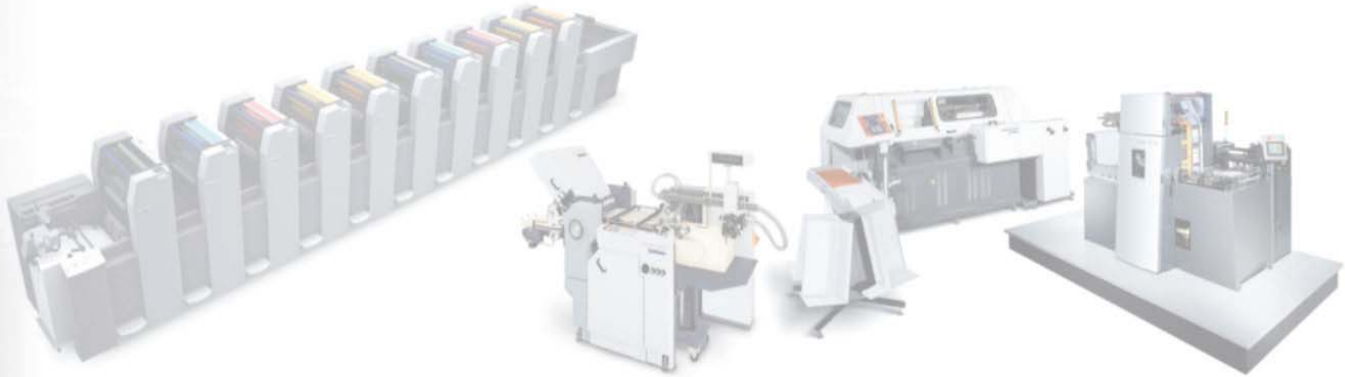
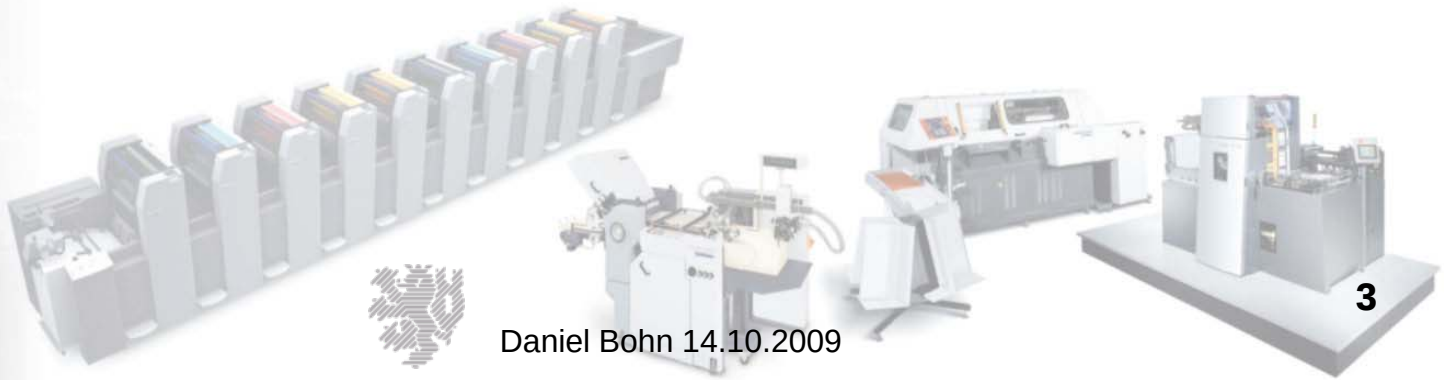


Objectives

- Management Systems
- Energy Management Tools
  - Visualisation Methods
  - Benchmarking
- Objectives of Energy Benchmarking
  - Tailored to the Print and Media Industry
  - European scale
  - Identify saving potentials
- Conclusion
  - Enable direct annual cost and emission reduction

Framework of Efficient Energy Management

- Management systems in general
  - different types of management
    - *Quality Management*
    - *Industrial-safety and accident management*
    - *Environmental management*
      - **Energy management**



Reasons for Energy Management

- Ever-increasing demand for energy
- Global warming
- Decline of energy resources
- Soaring Energy prices / Cost savings
- Low cost environmental protection
- Improved market access
- Sustainability contribution

- Competitive advantage & Image improvement
  - Certifications
    - *EMAS*
    - *ISO14001*

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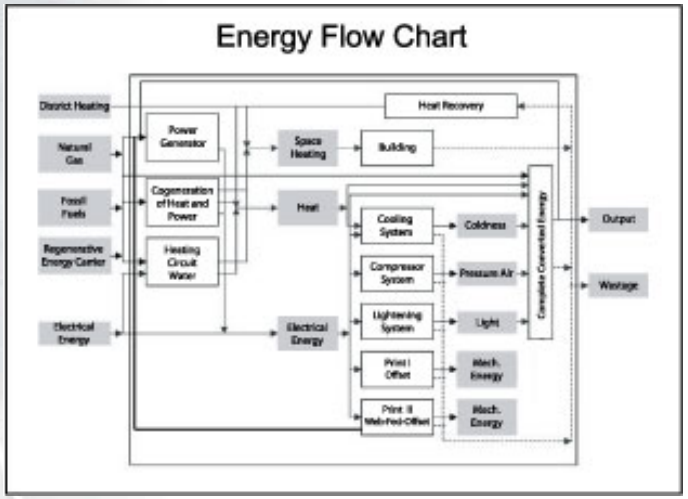
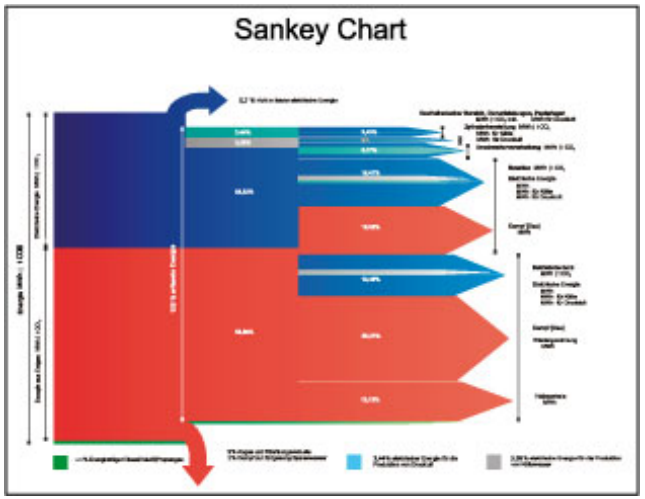
Energy Management Tools

- Visualisation of Resources

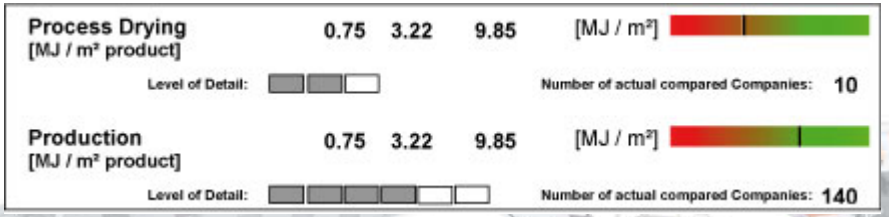


Based on Schmid, 2004



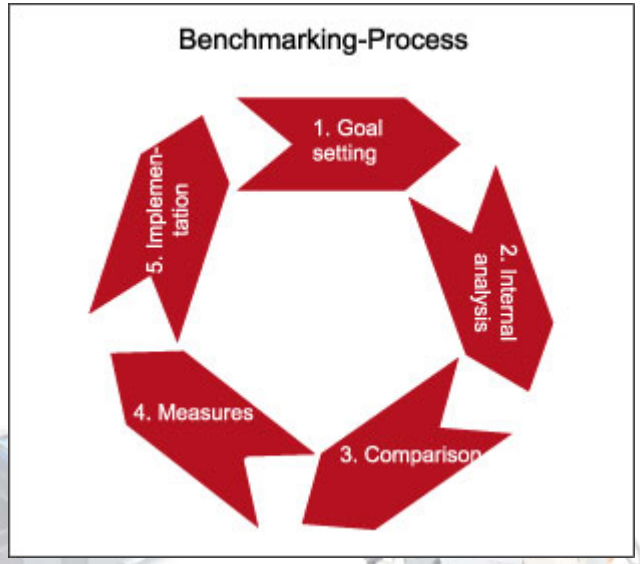
Based on Breuer, 2008

- Benchmarking



Benchmarking as the main tool for an efficient energy management

- Benchmarking in general
  - Benchmarking is the continuous process of measuring products, services and practices against the toughest competitors or those companies recognized as industry leaders. [*David T. Kearns, CEO of Xerox Corporation]*



Based on Siebert & Kempf, 2000

- Benchmarking on environmental aspects
  - Application-oriented approaches, which mainly focus on environmental key figures concerning waste and pollution topics. (Öko-Institut e.V.)

- Benchmarking on Energy aspects
  - Energy benchmarking comprises the collection, analysis and reporting of data to provide companies with a context for assessing its energy efficiency in comparison to others of the same sector. (BESS-research)

- Benchmarking on Energy aspects tailored to the print and media industry on EU-scale. (eeei)

eeei European Energy Efficiency Improvement
in the graphic media industry

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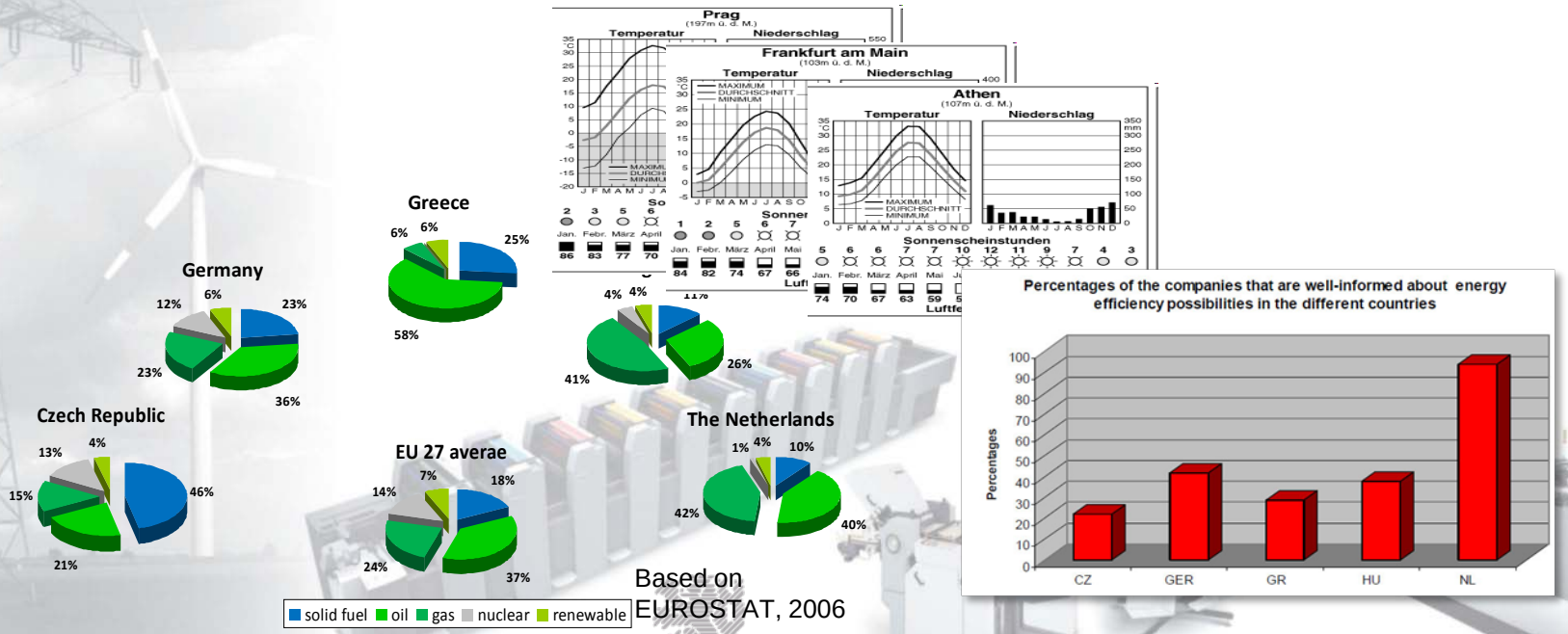
Course of Action I:

- **Unbalanced Starting Positions in the European printing sector**
  - Climate Situation
  - Primary Energy Supply & Regulations and Tasks
  - Distribution of Printing Technology
  - Information Standard concerning Energy Issues

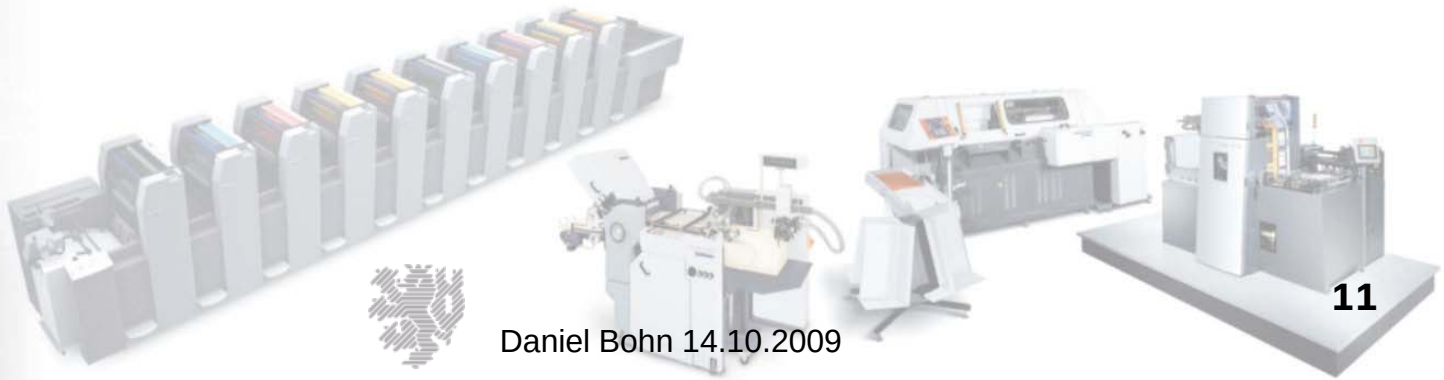


Based on EUROSTAT, 2006

Course of Action II:

- Tool and key figures generation
  - Which kind of data is necessary?
  - What happens to this data?
  - Which results can be expected?
  - How can the results be interpreted?

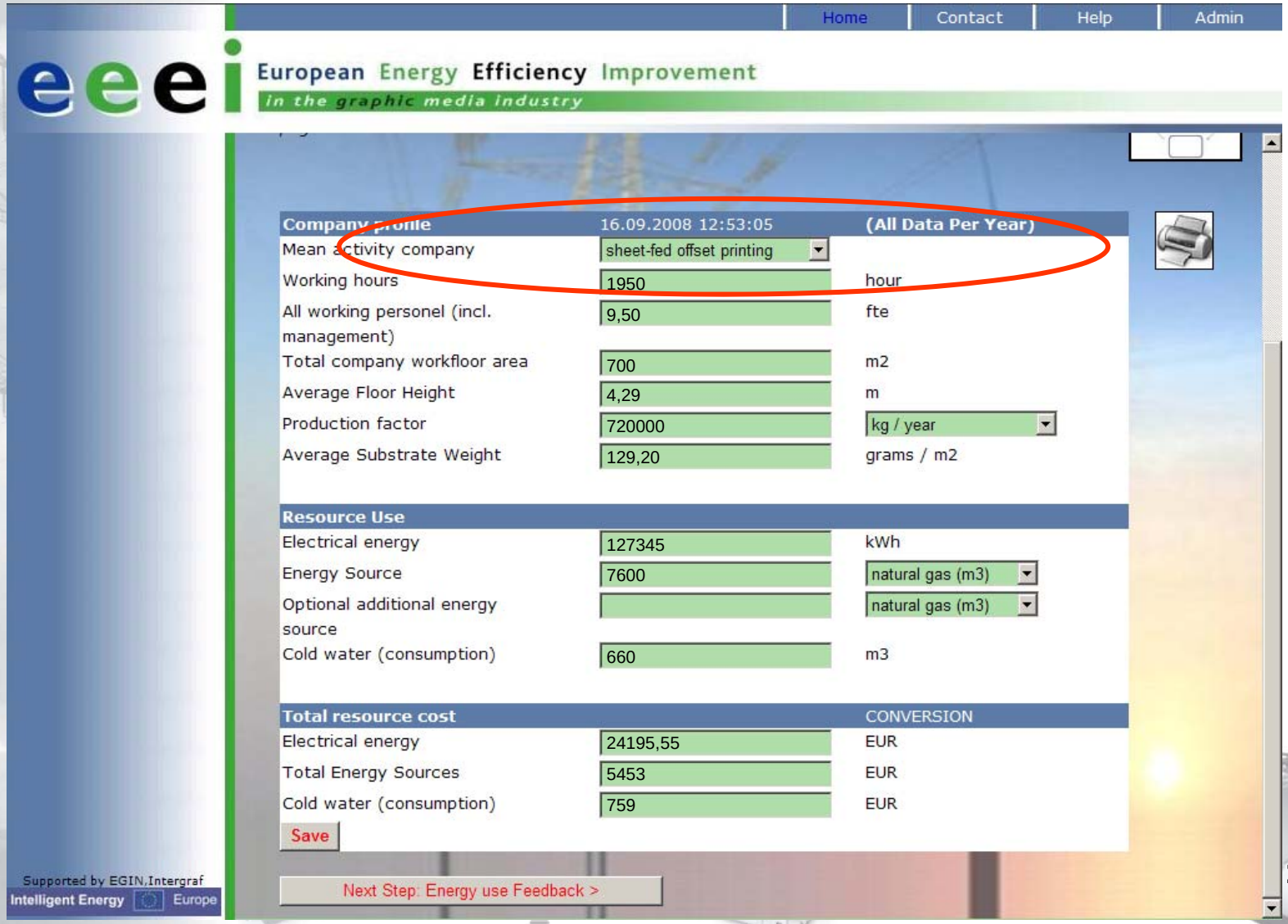
  - **Adjustments and Extensions**



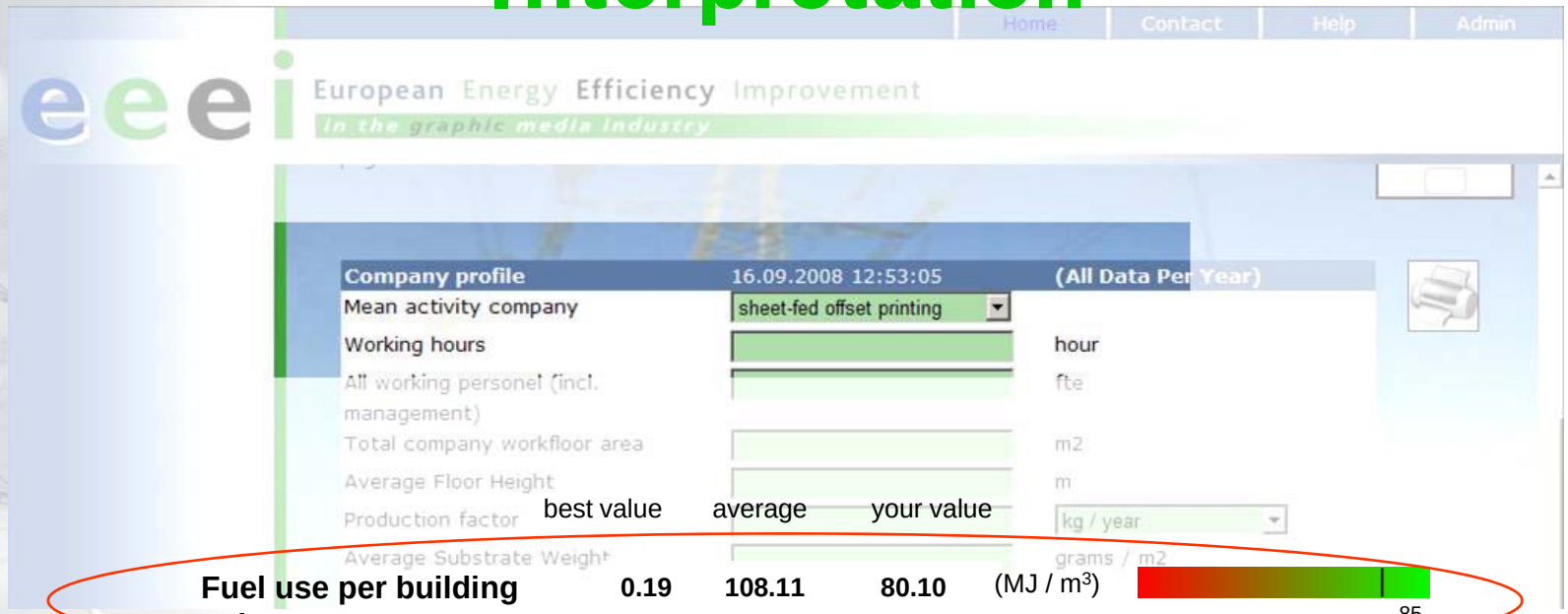
Necessary Data

- Energy Data Collection

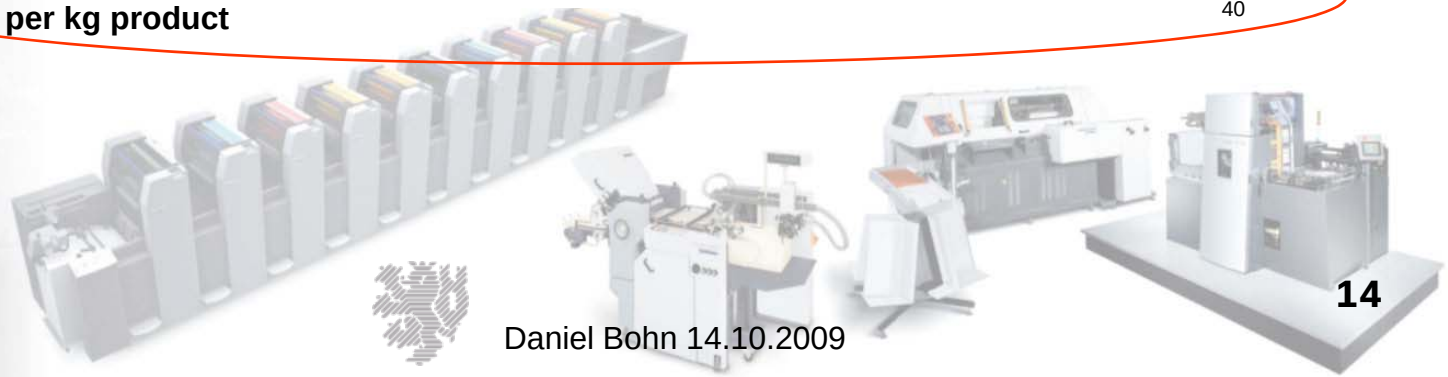
Data Implementation



General Benchmark Results & Interpretation

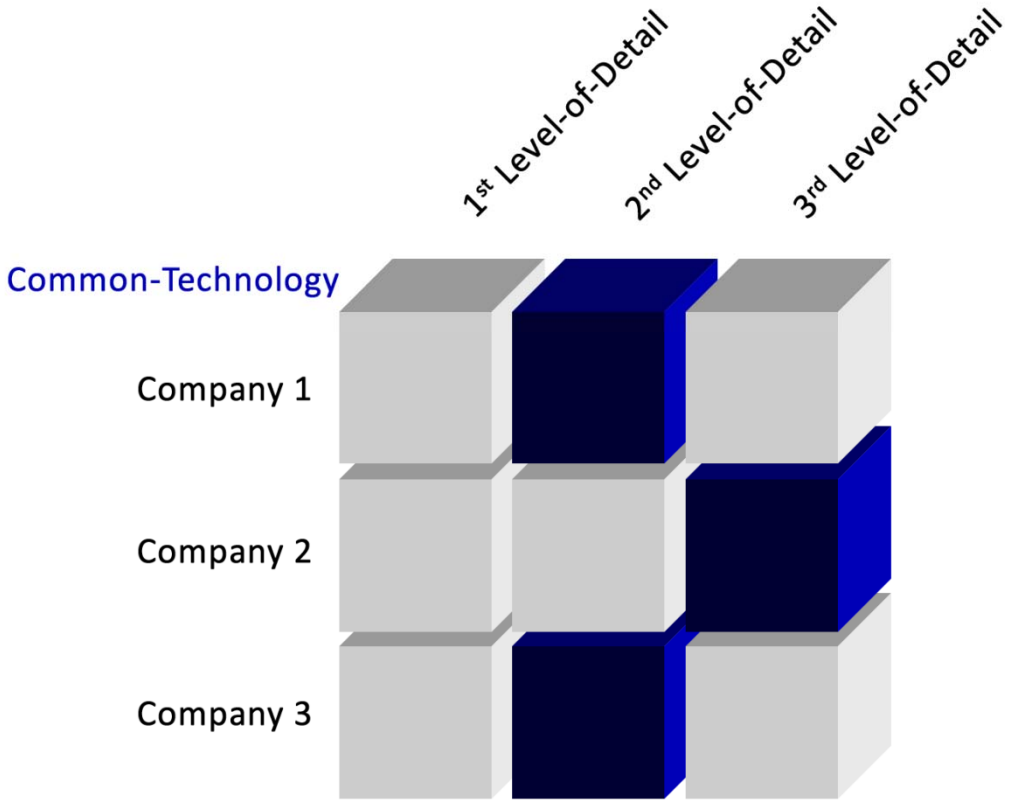


	best value	average	your value		
Fuel use per building volume	**0.19**	**108.11**	**80.10**	(MJ / m^3)	85
Total Energy consumption per kg product	**0.75**	**3.22**	**9.85**	(MJ / kg)	40

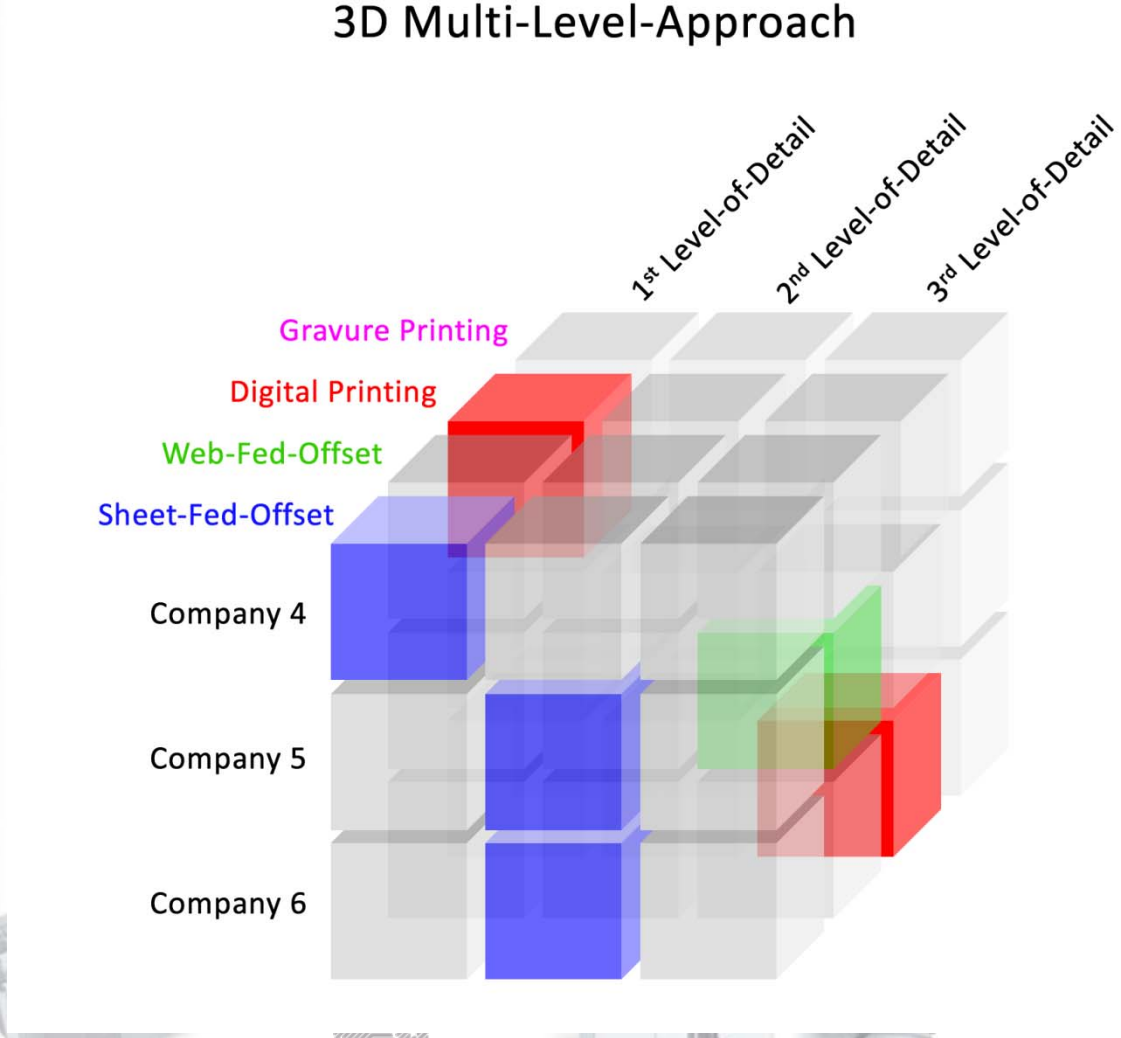


Adjusted and Extended Benchmarking I

2D Multi-Level-Approach



Adjusted and Extended Benchmarking II

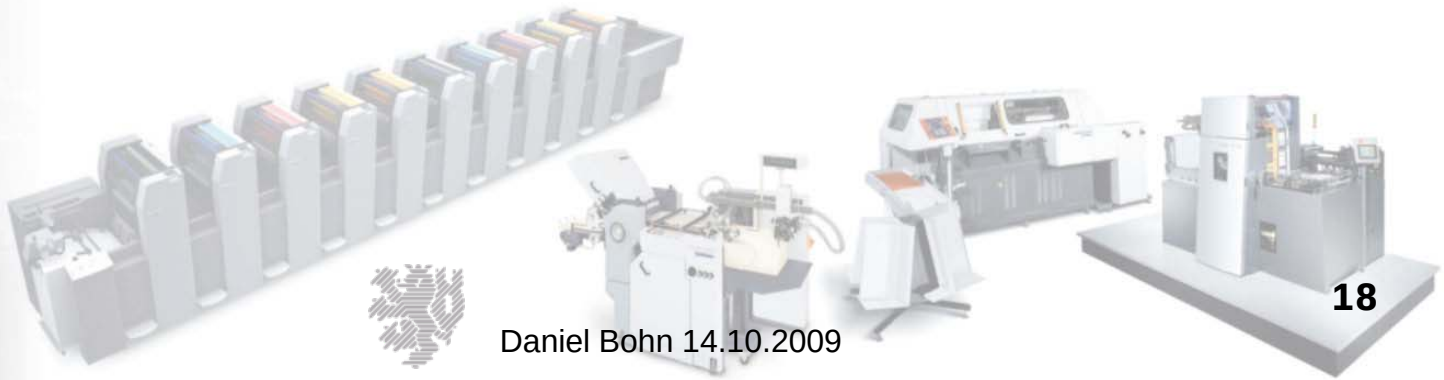


More detailed Key Figure

Production [MJ / m²]		
Available data	**Estimated effort**	**Suitability**
installed electrical power, amount of printed product, productivity parameter	high	suitable to only a limited extent
amount of printed product, actual electrical consumption	average (special measure equipment needed)	suitable
amount of printed product, actual electrical consumption, separated post press division	high	suitable
amount of printed product, actual electrical consumption, separated post press division, workload parameter	high	very suitable
Available data of companies with more than one print technology		
print technology specific data about the printed area as well as the actual electrical consumption	average (special measure equipment needed)	suitable
print technology specific data about the printed area as well as the actual electrical consumption, without post press division, print technology specific data about the workload parameter	high (special measure equipment needed)	Very suitable

Measures

- Depending on the benchmark scoring
  - Automatically choice of measures
  - Manual choice of measures
- Process optimisation
  - Cross-sectional measures
  - Print specific measures



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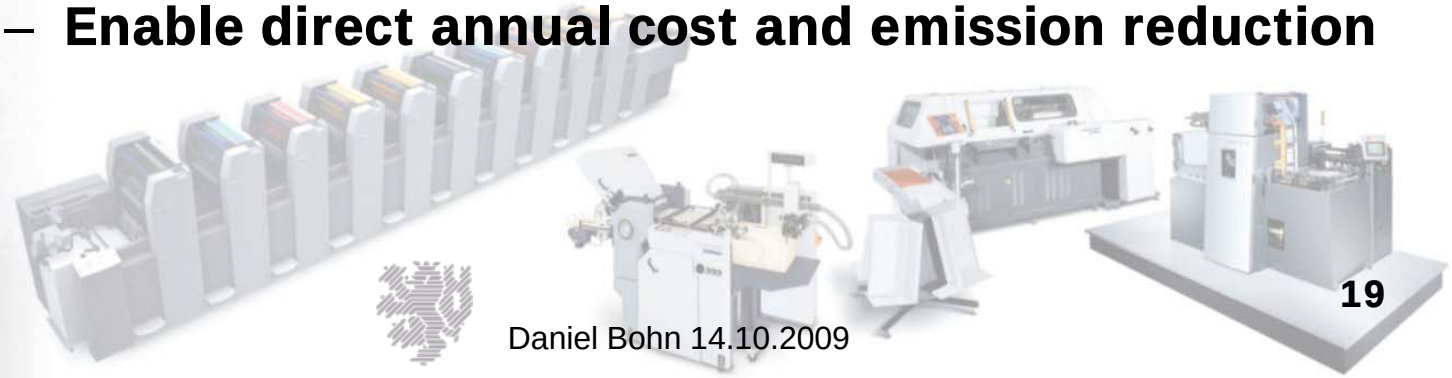

Energy Saving Potentials I

Energieverbraucher	Energiever-brauch (MJ/Jahr)	Einsparungen (%)	Einsparungen (MJ/Jahr)	Einsparungen (EUR/Jahr)	CO2 Reduzierun
Ventilation	0	0	0	0	0
Beheizung	640.500	25	160.125	2.082	11.897
Klimaanlage (Verwaltung)	67.500	55	37.125	1.559	6.291
Luftbefeuchtung	5.400	95	5.130	215	869
Beleuchtung	306.893	**30**	**91.025**	7.734	31.201
Büroausstattung	54.346	0	0	0	0
Produktion	1.518.480	0	0	0	0
Innerbetriebliche Transporte	8.789	0	0	0	0
Trocknung	468.000	47	219.960	9.238	37.271
Kühlung (Produktion)	43.200	0	0	0	0
Druckluft	72.000	63	45.360	1.905	7.686
Schredder	18.000	8	1.440	8	244
Total	3.203.107	20	653.276	22.741	95.459

Thank you for your attention!

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