



Fachgruppe Biogas Weckelweiler

Internationales
Biogas und
Bioenergie
Kompetenzzentrum

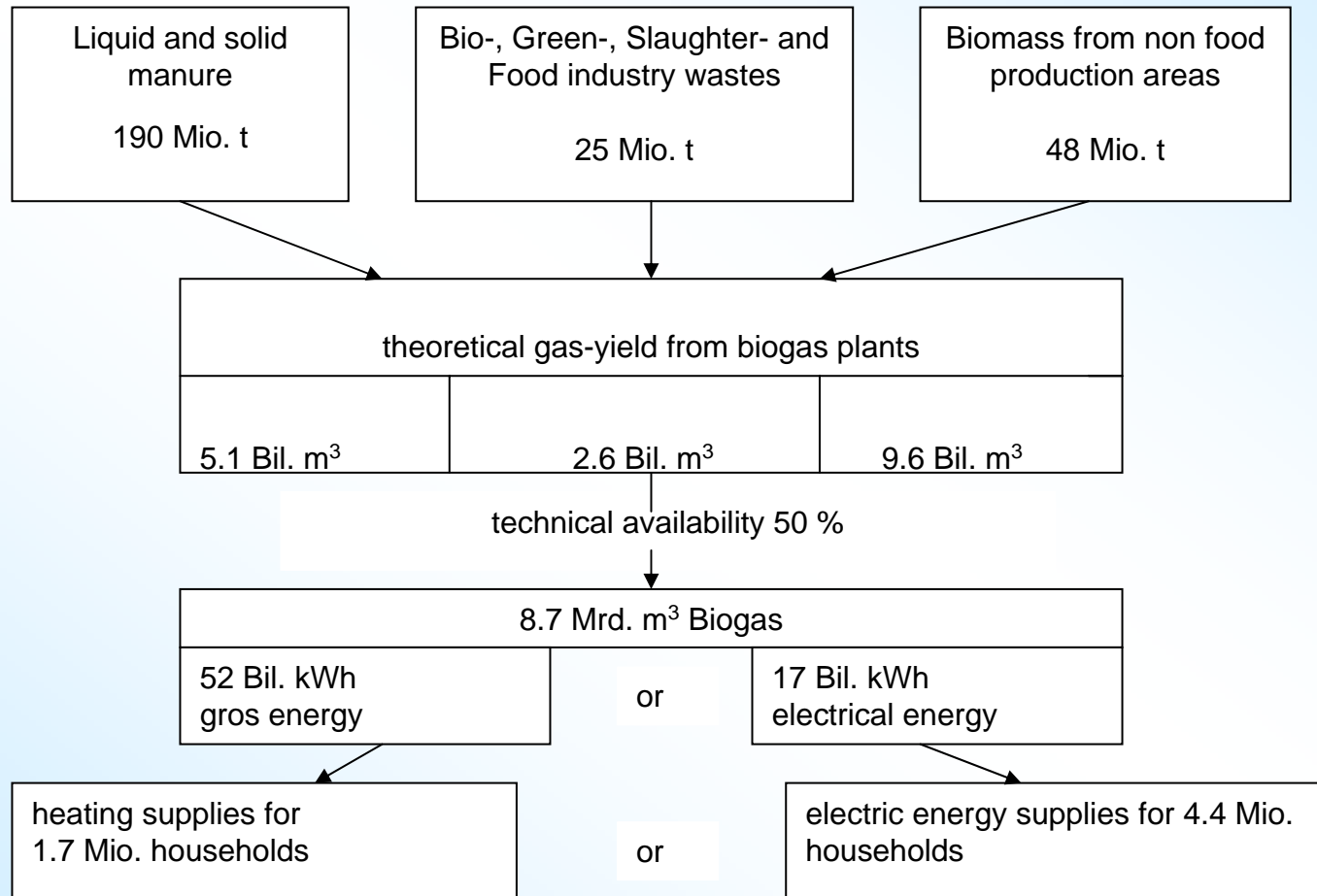
Start up meeting Regional markets for RESfuel cell systems for households

6 – 7 March 2006, Herning Denmark

1. Overview over the German Biogas Industry
2. Review on regulatory climate in Germany
3. The reasons for the expansion and success of the industry



Estimated biogas potentials in Germany



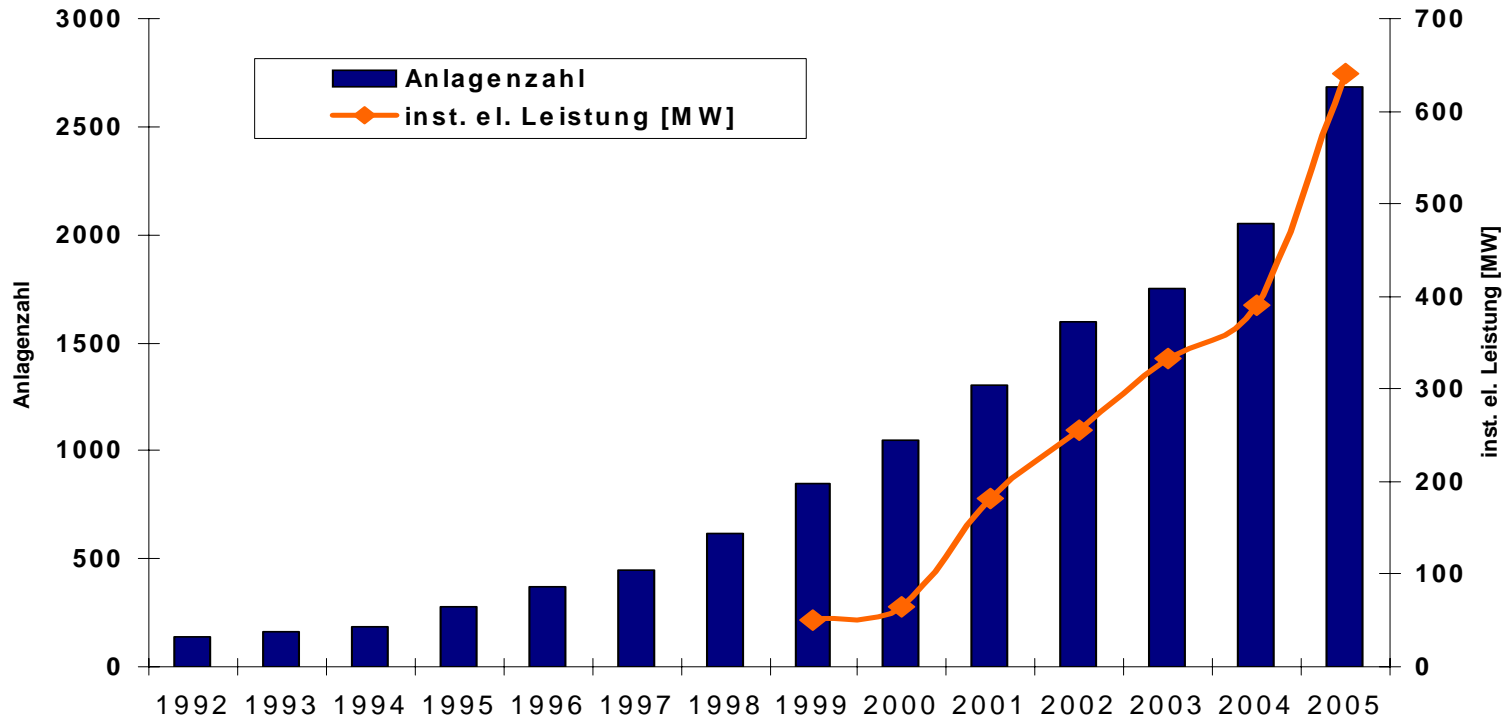


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Agricultural Biogas Plants in Germany

Entwicklung: Biogasanlagen in der Landwirtschaft



Fachverband
Biogas e.V.

German Biogas Association • Asociación Alemana de Biogas • Société Allemande du Biogaz





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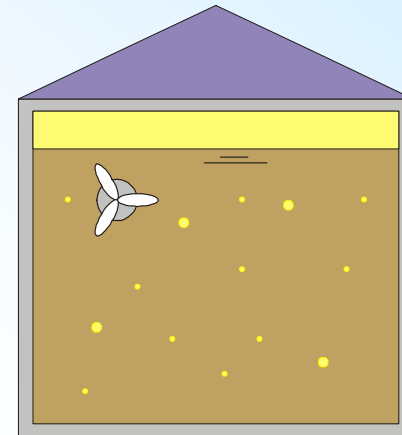
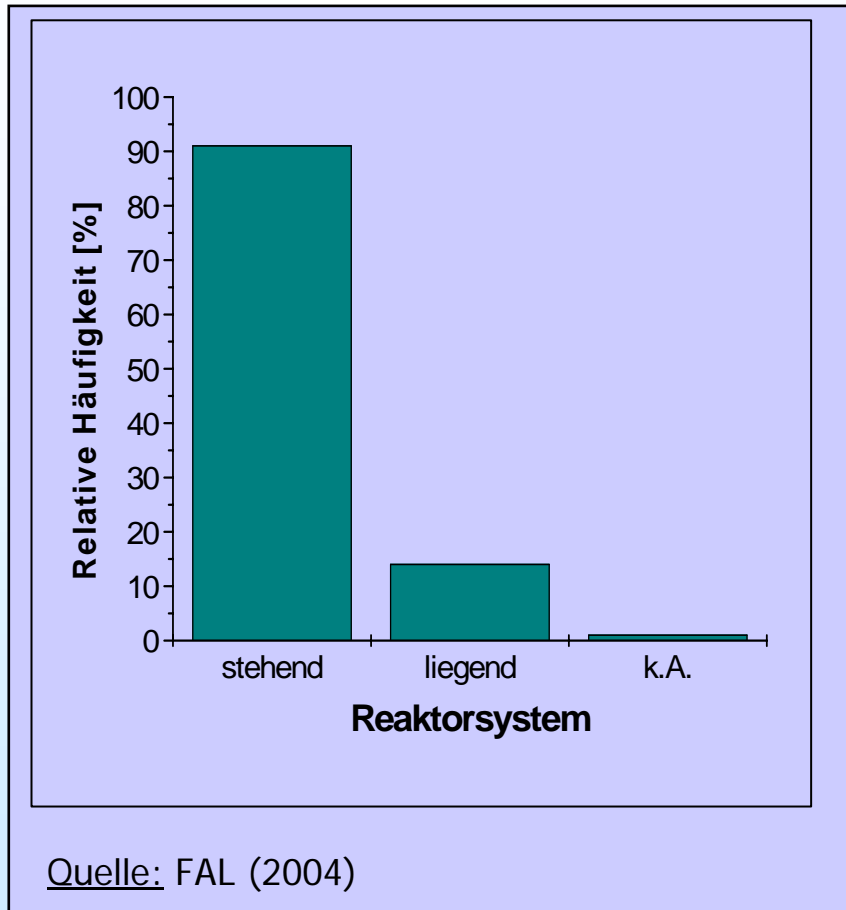
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Biogas in Germany 2005

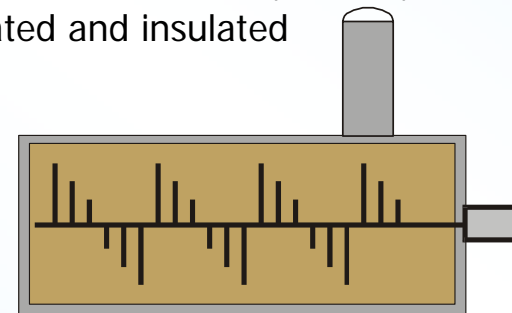
Basic Figures

<u>Biogas in Germany</u>	
amount of biogas plants	ca. 2.700
installed electrical capacity (cumulative)	650 MW el.
growth against prev. year	70 %
new plants built	250 MW el.
estimated turnover plant installation	650 Mio. EUR
growth compared to prev. year	80 %
employment	> 5.000
avoided climate gas emissions	2,8 Mio t CO₂-Eq.

Biogas Technology: Digester Types



Completely Mixed Digester (standing): Slurry Tank made of Concrete or Steel, stirred, heated and insulated



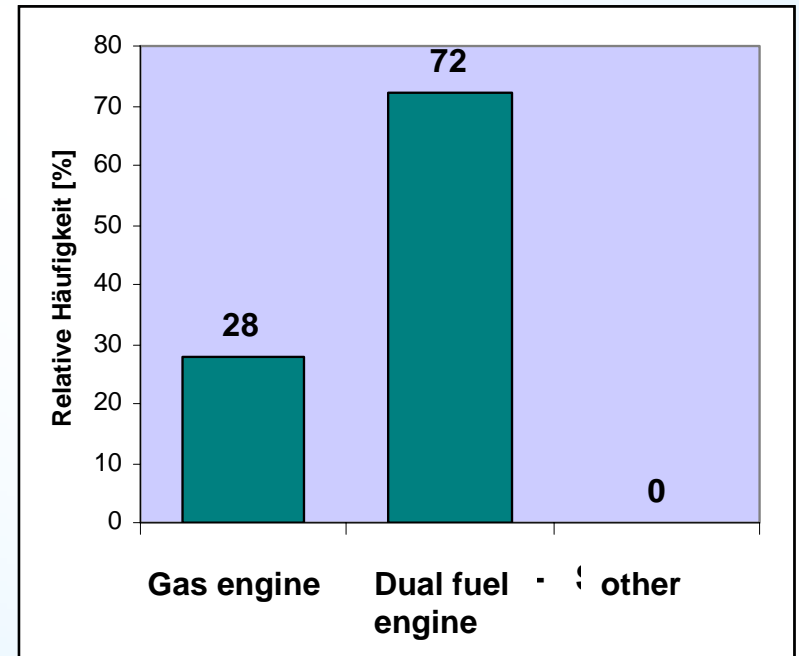
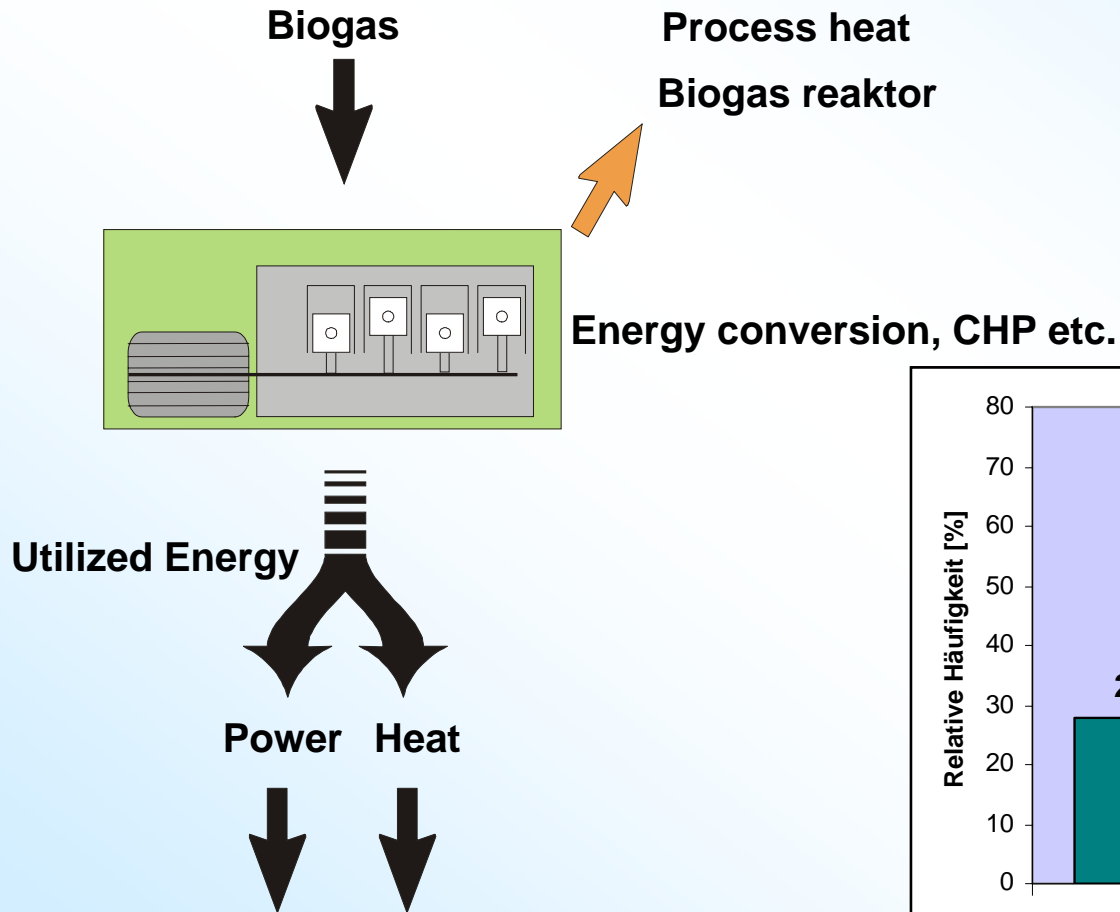
Plug Flow Digester (horizontal): Steel Tank with Paddle Stirrer, heated and insulated



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Biogas Conversion

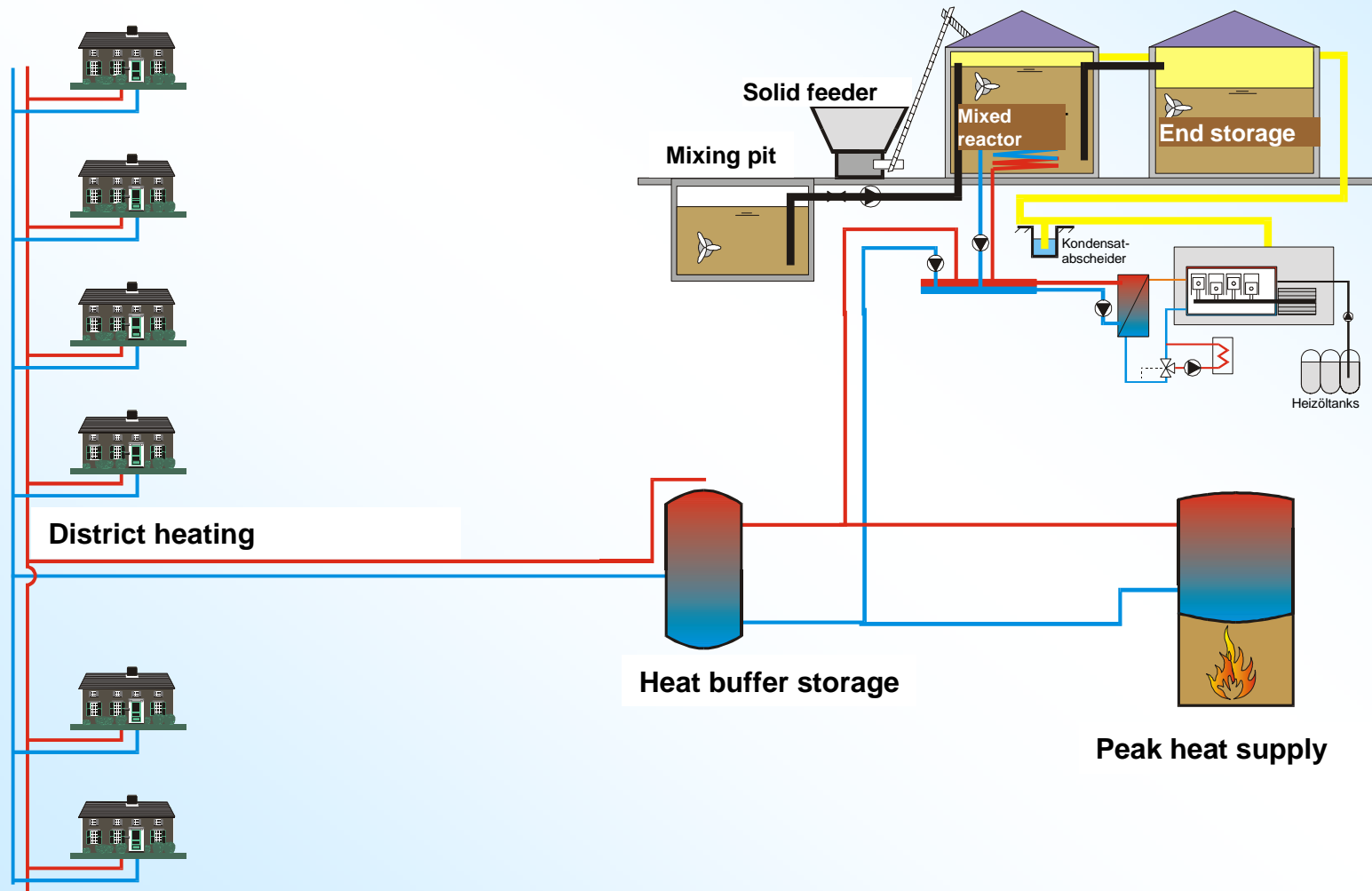




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Components of a Biogas Heat and Power Station





Overview: Reimbursement for electricity from biomass (in Cent/kWh) according to New „EEG“:

		Up to 150 kW _{el}	Up to 500 kW _{el}	Up to 5 MW _{el}	over 5 MW _{el}
Basic compensation	Old plants	like before			
	New Plants	11,5	9,9	8,9	8,4
Bonus for energy crops	Old plants	6	6	4	-
	New plants	6	6	4	-
CHP Bonus	Old plants	-	-	-	-
	New plants	2	2	2	2
Technology Bonus (only if CHP condition is fulfilled)	Old plants	-	-	-	-
	New plants	2	2	2	-



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Biogas in Germany

Present

- **Biogas plants in Germany can produce over 2,9 billion kilowatt hours of electricity per year.**
- **This is three times as much as PV is producing and a tenth of the amount that wind energy can produce.**
- **Therefore biogas plants are supplying electricity to about one million average size households**
- **At the same time about 4 million megawatt hours of heat is available for usage.**
- **Almost one billion cubic meters of imported natural gas could be substituted already directly today through biogas.**



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Biogas in Germany

Future

- A key to the future biogas utilisation will be the feeding into the gas grid.
- The utilisation of biogas through fuel cells in households is possible through the privilege of the EnWG and the bonus compensation of the EEG.
- DVGW regulations give a technical standard for the injection of biogas into the gas grid.