

"Making biofuels for less than gasoline"

September 2006

2. generation Bioethanol technologies

Biofuels are made from any kind of biomass.
Bioethanol, biogas, biohydrogen, biodiesel.

Bioethanol





1.st generation technologies

Starch Ethanol

Substrates:

Corn, Grain, Sugarcane...



2.nd generation technologies

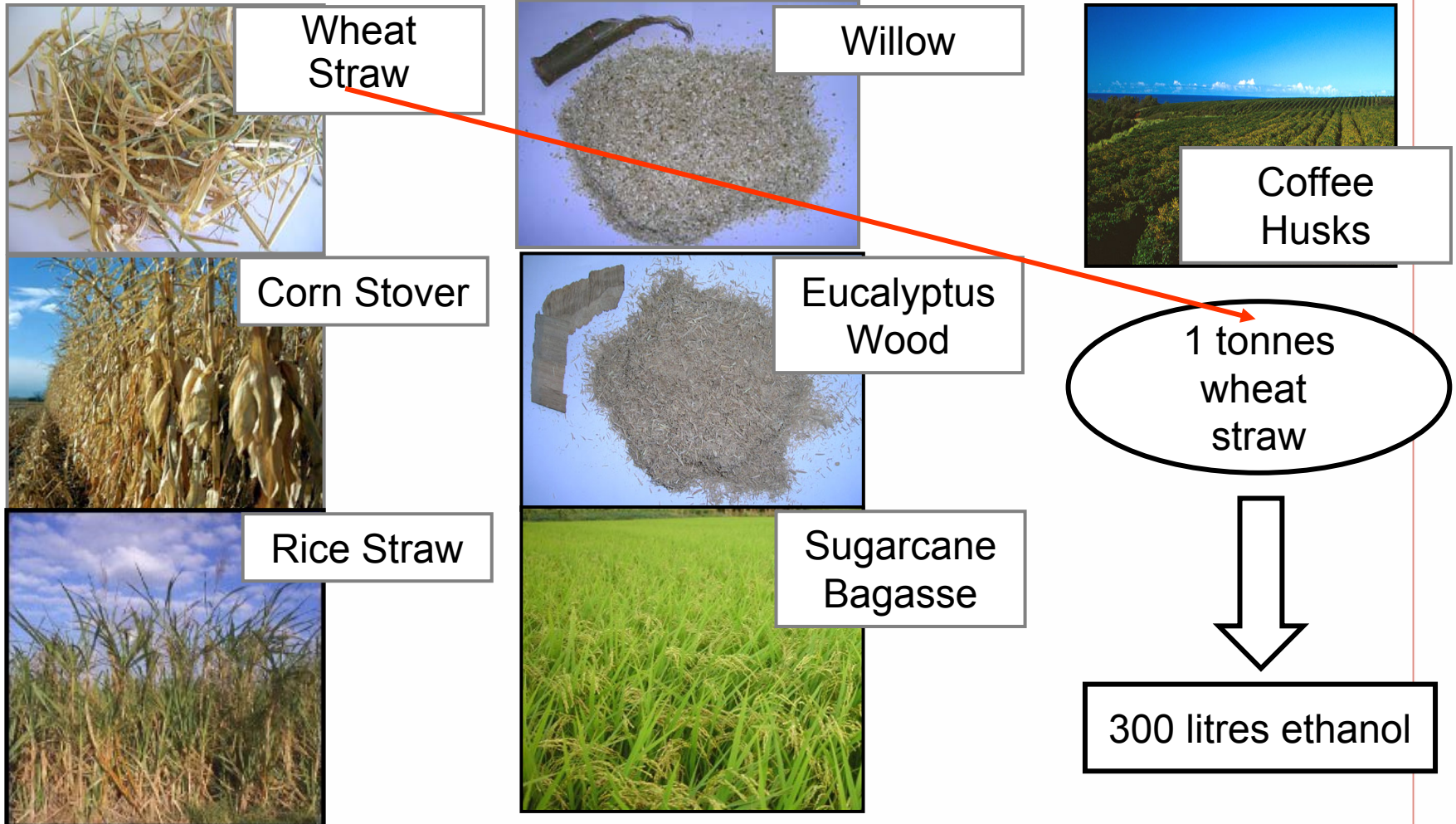
Lignocellulose Ethanol

Substrates:

Stover, Straw, Bagasse, wood, empty fruit bunches..

Lignocellulosic biomasses

Tested with success in the laboratory



Main drivers for lignocellulosic bioethanol technologies

- Cheaper
- Access to a larger array of low cost and abundant feedstocks
- No conflict with land use for food and fodder
- Improvement of local environment
- Greater CO₂ reduction potential

BioGasol ApS

Established January 27, 2006:

- Co-founder and CEO: Prof. Birgitte K. Ahring, Biocentrum, DTU
- More than 10 years of R&D/strong partners
- 1 patent and several patent applications
- 8 team members:
 - 2 Engineers
 - 2 Microbiologist
 - 1 Marketing and Communication
 - 1 Business Developer
 - + Secretary/financial reporting

..... 10 employees by the end of 2006

First round investor: BankInvest-New Energy Solutions

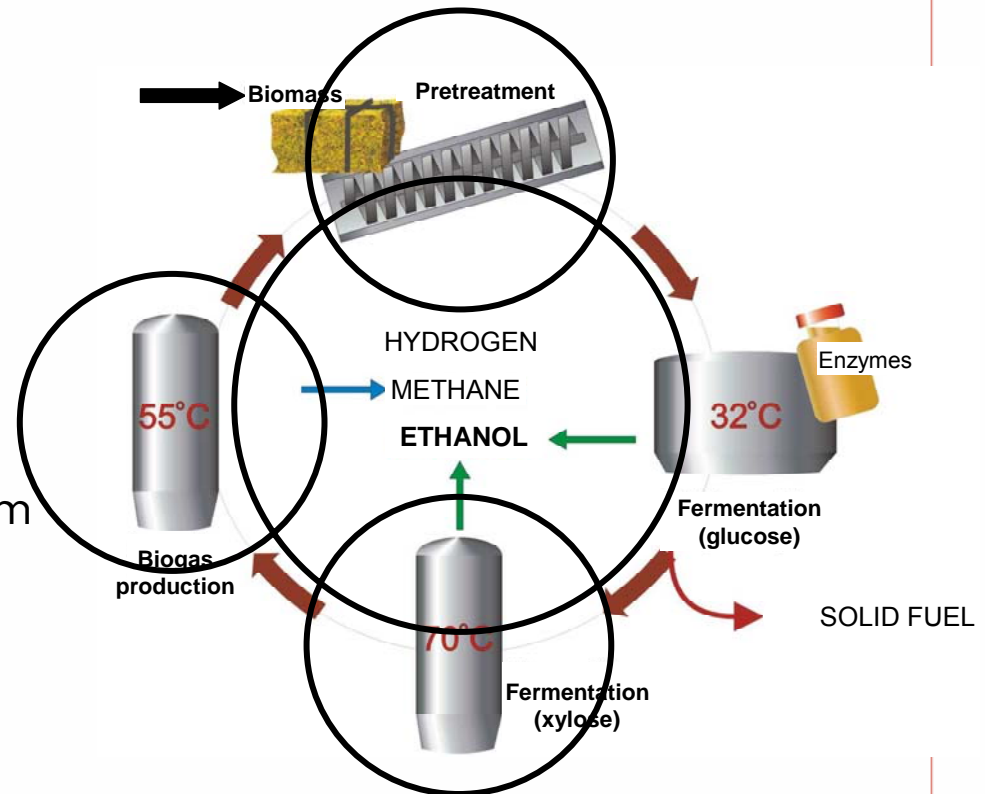
BioGasol

Engineering and technology company

Product offerings

Proprietary process equipment and licenses to BioGasol's process technologies:

- pretreatment reactors
- xylose fermentation reactors with immobilized microorganism
- recirculation of process water
- on-line sensor for process optimizations



Market



The Market is huge!

EU: from 0.5 bn litres in 2005 to 5 bn litres in 2011:
more than 30 new plants

Brazil: Internal ethanol demand will increase from 14 bn litres in
2005 to 25 bn litres in 2013

+ **Asia !**

During 2006 **US** is expected to become the world's largest
bioethanol producer

George Bush

31 January 2006

STATE OF THE UNION ADDRESS BY THE PRESIDENT

United States Capitol

Washington, D.C.

9:12 P.M. EST

Keeping America competitive requires affordable energy. And here we have a serious problem: **America is addicted to oil**, which is often imported from unstable parts of the world. The best way to break this addiction is through technology.We must also change how we power our automobiles. We will increase our research in better batteries for hybrid and electric cars, and in pollution-free cars that run on hydrogen. **We'll also fund additional research in cutting-edge methods of producing ethanol, not just from corn, but from wood chips and stalks, or switch grass. Our goal is to make this new kind of ethanol practical and competitive within six years.**

US market



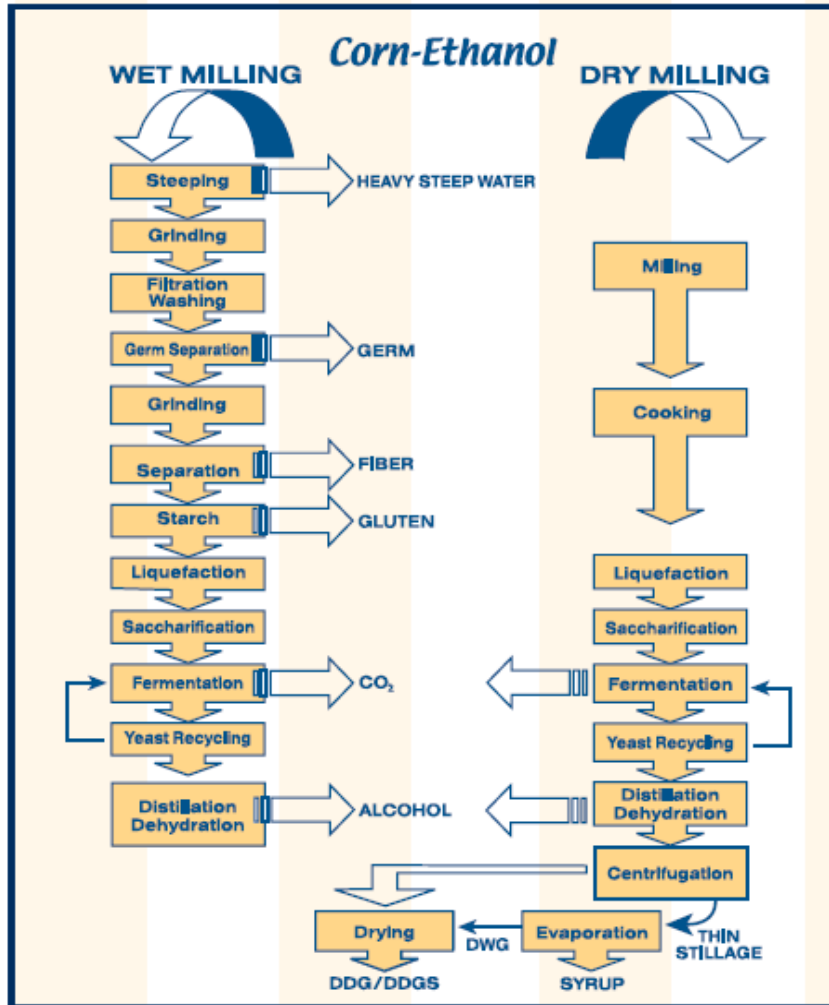
2004: 81 ethanol plants located in 20 states produced 12.8 bn litres
2005: 106 ethanol plants with a production capacity of 18.2 bn litres
2006: 42 plants under construction + 9.3 bn litres

BioGasol's second generation technologies add value to existing and new plants

Existing plants

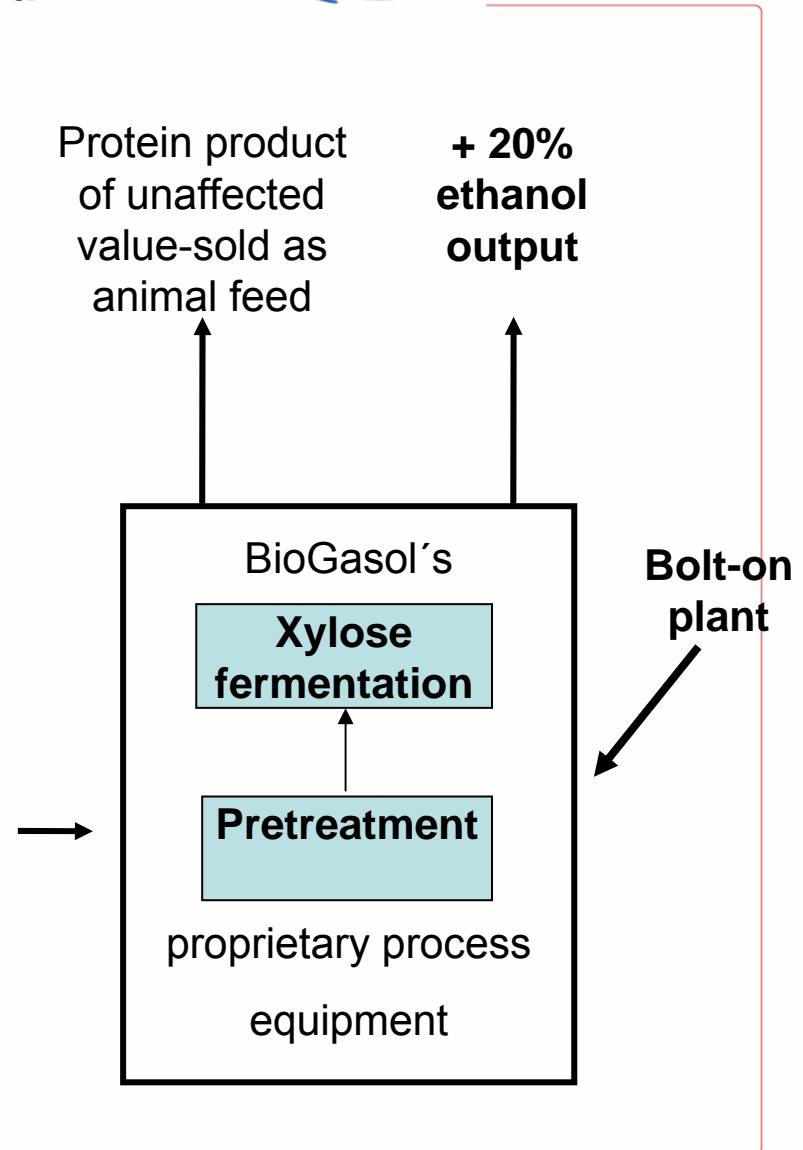
20% higher ethanol output from an existing corn-to-ethanol plant

Bolt-on plant to a traditional corn-to-ethanol dry milling plant. Simplified process diagram



Protein product of unaffected value-sold as animal feed

+ 20% ethanol output



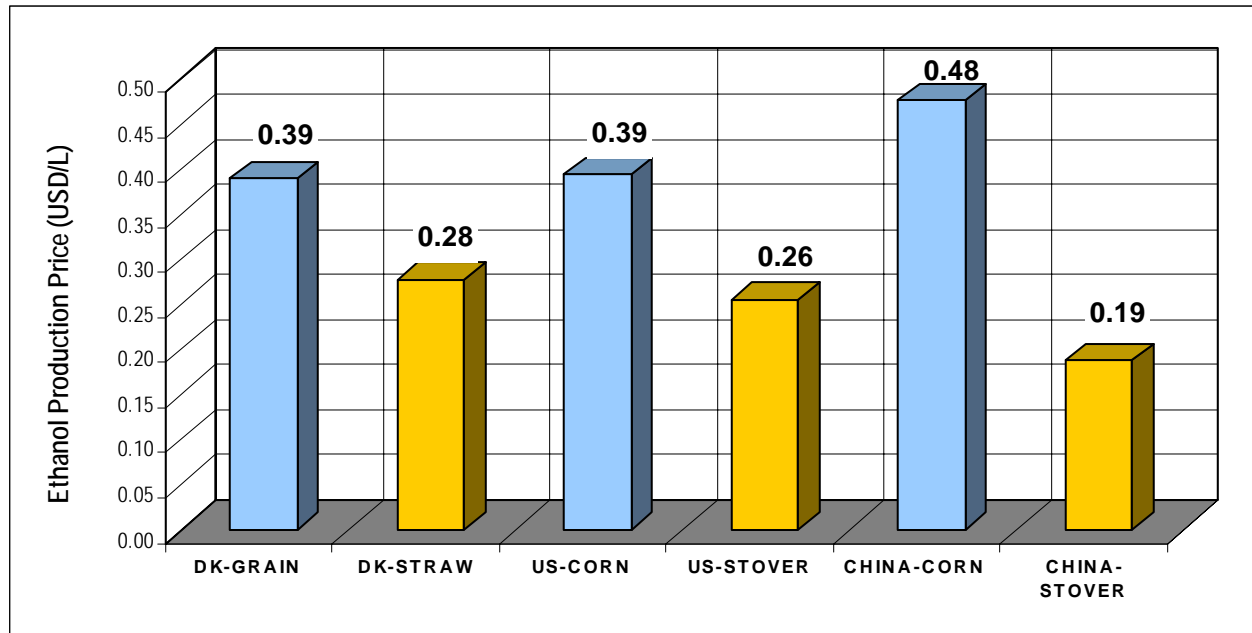
Simple pay back 3-5 years

*BioGasol's second generation technologies add value to
existing and new plants*

New plants

Competitive with gasoline

Bioethanol can be competitive with oil derived fuels



Gasoline prices in Germany 2005:
0.32 EUR/l

Old technology

New technology

Capacity (MMGY)	DK-GRAIN	DK-STRAW	US-CORN	US-STOVER	CHINA-CORN	CHINA-STOVER
27	0.43	0.31	0.44	0.30	0.51	0.23
40	0.39	0.28	0.39	0.26	0.48	0.19
69	0.29	0.21	0.30	0.18	0.40	0.12

150 mil lit/year

With new developments: **0.28 USD/l**

0.34 EUR/l
normalized to energy content

Road map for commercialization

2006 - 2007



- Laboratory scale test
- 45 liters ethanol per day
- Proof of cost advantage
- Develop/mature technology



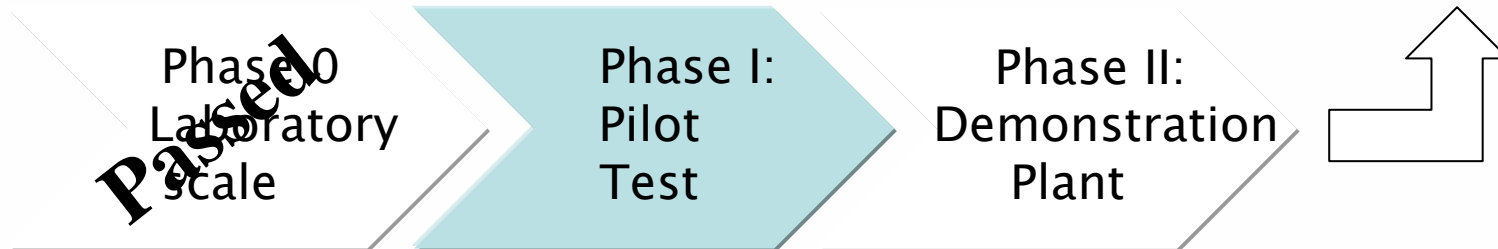
Road map for commercialization

Full scale

Commercialization

2006 - 2007

2007- 2008



Phase 0
Laboratory
Scale

Phase I:
Pilot
Test

Phase II:
Demonstration
Plant

- Laboratory scale test

- 45 liters ethanol per day
- Proof of cost advantage
- Develop/mature technology

- 25.000 liters ethanol per day
- Design, construct a demonstration plant