# TERRABON

**Renewable Gasoline and Industrial Chemicals From Already Collected "Non-Food" Biomass** 

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## **Biofuels Platforms....All Effective and Should Be Supported**

Acid Fermentation	Enzymatic (Sugar)	Thermochemical
-Lower Capital Cost -No sterility issues -No catalysts, no enzymes -Any biodegradable feedstock -Already collected feedstock - Low carbon footprint	-Higher Capital Cost -Requires sterility -Expensive enzymes -Vision is to piggyback corn ethanol plants -Extensive pretreatment required -Low carbon footprint	-Higher Capital Cost -Expensive heat and pressure -Expensive catalysts -Expensive gasifiers -Very efficient at scale -Higher carbon foot print
-Economies of scale at 10 MMGPY	- Economies of scale at 50+ MM GPY	-Economies of scale at 100+ MMGPY
TERRABON	Process De-sign Group Bic-date Preject Development	coskata Power Energy Fuels Inc.

SEKAB

PDET

SunEthanol

ABENGOA

ZeaChem



**MASCOMA** 

SunOpta BioProcess Inc.

**IOGEN** 



FRONTLINE.

Clean Technology for Renewable Energy

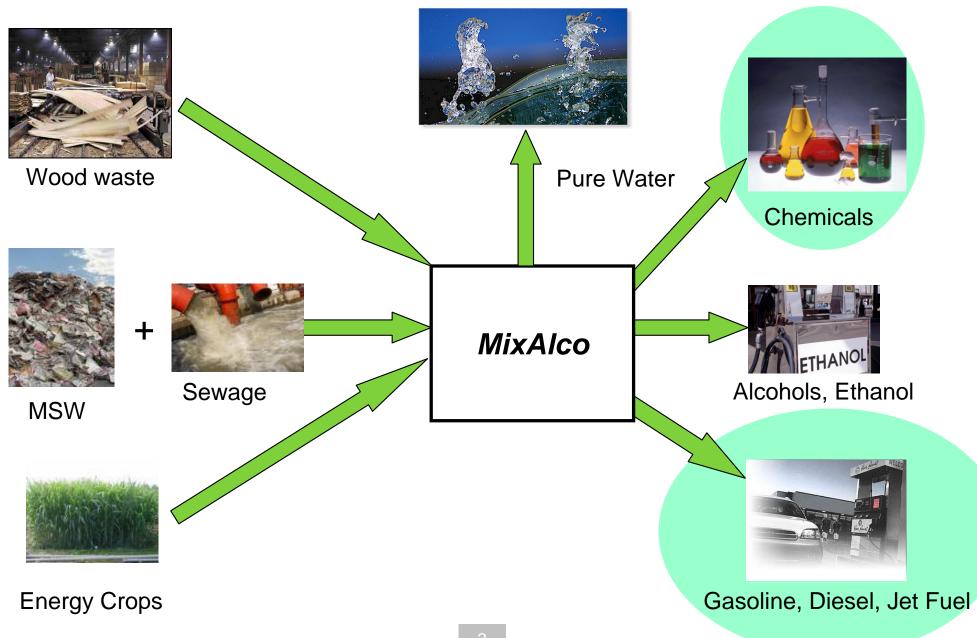
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STANDARD ALCOHOL COMPANY

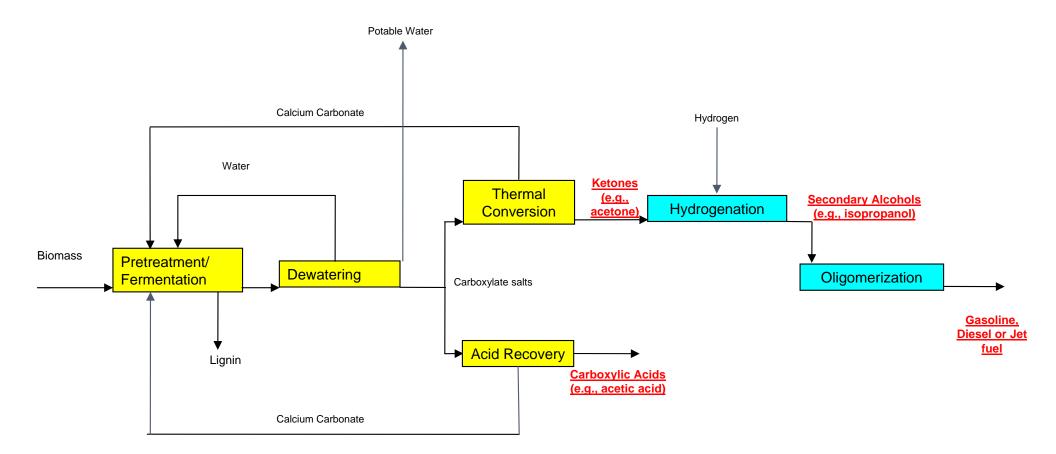
OF AMERICA, INC.

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### Very Low Capital Cost of About \$3.00 per Annual Gallon



### Patent Protected Technology Developed By Texas A&M

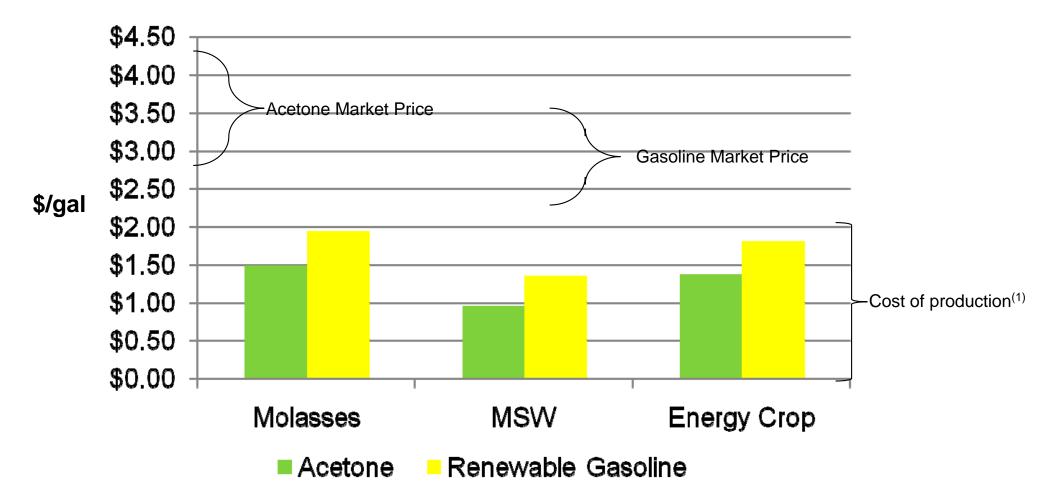


The *MixAlco* carboxylic acid fermentation platform has advantages over the *biochemical* (*sugar/enzymatic*) platform because it does not need enzymes to be added and it does not need a sterile environment during fermentation. It has advantages over the *thermochemical* (*gasification*) platform because it does not require high heat or pressures for conversion.

Texas A&M patented technology licensed to Terrabon

Conventional petrochemical technology

#### **Cash Conversion Costs of About \$1.35 per Gallon**



(1) 325 ton/day plant making 7,300,000 gal/year of renewable gasoline. Cost of wood molasses is 70 \$/ton, MSW and sewage sludge is \$10/ton and energy crops are \$50/ton