

# Next Generation Biorefineries – What is the endgame?

Founded in 1995 SME  
Founders from Pulp & Paper  
Based in Atlanta, Ga  
25 employees  
Significant IP  
Strengths:

- Biomass fractionation
- Project execution
- Energy integration

**Low cost lignocellulosic  
sugars from any  
feedstock**

Energy Consulting – Engineering Services  
Biomass Cogeneration Build / Operate

Biorefinery Technologies / Sugar production



•Green Power+™  
Commercial Demonstration

•AVAP™  
•Pre commercial Demonstration

Theodora Retsina, CEO



[www.alpenabiorefinery.com](http://www.alpenabiorefinery.com)



Process: GreenPower+™

- ~7000 T/y of lignocellulosic sugars from hardwood
- Sugars are converted to ethanol and (partnership – Cobalt) to butanol

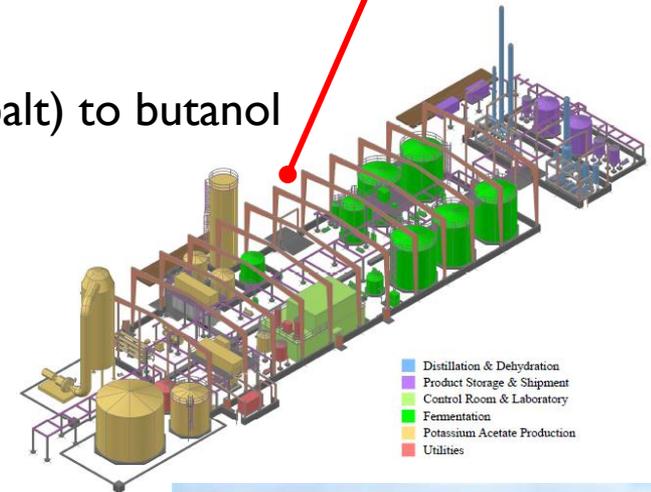
Timeline: Fast Track - 4 years -Startup Q1 2012

Business Model: Build Own Operate

- Produce ethanol, potassium acetate
- Sell sugars - Rent plant to “sugar-to-products” converters

Funding: Too large too risky for traditional – Too small for VC

- MEDC - \$4MM grant -City of Alpena
- IBR Grant - \$18MM
- American Process Equity + Unconventional financing



Biomass 2011: Next Generation Biorefineries – What is the endgame?

[www.americanprocess.com](http://www.americanprocess.com)



Technology: ready - near ready

Deployment: \$\$\$ capital, long execution, high market risk.

How do we reach the endgame?

Will need government support to take off:

- ▶ Consistency of government regulation
- ▶ The market must be made available for small companies
- ▶ Feedstock, technology guarantees, EPC guarantees become easier to achieve .....**If the market is there**

# Suggestion

- ▶ Government creates multi - year off take contracts to match original EISA levels of cellulosic and advanced fuels.
- ▶ Price per gallon indexed to fossil fuel price
- ▶ Government resells off take to blenders
- ▶ Companies that accept these contracts – “give back”