Succinic Acid & Derivatives SBU
Using a Proprietary Technology Platform, To Produce Bio-Succinic Acid

Not All Chemicals Are Created Equal™
Bio-Succinic Acid

- The Company
- Process Technology & Advantage
- Commercial Supply
- Product Quality
- Product Value Proposition
The Company

- Formed in 2004
- HQ in Boston, Massachusetts
- 150 Employees in R&D, Engineering, Manufacturing and Sales & Marketing
- Largest share holder: PTT Global Chemicals

Bio-Based Chemicals Business

- Convert Renewable Feedstocks to High Value Chemicals
- Focus on C3-C6 Chemicals
- Leverage Deep Biotech Experience to Further Pipeline
- Build-Own-Operate Model
- Strategic Partnerships to Accelerate Growth
- In-house Sales and Marketing Team with Deep Bio-Technology Experience
Myriant’s DNA: Our People

Research & Development
1,800 sq ft laboratory
48 Professionals, 27 PhDs
All core biotechnology developed in-house

Sales & Marketing
14 senior sales managers
Customer service
Application specialists

Engineering
Process engineers
Full scale-up capabilities
Integrated with ThyssenKrupp-Uhde

Manufacturing
54 plant operators
3 shift supervisors
Full QA/QC capabilities
Not All Chemicals Are Created Equal™

- Bio-succinic Acid Process Has Low Greenhouse Gas Emissions
  - 94% less than petrochemical succinic acid*
  - 93% less than petrochemical adipic acid*

- Renewable Feedstocks are Cheaper and Less Volatile Than Petroleum
- Efficient Fermentation and Downstream Processes Optimize Production Costs

- Feedstock can be sorghum (non-food) based or corn based

- Drop-in Replacement Anywhere Succinic Acid is Currently Being Used
- Replaces petroleum based chemicals in Urethane, Plasticizer, Coatings and Polymer Applications

* Life Cycle Analysis of Bio-Succinic Acid production using the IPCC 2007 (GWP) method
Bio-Succinic Acid

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Myriant’s Organism Produce the Building Blocks for the Petrochemical Value Chain

End products
- Polyethylene
- PVC
- PET
- Polypropylene
- Polyurethanes
- ABS
- Super absorbents
- SB rubber
- Elastane
- UPRs
- Polystyrene
- Esters
- Polycarbonate
- Nylon 6
- Acrylic Polymers

Traditional petro chemical reactions take place inside the cell

Metabolic pathways
- Fatty Acid Metabolism
  - C16, C14, C12, C10, C8, C6, C4
- Pentose Phosphate Pathway
  - C5, C6, C6
- Central Aromatic Pathway
  - C11, C7, C9, C10, C9
- TCA Cycle
  - C4, C4, C4, C4, C4, C5, C6

Organism Platform

Replacing petroleum based chemicals with bio-based chemicals

Myriant’s pipeline

C2
C3
C4
C6
C7+

Traditional petro chemical reactions take place inside the cell
Competitive Cost Advantage of Bio-Succinic Acid

**Petro route**

Crude Oil $\rightarrow$ Butane (4C) $\rightarrow$ Maleic Anhydride (4C) $\rightarrow$ Succinic Acid (4C)

Indexed cost:
- Petro route: 1.0 x /lb C
- Myriant’s bio route: 0.37 x /lb C

**Myriant’s bio route**

Corn $\rightarrow$ Glucose (6C) $\rightarrow$ Fumaric acid (4C) $\rightarrow$ Succinic Acid (4C)

Indexed cost:
- Petro route: 1.0 x /lb C
- Myriant’s bio route: 0.37 x /lb C

- Renewable feedstocks that are 60% more cost effective than petro-based feedstocks
- Myriant’s process sequesters CO₂, resulting in higher yields compared to the petro route
- Including secondary processing costs, Myriant’s total conversion cost is comparable to current petro-based succinic acid

Based on WTI Crude $97/bbl and Corn at $7.28/bushel
Bio-Succinic Acid

- The Company
- Process Technology & Advantage
- **Commercial Supply**
- Product Quality
- Product Value Proposition
Commercial Supply

- 30 million lbs capacity in Lake Providence, LA. plant
  - Start-up in Q1, 2013

- U.S has been selected for new plant expansion
  - Lowest costs worldwide
    - Feedstocks
    - Energy

- 140 million lbs capacity expansion
  - Target Mechanical Completion in Q2, 2015
Succinic Acid Production Phase 1: 30 Million Lbs. Lake Providence Plant

• First Bio-Succinic Acid plant in U.S.
• 30 million lbs / Year Commercial Plant in Lake Providence, Louisiana
• Start-up Q1 2013
• Project Partners: Uhde ThyssenKrupp CH2MHILL
Lake Providence Plant
Lake Providence Plant
Succinic Acid Production Phase 2: 140 Million Lbs of Production Volume

- **2013**
  - Site selection process – on going

- **2015**
  - Start-up 140 million Lb/Year of additional capacity, achieving world class economics
  - Procurement and Construction
  - Detailed Engineering Package
  - Basic Engineering Package – on going
Bio-Succinic Acid

• The Company
• Process Technology & Advantage
• Commercial Supply
• **Product Quality**
• Product Value Proposition
Product Quality

- Customers have tested Myriant’s Bio-Succinic Acid and approved the quality
- Third party labs have confirmed the performance of Myriant’s Bio-Succinic Acid in target applications
- Myriant’s process and product quality are guaranteed by ThyssenKrupp-Uhde, a global EPC and process engineering company
Bio-Succinic Acid product quality testing

<table>
<thead>
<tr>
<th>Customer Application</th>
<th>Customer feedback</th>
</tr>
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<tbody>
<tr>
<td>Polymers</td>
<td>Approved</td>
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<tr>
<td>Coatings</td>
<td>Approved</td>
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<tr>
<td>Plasticizers</td>
<td>Approved</td>
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<td>Urethanes</td>
<td>Approved</td>
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Sampled over 190 customers with excellent product quality
Bio-Succinic Acid Product Performance Testing

3rd Party Independent Labs

- **COATINGS**
  - Approved ✓

- **BIOPOLYMERS**
  - Approved ✓

- **URETHANES**
  - Approved ✓

- **PLASTICIZERS**
  - Approved ✓

Independent lab verification received for each product application
Guaranteed Process Quality

ThyssenKrupp-Uhde guarantees process scale-up and final product quality
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