



Enhancing sustainability and energy conservation through intelligent polymer engineering.



Mission and Vision

- Reshape the thermoplastics industry.
- Dominate the bioplastics marketplace.
- Offer comparable performance bio-composite polymers.
- Drive 5%-15% out of the cost of all traditional thermoplastics.
- Reduce worldwide petroleum consumption.
- Improve energy efficiency thru transportation light-weighting.



Problem/Opportunity/Unmet Need

- Societal shift toward sustainable solutions.
- Need for lighter weight polymers for vehicle production.
- High demand for bioplastics.
- Growth of bioplastics has been hampered by the high price and limited performance.



These factors, combined with the limited supply and high price of petroleum make this the perfect time to introduce a price and performance competitive line of bioplastics.



The Biobent Solution

- Made from low cost, abundantly available, renewable agricultural co-products.
- Replaces 30%-40% of the petroleum in plastic (meets USDA BioPreferred guidelines).
- 3%-15% less expensive than petroleum-based plastic.
- 20%-50% less expensive than existing bioplastics.
- Lightweight polymers (low specific gravity).
- Performance equal to pure petroleum-based polymers.
- Technology works with many base resins including PP, PE, PLA, PVC, TPO and others.





Technology/Product



- Technology base developed by Battelle Memorial Institute with ongoing R&D support.



- Initially funded by the Ohio Soybean Council (OSC) with subsequent funding from both OSC and the United Soybean Board.

- Exclusive world-wide production, sales and sub-licensing rights.
- Broad patents filed world-wide with IP management by Battelle.
- Winner of a coveted R&D100 award.
- 2014 BioProduct Innovation of the Year award.



- VentureNEXT award for the top Ohio startup company in 2014.

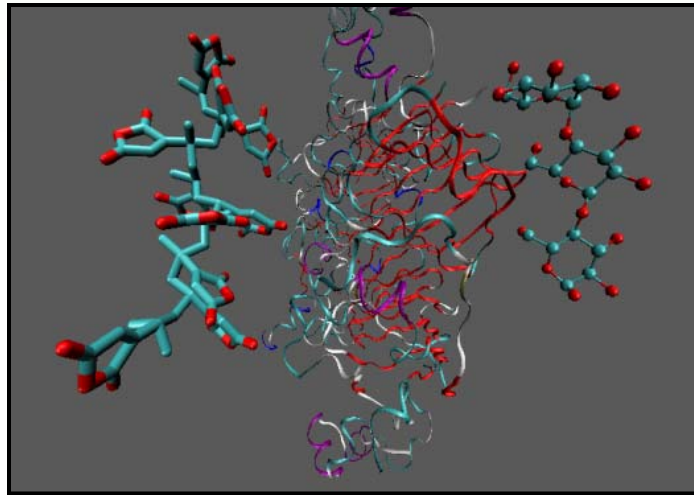


Technology



- Key technology:

A chemical bonding of biological material with polymer chains is accomplished through a protein unfolding mechanism initiated by the presence of a chemical compatibilizer during a reactive extrusion process.

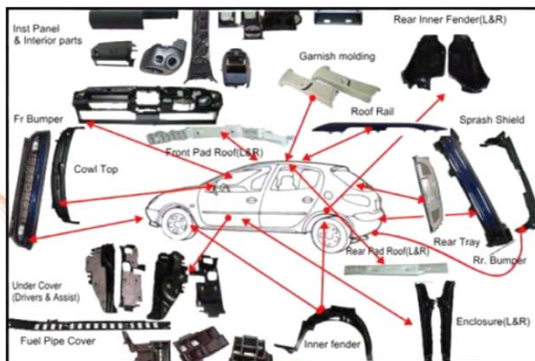


Unfolded β -sheets of protein segments.



Market Conditions

- World-wide the thermoplastics market generates over \$450 billion in annual sales.
- \$150 billion just in polypropylene and polyethylene sales alone.
- Petroleum-based resin sales have consistently grown 6%-8% annually over the last 30 years.
- Well established production, distribution and sales channels with few barriers to entry.

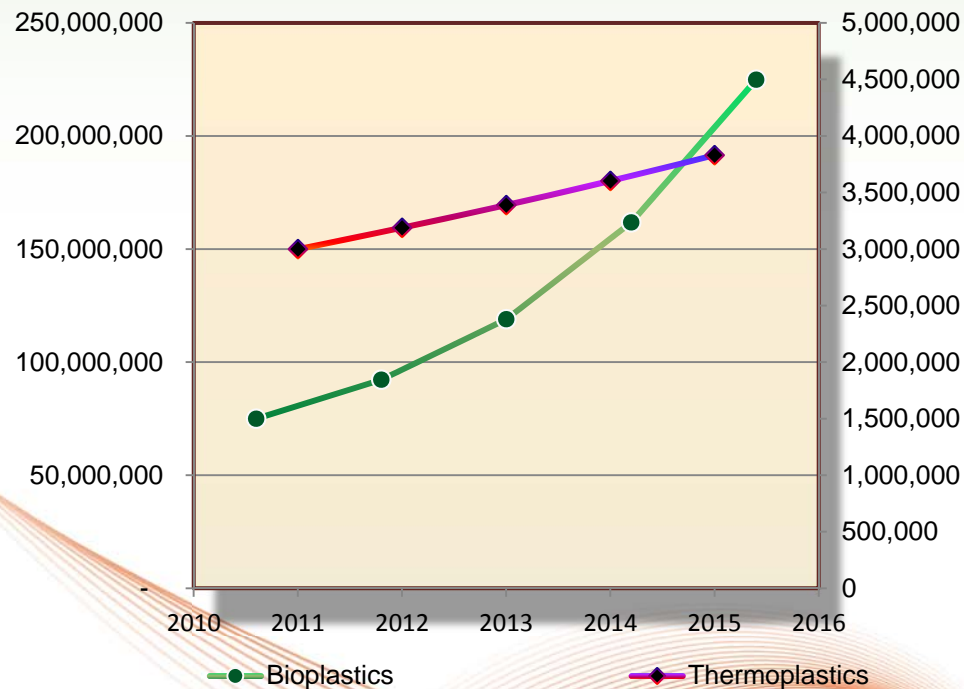


- Aggressive “polymerization of the automobile” underway by every major vehicle manufacturer.



Bioplastic Market Conditions

- Bioplastics market projected to grow 200% by 2017.
- 90% of this growth is coming from non-biodegradable PP.
- Huge pent up demand for sustainable solutions.
- No other affordable solutions.



Energy Considerations



- Plastics are the 4th largest consumer of petroleum.
- Petroleum demand on the rise with 1 billion Chinese and 1.5 billion Indians rapidly becoming westernized.
- Petroleum (and polymer) prices are projected between \$141/barrel (EIA 2014) and \$160/barrel (OPEC) by 2035.
- A 10% reduction in weight can result in 4.1%-6.4% fuel savings.

DRIVE CYCLE		EPA						
					FUEL ECONOMY BENEFIT			
		City FTP75	Highway HWFET	Combined	City FTP75	Highway HWFET	Combined	
		(mpg)	(mpg)	(mpg)	%	%	%	
	Baseline	34.1	46.8	38.9				
Weight Reduction	5%	35.0	47.6	39.7	2.4%	1.6%	2.1%	
	10%	Baseline Engine	35.7	48.2	40.5	4.8%	3.0%	4.1%
			37.5	49.6	42.1	9.8%	5.9%	8.4%
			39.4	51.4	44.0	15.6%	9.8%	13.3%
	20%	Engine Downsized to Baseline Performance	35.5	48.0	40.2	3.9%	2.4%	3.3%
			36.7	49.0	41.3	7.4%	4.7%	6.4%
39.4			51.4	44.0	15.6%	9.8%	13.3%	

- Biobent's bio-composites reduce weight by using feedstocks with very low specific gravity.



Biobent Lightweighting

- Low weight feedstocks.
- Comparable to virgin resins.
- Much lighter than current mineral fillers used in automotive parts.

	PP	PE	ABS	PC	TPO	Soy	Talc	CaCo3
Specific Gravity	.92	.91 to .97	1.04	1.2	1.15	.96	2.75	2.7
Soy (30%) Weight Change	1.3%	1.65% to -0.31%	-2.31%	-6.0%	-4.96%			
Talc (30%) Weight Change	59.67%	60.66% to 55.05%	49.33%	38.75%	41.74%			
CaCo3 (30%) Weight Change	58.04%	59.01% to 53.51%	47.88%	37.5%	40.43%			



Initial Customers

Marketing efforts have produced significant results

- *Biobent has been contacted by over 150 companies.*
- *Actively engaged in specific projects with ~20 companies whose project volumes exceed 150 million pounds annually.*



Customer Value Proposition

Customer Today

Base Resin	100,000
Price/Pound	\$1.00

Total Cost \$100,000

Biobent Solution

Base Resin (35% Loading)	65,000
Price/Pound	\$1.00

Base Resin Cost (Provided by Customer) \$65,000

Biobent ASP \$0.25

Biobent Charge To Customer \$25,000

Total Cost \$ 90,000

Customer Savings 10%



Key Milestones



- Funding
 - Raised over \$640,000 in non-equity funding.
 - Plans to close an additional \$2.75m by March 2015.
- Established relationships
 - A. Schulman
 - ADM (Archer Daniels Midland Company)
 - United Soybean Board, Ohio Soybean Council
 - Ohio State University's Polymer Lab
- Building first production line in Q1 of 2015.
- Great traction with early customers.
- Conservative sales projections
 - 2015 – 2,000,000 pounds
 - 2016 – 10,000,000 pounds
 - 2017 – 50,000,000 pounds
 - 2018 – 300,000,000 pounds



Leadership Team

- Management
 - Keith J. Masavage – Founder
 - Karen Davis, Green Oak Advisors – CFO (interim)
 - CEO – Actively seeking
- Board of Managers
 - Ross O. Youngs – Founder & Principal at BioSortia, Univenture & Algae Venture Systems
 - Michele Cole – President Univenture, Inc.
 - Chuck Anderson – Sr. Vice President, The Andersons



Leadership Team

- Board of Advisors
 - Paul Mulhollem – Former President/COO Archer Daniels Midland Company
 - Dr. Tom Brady – CEO and Founder of Plastic Technologies Inc., Inductee in the Plastics Hall of Fame
 - Dr. F. Thomas Krotine – Former CTO at Sherwin Williams Company, Materials Science Engineer
 - Tom Washbush – Legal Counsel, Bricker & Eckler
 - Dr. Dennis Hall – OSU Agricultural Sciences Department, Director of OBIC (Ohio Bio Innovation Center)



Round Raise and Uses of Funds

2015 Funding Goal	\$	3,000,000
Sources of Funds		
USB Grant	\$	120,000
Debt Instrument	\$	500,000
Equity or Debt	\$	2,380,000
	\$	3,000,000

Uses of Funds

Capital Equipment and BuildOut	\$	1,230,000
R & D	\$	250,000
Lab and Testing Facility	\$	50,000
Sales, General & Administrative	\$	1,470,000
	\$	3,000,000



Thank You

