

LAND TO BRAND TO LAND

Bio-composite Solutions for Sustainability on Planet Earth

COMPETITIVE GREEN TECHNOLOGIES

Circular Economy Workshop @ Guelph, ON - May 5th, 2017

Acknowledgements

All that we have achieved with our customers in creating sustainable value in the Agriculture value chain so far has been only because of the support from the following:

- Agriculture and Agri Food Canada
- Agricultural Innovation Program - Growing Forward 2
- Agricultural Adaption Council
- Industrial Research Assistance Program (IRAP)
- Ontario Agri Food Technologies (Rapid Response Program)
- Ontario Ministry of Agriculture, Food and Rural Affairs
- University of Guelph – all bio-composite resin formulations compounded on a commercial scale at CGTech are under exclusive license from University of Guelph.

Our Mission - Our Values - Our Vision

Mission: (why we exist)

- Reduce global dependence on non-renewable resources by creating innovative, globally scalable, competitive bio-composite resins for food, auto and consumer markets.
- Add value to **undervalued biomass and co-products and by-products of Agriculture** and food processing industries.

Values: (what we swear by)

- Financial independence
- Independence of thought
- Mutual respect of intellectual property of all collaborators
- Not setting our name to anything we will ever have reason to be ashamed of

Vision: (what we will spare no effort in achieving)

- **A billion people on Planet Earth will use sustainable bio-composite resins by 2020**

Competitive **Green** Technologies

Leamington ON – located at farm-site!

Customer centric bio-material research and development working with the Bio-products Discovery and Development Centre, (BDDC) University of Guelph.

- Compounding binary, ternary and quaternary polymer blends on an industrial scale with biomass to make **compostable** bio-composite resins that offer measurable value to the end-customer. Scaling lab research to commercialization for adding sustainable value to agriculture.
- Compounding **recyclable** bio-composite resins

EINVERSTANDEN – ONE UNDERSTANDING – AMONG ALL STAKEHOLDERS

- A bio-economy ECO-SYSTEM has been created that is healthy and thriving – farmer, BDDC, suppliers of raw material, CGTech, molder, packager, mass merchandiser/OEM, end-user.
- Globally Scalable biomass supply chain, characterisation and fibre formatting.
- Brought about a farmer-industry collaboration in creating and growing Competitive Green Technologies – compounding done actually at farm site!
- Increased value at farm gate by as much as 200%.
- **Competitive** is the operative word throughout the eco-system:
Price, Performance, Process, Supply chain – sustainably competitive at each level.

Natural fibre and bio-carbon based Recyclable bio-composite resins

Natural Fibre
reinforced
polypropylene



Flower pots, storage
bins

Bio-carbon reinforced
Bio-composites



Light-weight auto parts –
substituting 20%, 30% and
40% talc filled Polypropylene

Bio-carbon
masterbatch



Substituting carbon black
masterbatch – PP, PE, PS, ABS,
food grade masterbatch,
compostable film masterbatch

MISCANTHUS BIOFILLED POLYPROPYLENE APPLICATIONS

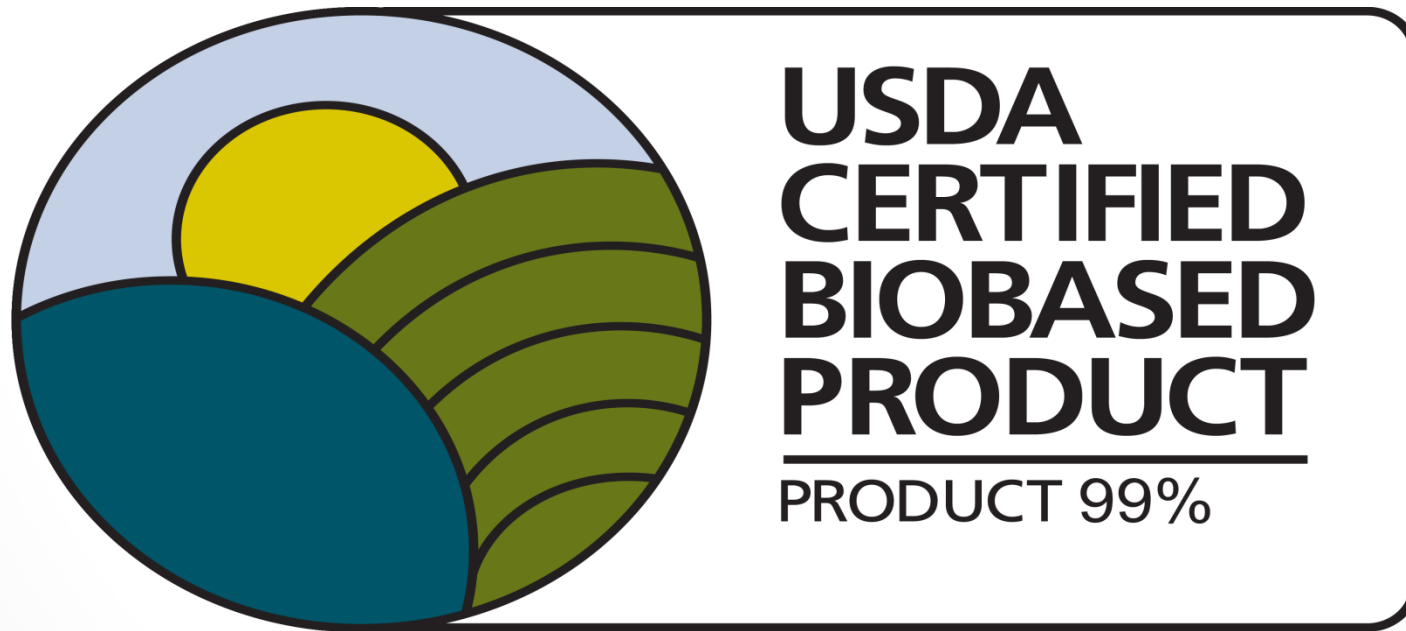


**COLOURED STORAGE
BIO-BINS AT HOME
HARDWARE**



**FLOWER
POTS AT LOWES,
KROGER**

Patent-pending BIOCARBON is USDA certified 99% new carbon



BIOCARBON MASTERBATCH

BIOBLAKR® - CARBON BLACK REPLACEMENT – INDUSTRY EXAMPLES SUCCESSFULLY TESTED



**POP BOTTLE TRAY USED
BY COCA COLA**



**STORAGE BIN USED BY
ULINE**

BIOCARBON AUTOMOTIVE LIGHTWEIGHTING APPLICATIONS -

UNDER TESTING



**20% TALC FILLED PP
SUBSTITUTE
FOR VW**



**20% TALC FILLED PP
SUBSTITUTE FOR
FIAT-CHRSYLER**

BIOCARBON AUTOMOTIVE LIGHTWEIGHTING APPLICATIONS-

UNDER TESTING



**ORIGINAL 32% TALC
FILLED POLYPROPYLENE
PART – 889 grams**



TESLA MOTORS



**25% BIOCARBON -
FILLED PP SUSTITUTE –
754 grams**

BIOCARBON AUTOMOTIVE LIGHTWEIGHTING APPLICATIONS



**ORIGINAL 40% TALC
FILLED POLYPROPYLENE
PART- 989 grams**



**30% BIOCARBON FILLED
PP SUBSTITUTE- 824 grams**



Competitive Green Technologies

Direct Supplier to Ford and ISO 9001:2008 certified company

- Competitive Green Technologies was awarded the status of a direct resin supplier to Ford in December 2016 – Supplier Number HD24
- Competitive Green Technologies was certified as ISO 9001:2008 compliant in Jan 2017

Binary, ternary and quaternary blends- U of G technology

BPI certified Compostable Resins and Recyclable Resins for Single Use Applications

Q2 2015
commercialization

Singe serve coffee - world's first coffee chaff
based compostable resin 'soft pod' app format –
U of G invention in response to a market need

2016-
2019

Diverse technology platforms being created - for both recyclable and compostable
applications with and without barrier –
focus on single-use throw-away packaging applications.

COFFEE CHAFF BIOFILLED BPI CERTIFIED 100%

COMPOSTABLE APPLICATION FOR SINGLE-USE FOOD PACKAGING



**100% COFFEE POD ON SHELVES OF
Loblaws, McDonalds Canada and other mass merchandisers**

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World-wide potential customers engaged in the 'Land to Brand to Land' Eco-System – BDDC, U of G

- **JAB Coffee Holdings, Netherlands / UK** – the largest coffee group in the world that includes: Keurig Green Mountain (K-cups); JDE (Tassimo)
- **Rogers Coffee OneCup BIO** – '97% Biodegradable' to '100% Compostable'
- **LEGO, Denmark:** The largest toy company in the world with a stated vision to eliminate dependence on fossil polymers
- **CFK Inc., Canada:** One of Canada's leading food service packaging companies
- **3M:** Fuel cells technology with conductive bio-carbon
- **Tesla, USA; Volkswagen, Mexico / Germany; FCA, Ford:** Cost reduction for more under-hood auto applications through light-weighting
- **Mahindra & Mahindra, India:** Cost reduction through light-weighting parts for Farm Equipment and SUVs.

EINVERSTANDEN – ONE UNDERSTANDING

- Academia – industry collaboration:

Mutual respect for IP: Academia – chemistry and Industry – scale-up and commercialization process.

- Customer-centric biomaterial development:

Identify value proposition and application needs upfront – not the relentless pursuit of irrelevant perfection.
'Make it real good and they will come' mentality does not go to market

- Alignment and trust amongst all stake holders:

Mutual vulnerability and mutual benefit – farmers, compounder, academia, molder, customer.

- Iterative development process – no slam dunks

Commitment to success – perseverant effort.

THANK YOU

