

Natural Fibers +
New Technology +
Customer's Voice =
Unlimited Opportunities

Hiro Miyake



ERI Eco Research Institute Ltd.

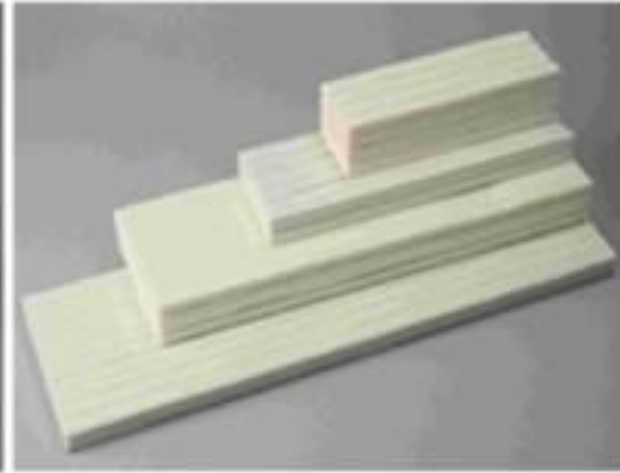


EBPM
Eco Bio Plastics Midland

Eco Research Institute (ERI)

- Head Office: Tokyo, Japan
- Established: 1998
- Capital: US\$5,875,000 (@Yen 80)
- Development Bank of Japan owns 50% of ERI shares (on a preferred stock basis)
- Business:
 - R & D of new eco-friendly technology
 - Manufacturing of paper /pulp reinforced plastics composites
(Paper/Plastics or Starch/Paper pellets)

Unique Paper Recycling Technology of ERI



Steam Foamed Products
(Brand Name: Earth Republic)



Plastic Alternatives
(Brand Name: MAPKA)

General Resistance about Bio-Plastics

Consumers' Resistance

- Issue of using food crops as feedstock for plastics
- Concern over genetically modified crops
- Confusion over 'bio' classifications
 - Bio-source, Biodegradable, compostable
- Higher costs
- Skepticism with government intrusion into markets

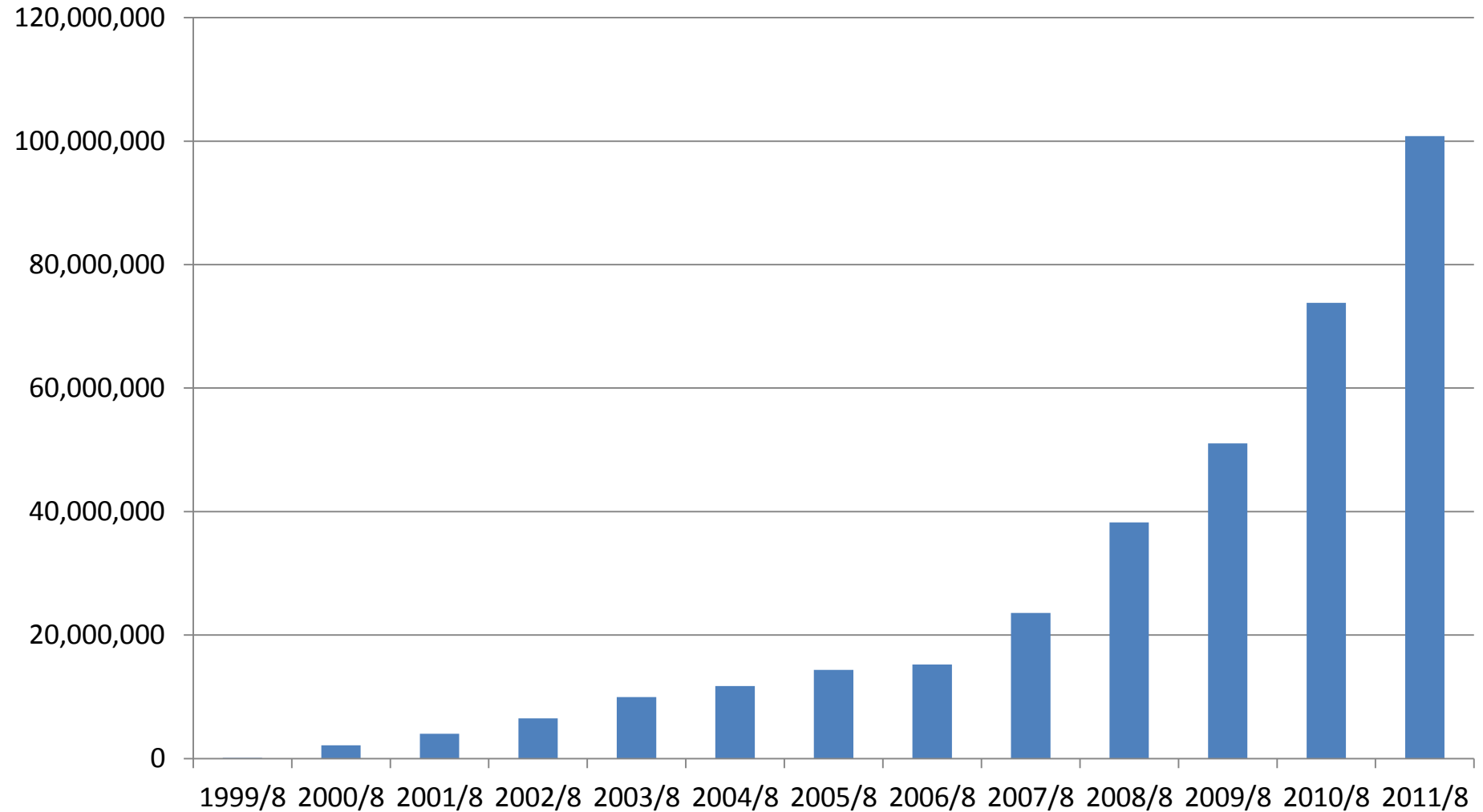
Processors' Resistance

- Common perceptions that biopolymers face several processing and performance limitations (longer cycle time, poor yield rate, bad heat resistance etc.)
- Confusion and mistrust of claims and definitions
- Limited supply
- Higher costs

Growth of ERI

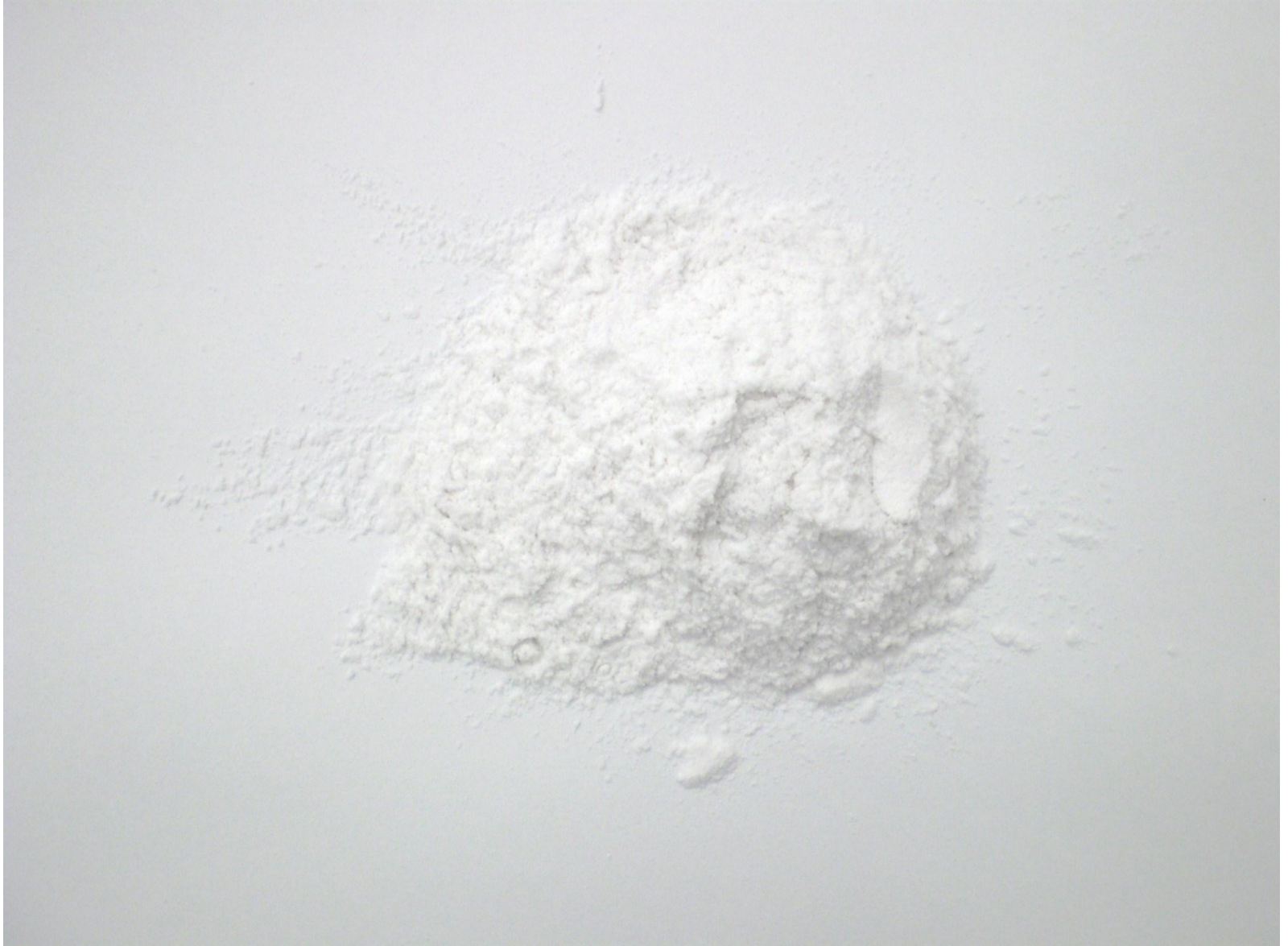
STRICTLY CONFIDENTIAL

ERI Revenue (CHF)



Exchange Rate: 1CHF = Yen85.35

Powdered Paper



Transportation Industry



Waste Paper +
Starch + PP



Steam Foamed Cushion

Housing Industry

Starch + Waste Paper + PP



Now occupying 8% market share of residential floor heat insulation in Japan

ERI won GPEC® 2010
Environmental Awards of
the Society of Plastics Engineers
“Emerging Technologies
in Materials,
Processing & Applications”



PLASTICS
ENVIRONMENTAL

A DIVISION OF THE SOCIETY OF PLASTICS ENGINEERS

Powdered Paper/Plastic Pellets



Food Service Industry



2012

march 10-13
chicago • usa

Annual Show Attendance Info:

- 60,000 professional attendees
- 2,000 exhibitors - from over 35 countries
- 15,000 U.S. buyers
- 6,000 international buyers from 100 countries on 6 continents

Your **Reusable Cup**

was selected by our reviewers to be included in the Going Green display. This display will be located in the Lakeside Center lobby in the Hall of Innovation. Approximately 60 examples of products and packaging from our exhibitors will be featured as a snapshot of our exhibitors' sustainability efforts. This placement is meant to give buyers and media a "greener" view at the Show.

Vicki Matranga, H/IDSA

Design Programs Coordinator

International Housewares Association (IHA)

6400 Shafer Court, Suite 650, Rosemont, IL 60018 USA

*The International Housewares Association (IHA) is a not-for-profit, full-service trade organization that has been promoting the sales and marketing of housewares since 1938. The association has more than 1,600 member companies from more than 40 countries.



The main ingredient of Reusable Cup is Eucalyptus Pulp (approximately 50%)

*“from fossil-based materials
to renewably sourced materials”*

“Reduce the Waste”

Dishwasher OK & Heat resistant

Toy Industry



Paradigm Shift
by
ERI's One & Only
Green Technology

Conventional Technology No.1

- We need long cellulose fiber of paper to utilize paper back into recycled paper.

Utilizing ERI technology, there is no need to keep fiber quite as long any more

Conventional Technology No.2

- Paper can be recycled back into only paper

***ERI technology can utilize powdered
Paper as filler in thermoplastics
(Unlimited Applications)***

Conventional Technology No.3

- Bio-Materials require a lot of processing to be bio-plastics, which makes the product quite expensive

ERI has developed Dry paper grinding method that pulverizes paper/pulp to the micron size efficiently

Powdered Paper/Plastic Composite

- Efficient one-stage process through **DRY** & direct paper grinding
- Pretreatment: NOT NEEDED
- Hydrolysis: NOT NEEDED
- Fermentation: NOT NEEDED
- Enzyme/Catalyst Control: NOT NEEDED
- Purification/Refinery: NOT NEEDED
- Distillation/Drying: NOT NEEDED
- Waste Water Disposal: NOT NEEDED

Powdered Paper/Plastic Composite

- One-line production process
- Low energy consumption
- Reasonable equipment investment
 - ➔ Cost competitiveness
- Simple materials
 - ➔ Safe product
- Unique paper character/properties
 - ➔ Improve conventional plastics

Why can powdered paper overcome the limitations of most of bio-plastics?

Secret of Powdered Paper

- Paper itself is already processed material not like wood fiber

- ➔ Very stable properties

- Paper powder is reactive

- ➔ It can enhance properties of conventional plastics

- Paper is different from plastics

- ➔ Easy difference recognition

Paper Plastic Strategic Position

- Biodegradable: YES for paper/PLA (PHA)
- Carbon Footprint: YES
- Compostable: YES for paper/PLA (PHA)
- Recoverable: YES
- Recyclable: YES
- Renewable Resource: YES
- Reusable: YES
- Reasonable Cost: YES

EBP Midland, Inc.

- Eco Bio Plastics Midland, Inc.
- Location: Midland, Michigan
- Subsidiary of Eco Research Institute
- Strong partnership with Michigan Molecular Institute (MMI)
- Capital: US\$11million
- US production facility in Michigan
- Technology license in North America

EBPM First Business Plan

- Demonstration plant in Midland, MI
- Annual capacity: up to 10,000 tons
- Initial Employees: 30
- Pellet production for food grade business
- Expecting to go forward to the next commercialization stage in a few years (Production capacity: 10 times bigger)
- Dr. James H. Plonka: President & CEO (ex. Dow Chemical)

ERI/EBPM Product Lines

Food Grade PP/PE

General Grade PP/PE

Recycled PP/PE



Direct contact: reusable



Indirect contact: Reusable



Direct contact: disposable



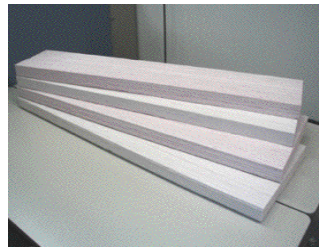
Indirect contact: disposable

Virgin paper/pulp

Industrial paper/pulp waste (cutting, shaving, trimming)

Waste paper

Feedstock Quality



Food Market

Non Food Market

ERI/EBPM Strategic Direction

- Technology globalization in cooperation with Japanese government and its banks
 - ABC Strategy (America, Brazil & Canada)
- Contribution to the switch from fossil-based materials to 100% bio-based materials
 - 100% Biomass mark in Japan from 2013
- Market development through ERI/EBPM business partner network
 - Work as a team to meet customer's need
 - Customer-oriented engineering

Thank You Very Much