Innovative Technology of Biodegradable Packaging in Croatia – Why Not?

Spring 2008. Plitvice Lake, Croatia

EcoCortec's Mission

- **Develop and bring to market, value-added biodegradable flexible films that outperform non-degradable and other biodegradable materials currently on the market.**
- **Customers buy first on PERFORMANCE, then on environmental attributes**
- **Therefore our mission is to develop eco – efficient production of biodegradable films that combines new technology and high productivity with positive effect on the environment**

Biobased Vs. Biodegradable

- Biobased: A renewable product engineered or composed in whole or in significant part from plant or animal material (other than food or feed).
- Biodegradable: Material that left to itself will be decomposed by natural processes (microorganisms)

Compostable

- According to ASTM D6400/ D6868 (for compostable plastics) a product or material must meet three key criteria to be certified as Compostable
  - Product or Material must disintegrate/fragment small enough to NOT have to be screened out.
  - Product or material must convert into carbon dioxide, water and organic matter at an acceptable rate. (such as yard trimmings)
  - Finished product must support plant growth – must not leave behind toxic residue.
  - Eco Film® and Eco Works® Meet those standards and can carry Din Certco (German Institute for standardization) (IBAW Mark) and BPI/USCC approval logos.

Eco Film®

- ❑ Certified compostable per ASTM D 6400
- ❑ 300% stronger than LDPE
- ❑ High and Low temperature stable
- ❑ Heat-Sealable, Convertible, Laminations
- ❑ Biodegrades rapidly in soil (varies on region),
  as little as 45 days
- ❑ Elastic and visually attractive material
- ❑ Stock products available in 3 common sizes
- ❑ Accepts Printing – for marketing and identification

Eco Film® Cryogenic Film

- Certified by BPI, Din Certco per ASTM D 6400
- Specific Eco Film formula for frozen goods
- Patented in 2003
- Does not become brittle at extremely low temperatures
- All the benefits of Eco Film® (strength, etc)
- Ideal for frozen packaging
  - Food, Medical

Eco Film™ Cryogenic film and bags are ideal for frozen food packaging

Eco Works® Premium Films & Bags

- Certified compostable per ASTM 6400 and DIN CERTCO
- Meet proposed USDA definition of Biobased
  - A minimum of 25% of the formulation must contain material that is derived from an annually – renewable source
  - New formula Eco Works® 70 has been tested for biobased content at Iowa State University and has a completed BEES environmental profile for " Durable Films"
- Certified and approved for Food Contact (Faculty of Food Technology and Biotechnology Zagreb, Croatia)
- 300% Stronger than LDPE
- More rigid than Eco Film® (allows handle bags)
- Longer curb life in some areas (UK)
- More marketable to some customers
- Formulation derived, in part from corn

Eco Wrap® Compostable Stretch Film

- Up to 60% better yield per roll
  - Wraps 60% more pallets than standard stretch film
- Perfect for items that are flash frozen
  - Frozen food, medical
  - Does not become brittle
- Applied with the same stretch equipment
  - Hand or machine, can withstand 400% prestretch
- Agricultural markets initially
  - Typically do not use pallets, so twine (also biodegradable) and stretch film are only packaging materials
- Accepts printing
  - For marketing and identification

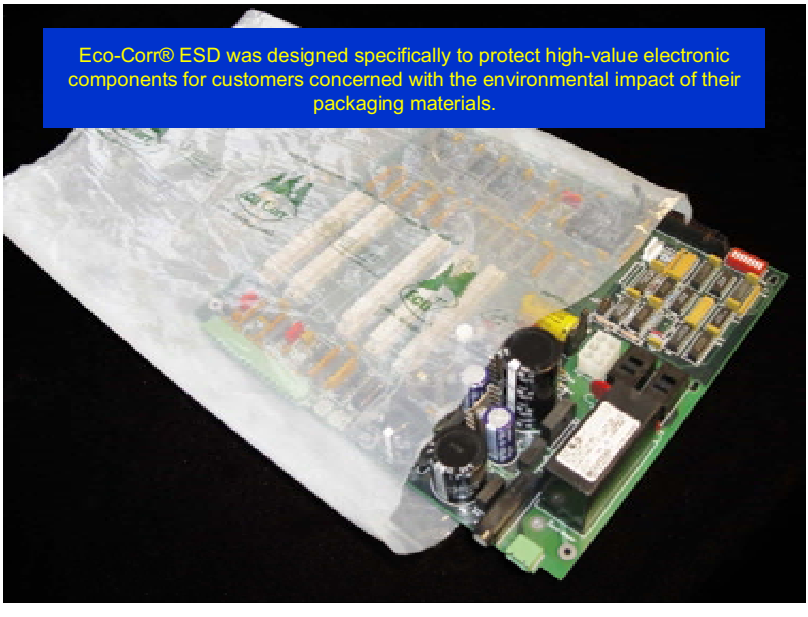
Eco-Corr® VpCI

Biodegradable/Compostable bags and film

- ❑100% Biodegradable per Din V 54900, BPS Certified
- ❑Offers superior strength compared to LDPE
- ❑Heat and Water stable
- ❑Once exposed to a compost environment Eco-Corr® will biodegrade rapidly with no harmful effects to the environment

Eco-Corr® ESD compostable Films & Bags

- ❑Meets requirements for compostability
- ❑Combines
  - ❑ All the benefits of Eco-Corr, Eco Film®, Eco Works
  - ❑ Multi-metal corrosion protection (VpCI)
  - ❑ Electro-static Discharge (like VpCI 125)
- ❑Designed specifically for electronics
  - ❑ Protects electronics from corrosion, static damage
  - ❑ Leaves no residue after unwrapping
  - ❑ Does not affect solderability
- ❑Custom Sizes and Formulations



CorrTainer™ brand of corrugated boxes

- ❑Fully recyclable, repulpable
- ❑Moisture resistant
- ❑Eliminates the need for secondary packaging in some applications
- ❑Cost effective, environmentally friendly, corrosion protection
- ❑Easy to use, with no need for desiccants or poly-coated wraps

CorrTainer™ ideally suited for automotive components

EcoShield®
Paper and Linerboard

- ❑Environmentally Friendly barrier coating
  - ❑Offers the same if not better barrier protection than wax or poly-coated paper
- ❑Fully recyclable - repulpable
- ❑Complies with FDA and USDA regulations for direct and indirect food contact
- ❑Also available with Cortec's patented Vapor phase corrosion inhibitor (VpCI)
  - ❑Offering protection to both ferrous and non-ferrous metals

EcoShield® can be used to protect items sensitive to moisture

Conclusions

- EcoCortec's line of biodegradable/compostable films bridge the gap between performance and environmental impact for flexible films
- Our products are the strongest, most resilient on the market while retaining strict adherence to the international environmental standards
- EcoCortec's vision is to combined early development into new cost effective eco friendly products.
- NOT JUST MAKING DIFFERENT PRODUCTS
  MAKING PRODUCT DIFFERENTLY

Our mission

Biodegradable & Compostable Packaging Films

Laboratory

Converting

Printing

Ecocortec d.o.o.
Industrijska zona b.b.
Beli Manastir

Generalni konzul RH – Zorica Matković, Boris Miklić
te predstavnice agencije Tri, dva, jedan

OBAVIJEST ZA MEDIJE

Dodjela World Star nagrada
15. svibnja, 2007 - Chicago, SAD

Impresivna je činjenica da je na dodjeli World Star nagrada Hrvatska dobila više Oskara od Italije i Austrije, dok su Slovenija i Srbija tile doma praznih ruku.

Dobitnici Cropak-a 2006, Ecocortec d.o.o, Beli Manastir i agencija Tri dva jedan, Zagreb, pobjednici su svogodišnjeg World Star natjecanja, koje je sponzorirala World Packaging Organization za najbolje ambalažne proizvode u konkurenciji 35 zemalja svijeta.

Isto tako obavještavamo vas da je EcoCortec počeo s proizvodnjom EcoCort® biorazgradive plastike u Hrvatskoj. Poput EcoCortec-a u Belom Manastiru najmodernija je tvornica ambalaže u Europi, a upravo nal proizvod EcoCort® dobitnik je svjetske nagrade za treutno najbolju biorazgradivu plastiku u svijetu. Predviđena godišnja proizvodnja vrhunskih biorazgradivih plastičnih folija te PE folija, koje bi se (gotko 85%) izvozile u europske i azijske zemlje, iznosi cca 5 milijuna kg finalnih proizvoda. Proizvodna hala veličine 1700 m2 u potpunosti je opremljena novom automatiziranom opremom s visokim stupnjem ekološke zaštite te energetskim iskorištenjem i visokim stupnjem ekonomske učinkovitosti. Tvornica biorazgradivih folija u Belom Manastiru predstavlja konkretnu izgradnju i ulaganje u Hrvatsku kao zemlju izvoznicu gotovih proizvoda, koja uz primjenu novih tehnologija ostaje i postaje ekološka oaza Europe.

Cortec® Corporation Receives Two CROPAK 2006 Awards.

June 06, 2006

Cortec® Corporation wins two awards in the ECOCROPAK category at CROPAK2006, held in "Plitvice Lakes" National Park, Croatia, May 18 & 19. The ECOCROPAK category focuses on ecological packaging, machine or equipment for waste packaging management, and a project for packaging and waste packaging management. Cortec® was one of 37 nominated in five different categories. Cortec® was awarded the CROPAK 2006 "Eco Packaging" Award for its innovative biodegradable EcoWorks® bags & films and the CROPAK 2006 "A Project for Packaging & Waste Packaging Management" Award for its EcoCortec® plant in Beli Manastir, Croatia.

The EcoCortec® plant is one of the first in Europe to incorporate an advanced green technology in the production of multilayered biodegradable films and corrosion protection films. The EcoWorks® packaging is biodegradable 100% compostable packaging that does not pollute the environment. EcoWorks® incorporates Cortec's Advanced Green Technology and uses natural renewable resources from corn instead of petrochemical raw materials.

The awards were given during the International Conference "Polymeric Materials in Packaging" at CROPAK 2006 (Plitvice, Croatia). The conference explores the development and applications of new polymeric materials in the packaging industry, emphasizing on food and beverage packaging. Lectures were given by industry experts and leaders. Among them, Cortec® Corporation President, Boris Miklić, presented "Packaging and Environmental Protection, EcoCortec® - Biodegradable Packaging Technology."

CROPAK is organized by the Institute for "Packaging and Graphic Arts Industry", the "Packaging" Trade Journal, and TECTUS d.o.o. in Croatia. The goal is to promote innovative products & packaging, product designs & labels, environmentally responsible packaging & waste packaging management systems.

www.ecocortec.hr