

EkoProof

THE ECOLOGICAL DIMENSION OF
PACKAGING

Market issue

The problem – Elimination of plastics and aluminum from packaging

- Today, most barrier cardboard packaging (e.g. cartons for milk, juices, dry food, ready meals) require lamination with PE, PET and aluminum foil.
- It is estimated that about 400 million tons of plastic are produced annually, of which more than 40% ends up in packaging (~160 million tons).
- From this pool, several tens of millions of tons are foils and laminates on cardboard packaging

The EkoProof technology eliminates the need for additional foil and aluminum, reduce the use of plastic by several million tons per year, and fundamentally simplify the production process of food packaging.



EkoProof - Simplifying the production process

Standard barrier carton requires multi-layer lamination (paper + PE + alu). This means: additional technological lines, energy, adhesives, production waste.

The EkoProof layer is applied to the cardboard like a regular varnish, thus:

- Several production steps are eliminated,
- Energy consumption decreases,
- Lead time is reduced.

Cost and energy savings amount to hundreds of millions of € per year globally, especially in large plants (TetraPak, SIG Combibloc, Smurfit Kappa).





EcoProof – recycling, food saving and decarbonization

Currently, multi-layer cardboard is difficult to recycle, because separating the alu/PE layer from the cardboard requires special processes.

EcoProof is a mono-material packaging that accounts for <5% of the weight of the packaging, So:

- cardboard behaves like ordinary cardboard (because the barrier layer can be ground together with cardboard)
- fiber recovery is approaching 100%,
- production and recycling costs are falling

About 30% of food is wasted globally, and one of the reasons is insufficient protection in the packaging (moisture, oxygen), according to the FAO, the value of wasted food > USD 1 trillion/year.

The initial potential of EcoProof:

- Over 600,000 tons of plastic less/year
- Reduced CO2 emissions by nearly 3 million tones/year
- Over 130,000 tons of aluminum less/year
- Reducing the amount of food wasted

Triple Impact – EkoProof

Benefits	Standard Packaging (papier, polimers, aluminium)	EkoProof (monolayer packaging)	Global benefits on an annual basis
Production Cost	~1,00 €/m ²	0,75–0,85 €/m ²	4–7 mld € savings
Emissions CO ₂	+0,108 kg/m ² (plastic + alu)	0	2,9 mln ton CO ₂ less (~230 mln € EU ETS price)
Plastic	670 000 ton/year	0	Total elimination
Aluminum	134 000 ton/year	0	Total elimination
Recycling	>40%	100% recyclable	Lower costs and higher recovery rate

EkoProof – business case



Market potential

Paper/cardboard packaging market: ~\$400 billion/year (2024).

Barrier cartons (foil/alu) segment: ~\$70-\$100 billion/year (liquid, dry food, pharma, fast-food cartons).

Annual Production of Barrier Carton: ~6-15 million tons



Assumptions:

Cost of standard barrier carton: ~1,00 €/m²

Cost with EkoProof technology: 0.75 - 0.85 €/m²

Savings for the manufacturer: 15%-25% cost reduction



Annual Global Savings

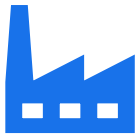
Global Barrier Cardboard Production: 26.8 billion m²/year (6.15 million tonnes)

Minimum savings (€0.15/m²): €4.02 billion/year

Maximum savings (€0.25/m²): €6.70 billion/year

~€4-7 billion/year of market-wide savings

Business model



Technology Licensing

The manufacturer pays for each ton of barrier carton.
Low CAPEX, scalable model.



Sale of ink additive

Partnership with a dyeing company (Siegwerk, Flint, Sun, Huber, Dunapack).
Sale of paint with EcoProof technology.

Beneficiaries of EkoProof :

1. Carton/Packaging Manufacturers

- Smurfit Kappa, Stora Enso, WestRock, Mondi (control the production of barrier cardboard and have printing and varnishing lines)

2. Manufacturers of printing machines and varnishes

- Heidelberg, Bobst, Koenig & Bauer (printers, varnishing).
- Sun Chemical, Siegwerk, Flint Group (varnish/paint).

3. Brand owners (FMCG, food, retail)

- Nestlé, Unilever, Coca-Cola, Danone, PepsiCo.

Market penetration scenarios



Clear EcoProof value
– 15-25% reduction in
packaging costs



Global potential: €4-7
billion/year of
savings.



Market potential:
€400 million – €1.3
billion/year.

Market share	Savings	10% license	License 20%
0,5%	20-34 mln €	2-3 mln €	4-7 mln €
3%	121-201 mln €	12-20- mln €	24-40 mln €
5%	201-335 mln €	20-34 mln €	40-67 mln €
10%	402-670 mln €	40-67 mln €	80-134 mln €



Project & go to market strategy

1. Barrier tests (O₂, H₂O, fats) Partner: COBRO Packaging Research Institute, Uniw. West Pomeranian CBMIO
2. The first applications in small editions (Huber, Chespa).
3. Recycling and composting – tests with paper recyclers.

Time: 18 months Effect: 3 products (tea packaging, fast-food, juice carton).



Phase 1: Early adopters (Year 1–2)

Project carried out together with Huber Group – an industry partner

After Phase 1, Huber will implement EkoProof technology in its international structure



Phase 2: Scaling (Year 2–4)

Large packaging companies (Stora Enso, Smurfit Kappa).

License agreements or joint JVs.



Phase 3: Mass adoption (year 4–6)

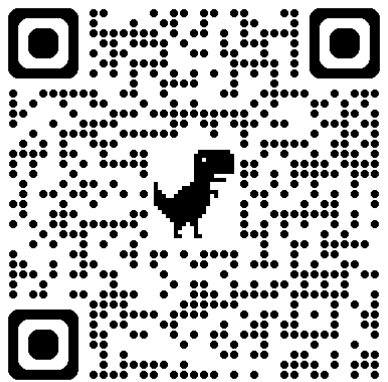
Global FMCG (Nestlé, Coca-Cola).

The EU, the USA, Asia will force plastic substitutes.

Invest in Energy Security and Sustainable Materials

The Value: Investment in a proven, proprietary, and scalable nanotechnology platform that solves fundamental loss and waste problems in two multi-billion dollar markets

Call to Action: Partner with hiPower IoM to commercialize the technology that secures hydrogen storage and creates a new generation of fully recyclable packaging



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