
Title: **Becoming a mature material: the role of customers**

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Curriculum:

Mark Geerts studied applied mathematics at Twente University and Groningen University (The Netherlands). After his graduation in 1984 he worked several years at the Institute for Environmental Studies of the University of Groningen. By developing models of the national electricity grid, simulations studies were performed to investigate the possibilities for sustainable energy sources like wind, solar and biogas. He also did evaluation studies on the risks of nuclear energy.

After several years at the university he started with some colleagues an IT company GRIP were a.o. software was developed for environmental modelling. He continued the working in the IT sector for many years in a larger company Vertis, formerly subsidiary of the potato starch company Avebe. In this environment the present company PaperFoam was born as a follow up of an Avebe research project.

PaperFoam is a company developing, producing and selling PaperFoam packaging: low carbon footprint, biobased packaging for electronics, medical products and food applications. Mark joined PaperFoam in 2008 as the CEO. At present PaperFoam, headquartered in the Netherlands, is present with production locations in three continents and PaperFoam® has become known as a new material.

Abstract:

PaperFoam is a rather novel material. It's development started in the mid '90's. In many occasions customer demands seemed impossible to realise. But nevertheless, looking back, they brought the company where it is now: a pretty well established material, used by many large companies in the world.

The presentation describes the steps taken, and will explain the issues that have been solved.



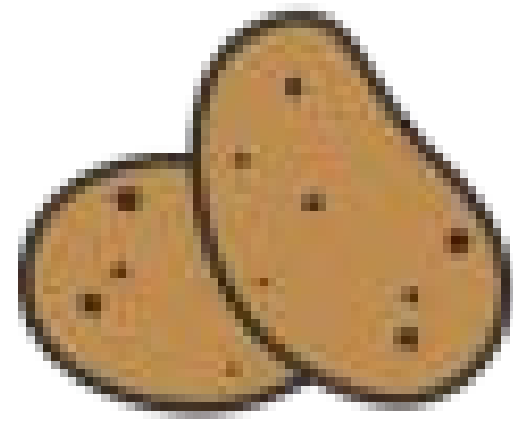
Becoming a mature material: the role of customers

- What PaperFoam did to become a known and used material?

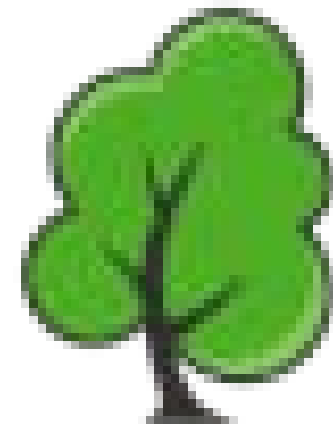
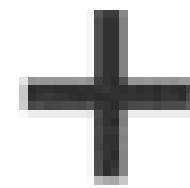
PaperFoam – Biobased Performance
Materials

June 1^{5th} 2017

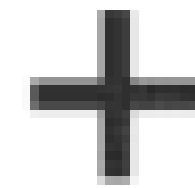




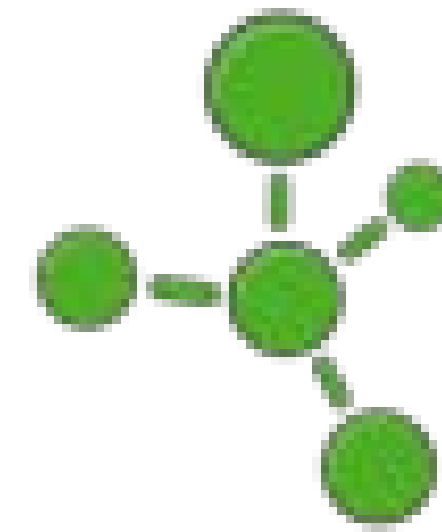
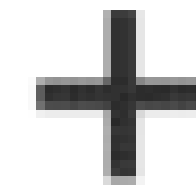
INDUSTRIAL
STARCH



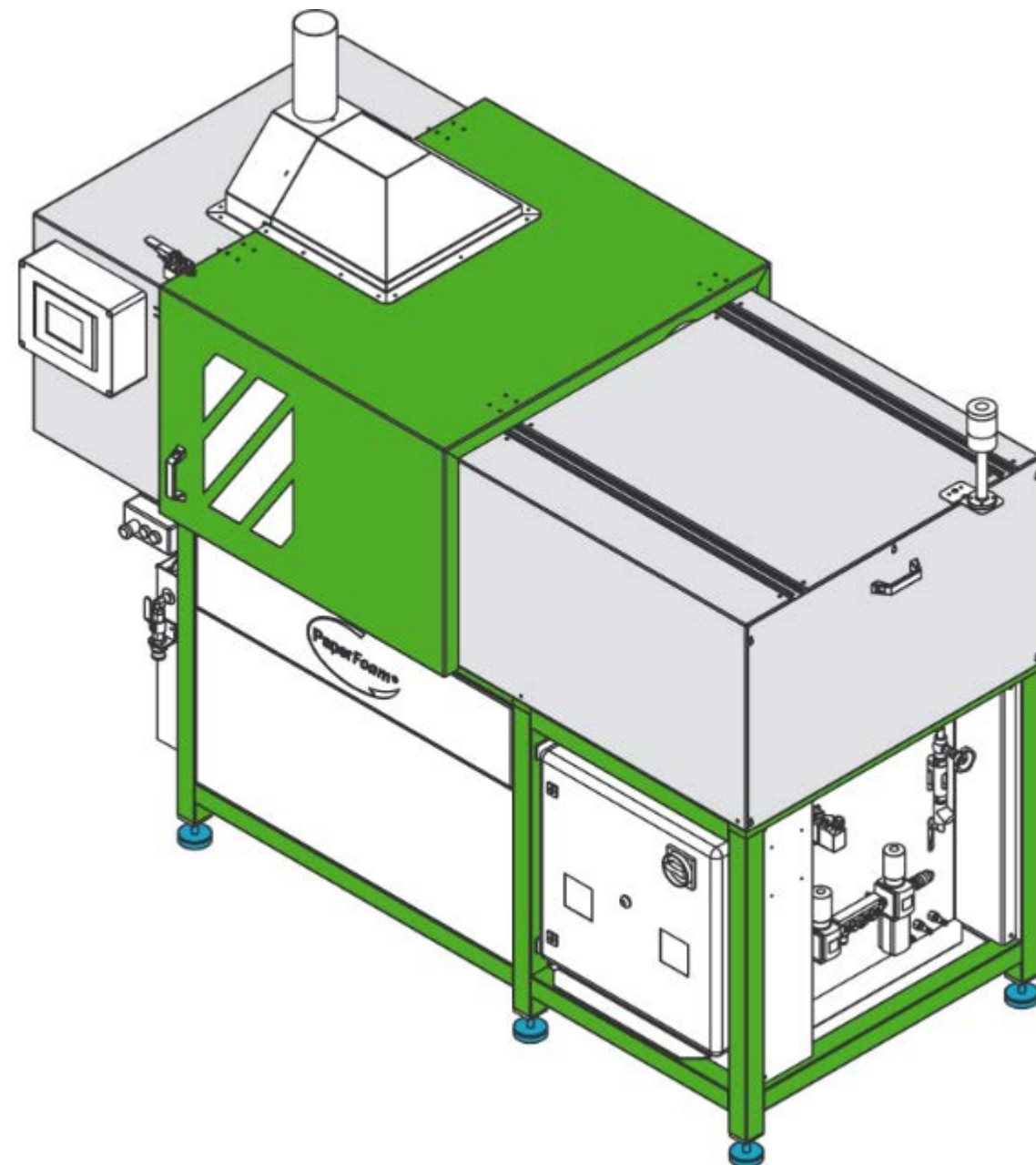
NATURAL
FIBERS



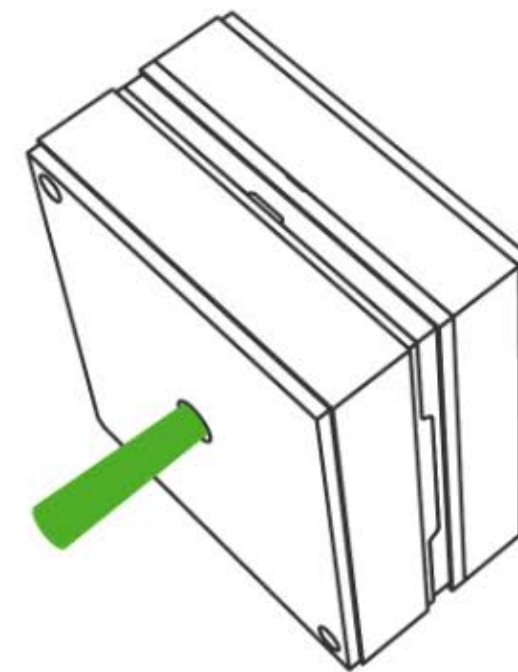
WATER



PREMIX



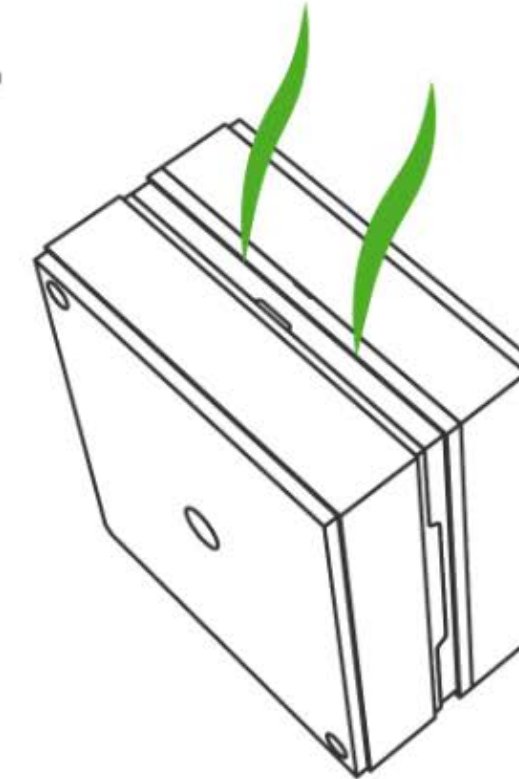
1.



INJECTION



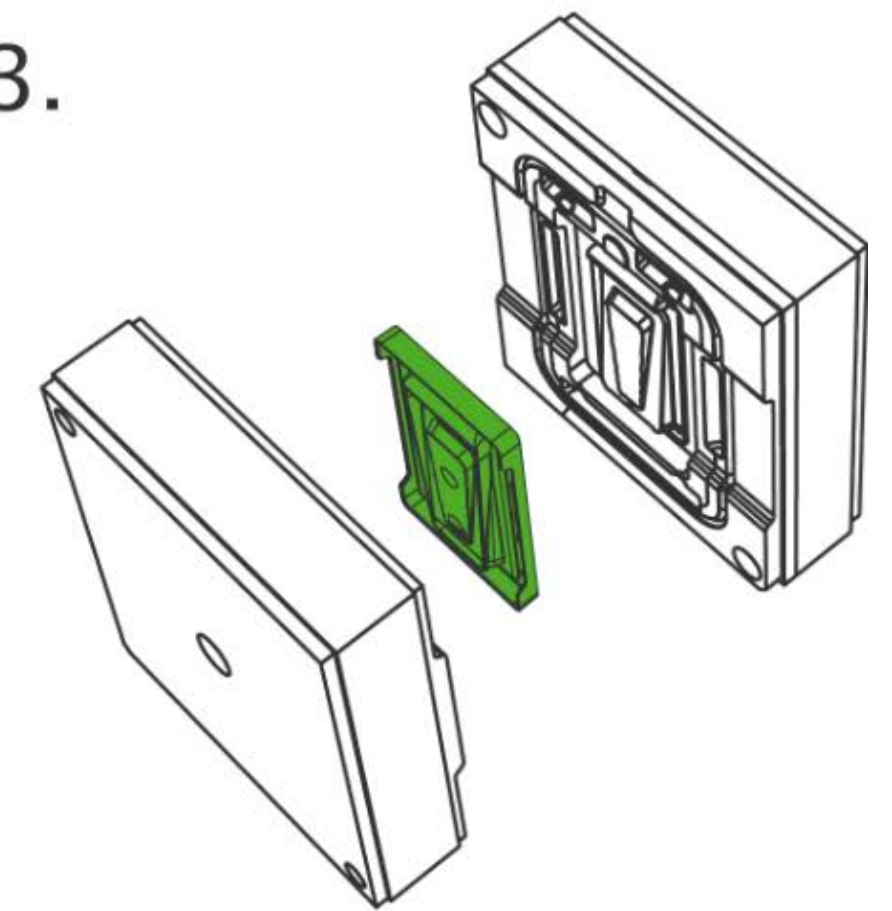
2.



BAKING



3.



PRODUCT

Sustainability



- Biodegradable
- Pollution free
- Low in carbon footprint
- Energy efficient in production
- Renewable raw materials
- Home compostable
- Paper recyclable
- Pollution free waste products

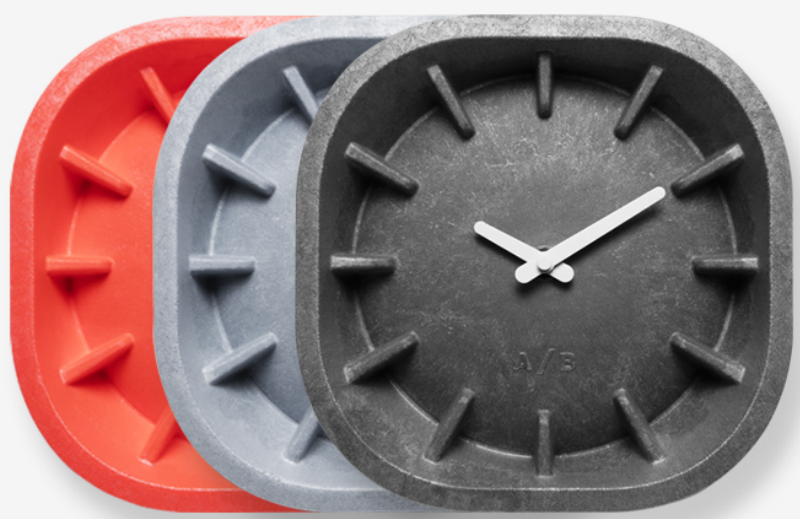
Applications

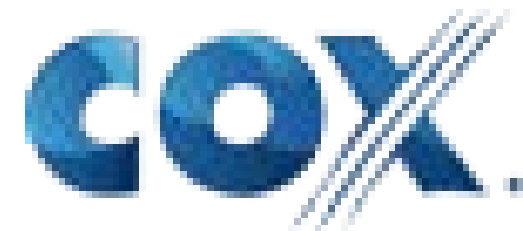
PaperFoam is applied for protective packaging

- Consumer electronics
- Cosmetics
- Medical devices
- Dry food



Paperfoam Customer examples





Price winning



2013 Worldstar



2015 Dieline



2017 Ameristar



2017 Dieline

Where we are



Research topics: process



Development of the production process

- Injection moulding, but different from plastic IM
- Mixing technique
- Injection technique
- Cycle times, yields, ...
- Evaporation
- ...

Research topics: recipes



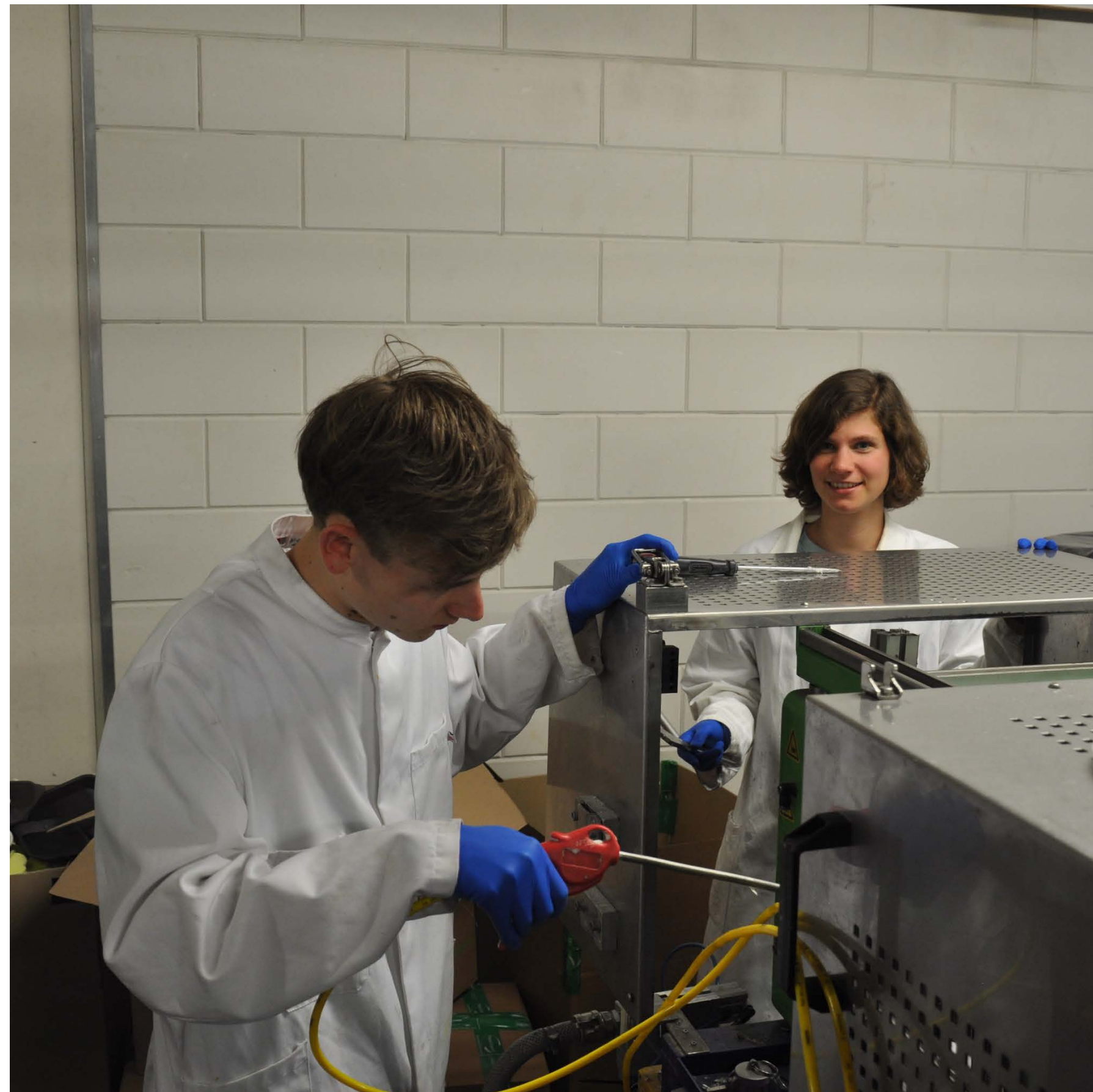
- What ingredients work?
- Biobased
- Available all over the world
- Stable in time
- Pricewise competitive

Research topics: products

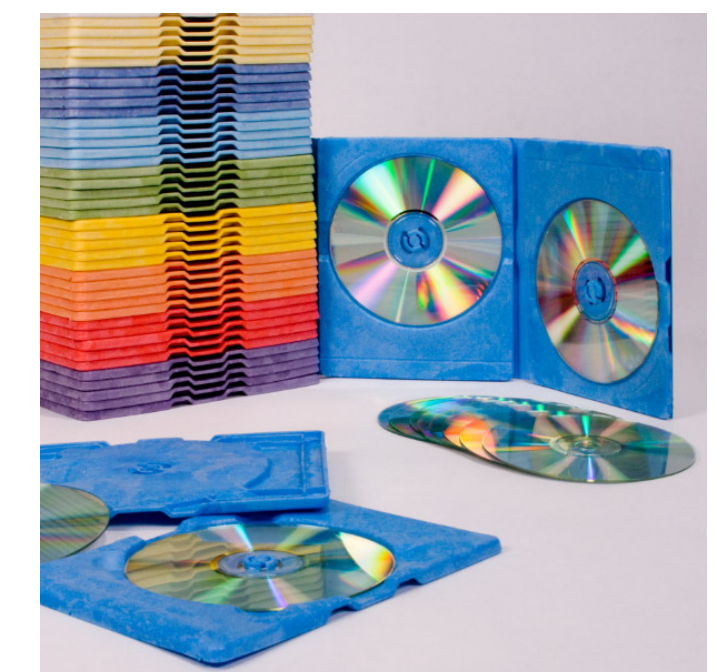


- How to commit to requirements?
- Design wise – fit for use, nice, ...
- Coloring and look & feel
- Strength – drop tests
- Durability – climate test
- Sustainability – bio degradable, paper recyclable
-

Research over the years



- 1990's : moulding machines, molds, initial recipes
- Early 2000's: first large orders: yield optimisation
- 2004: heavier products, climate tests: better recipes
- 2006: CD/DVD production: lower costs, improved moulding techniques
- 2008: medical market: improved humidity resistance



Research over the years-2



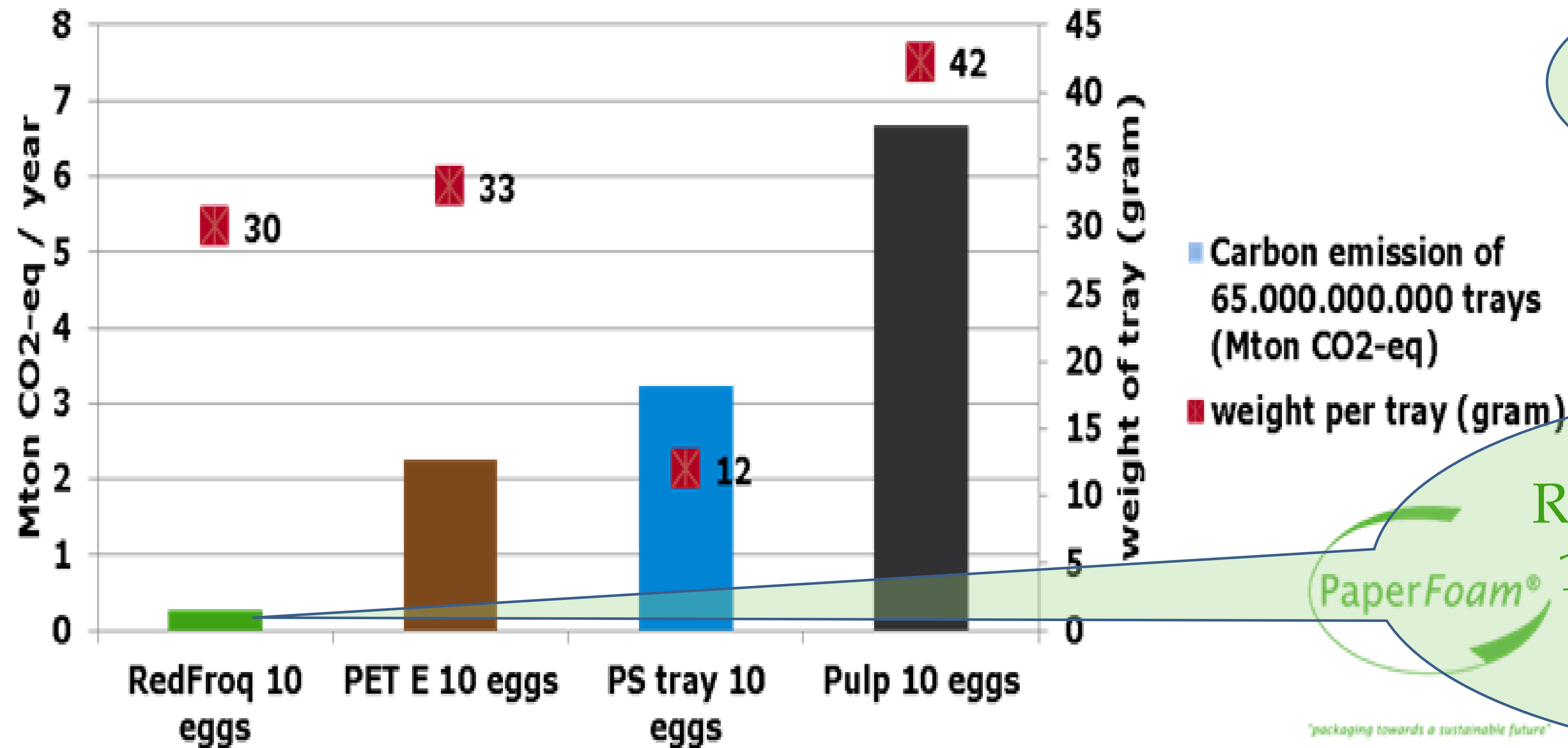
- 2010: large volume production: robotisation
- 2012: champaign bottle: improved humidity resistance
- 2014: food packaging: sealed PaperFoam
- 2015: heavier products: other fibers
- 2016: egg packaging: cheaper recipes

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Life cycle assessments

Carbon emission of 65.000.000.000 trays
(Mton CO2-eq)



Every Chinese 1 egg box per week in PaperFoam

Reduction equivalent of 1% of China's carbon emission

"packaging towards a sustainable future"



Packaging towards a sustainable future

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