
**“THE PLACE WHERE IDEAS
TURN INTO REALITY ”**



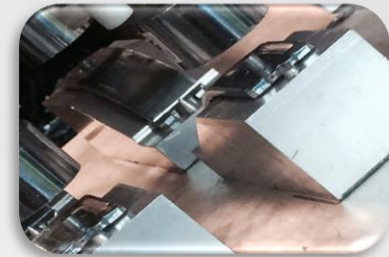
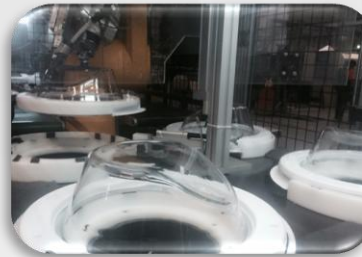


*Technology availabilities &
decorative parts*



Farel Technologies

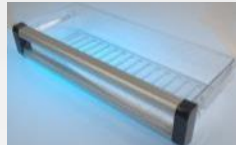
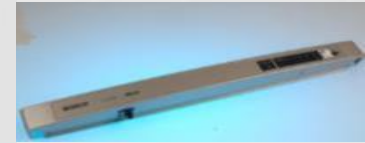
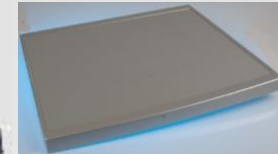
- Plastic Injection
- Bi-component Inj.
 - 2K Plastik injection
 - Metal insert-moulding
 - Glass insert-moulding
 - Gas Injection
- Central Material Feeding System
- Plastic Painting
- Automated Assembly Lines










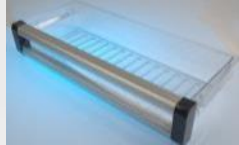



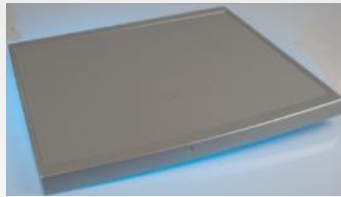



Products



Products



Products

Product Group	Products	Sample Product Pictures
Washing Machine Parts	Table Top Window Complex Detergent Dispenser Control Panel E-housing	    
Refrigerator Parts	Front Panel Fan Unit Drawer Door Handle	    
Dishwasher Parts	Facia Panel Table Top	 
Other Products	Combi Front Panel Cooker Handle Air Duct for Cooker	  

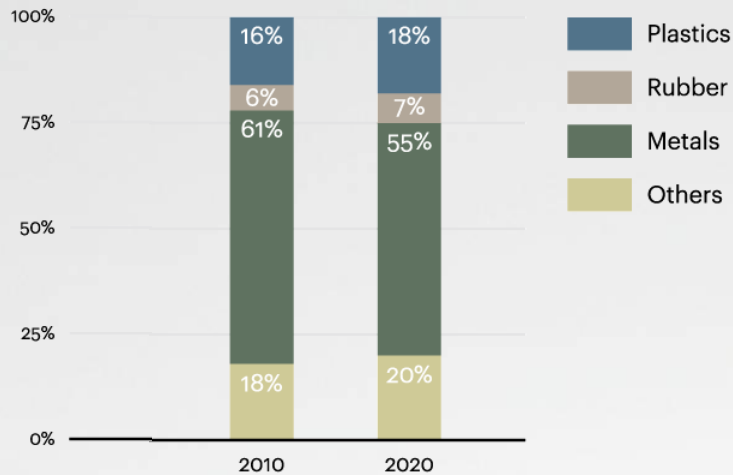


Plastics in Automotiv

Figure 2

Plastics will account for 18 percent of average vehicle weight by 2020, up from 14 percent in 2000

Percentage of total vehicle weight



1,100 kg 1,180 kg 1,260 kg 1,340 kg 1,400 kg 1,100 kg

Average vehicle weight

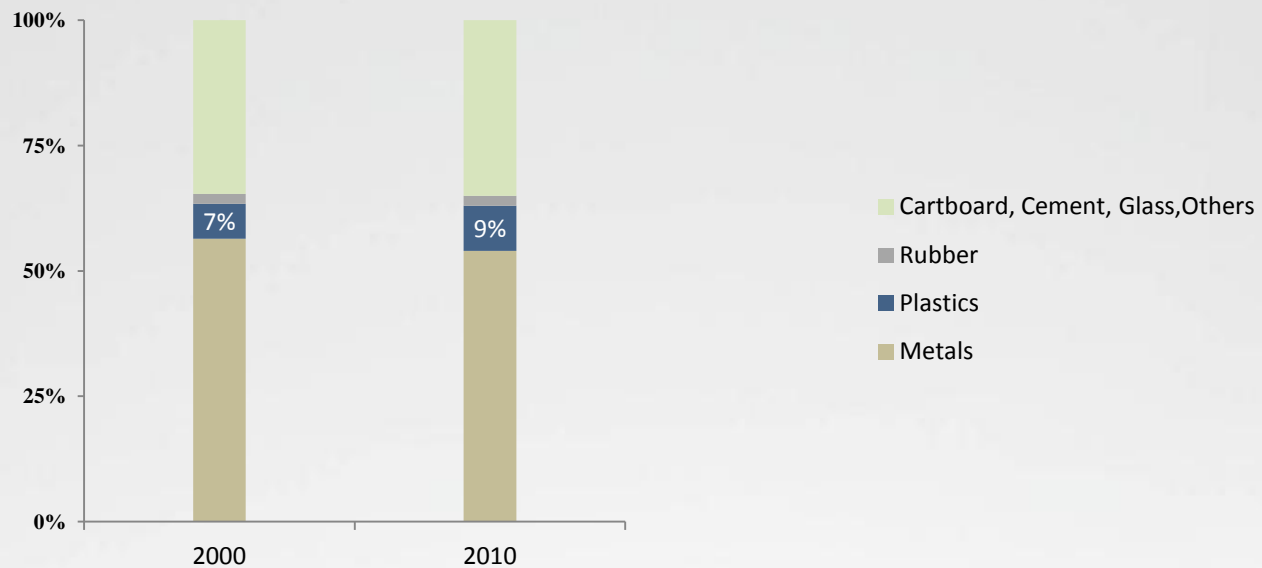
Notes: kg = kilogram. Due to rounding, some percentages may not add up to 100.

Source: A.T. Kearney analysis



Plastics in Home Appliances

Figure 1



Notes: kg = kilogram. Due to rounding, some percentages may not add up to 100.

Source: A.T. Kearney analysis

Washing Machine



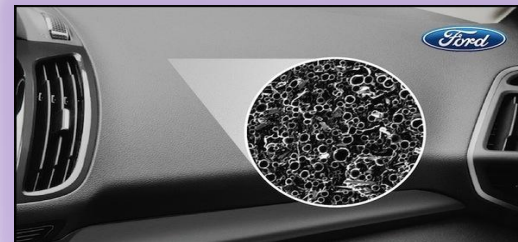
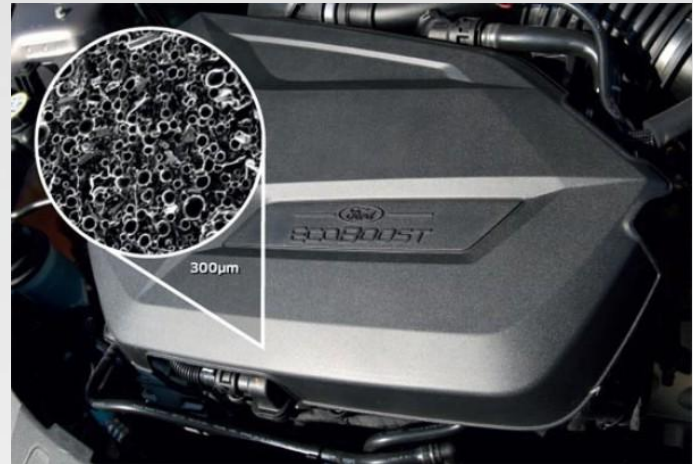
Physical Plastic Foaming

Advantages

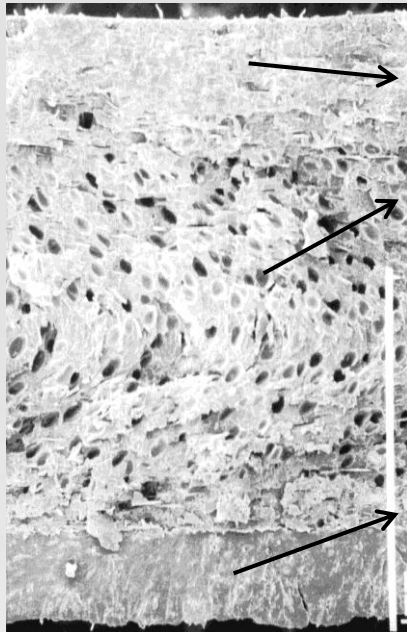
- Up to 30 % weight reduction
- 20 % shorter cycle time
- Energy efficiency
- Design freedom

Challenges

- New part design criteria
- Critical pressurized gas operation



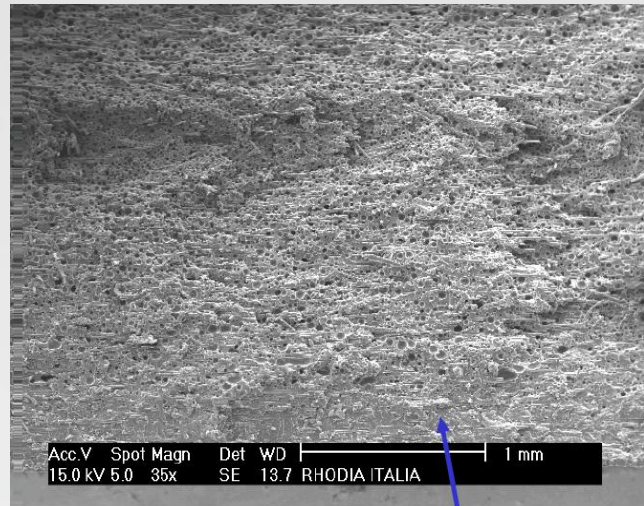
Physical Plastic Foaming



Compact skin

Foamed core

Compact skin

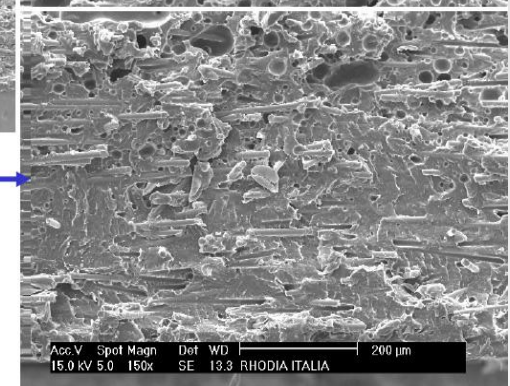
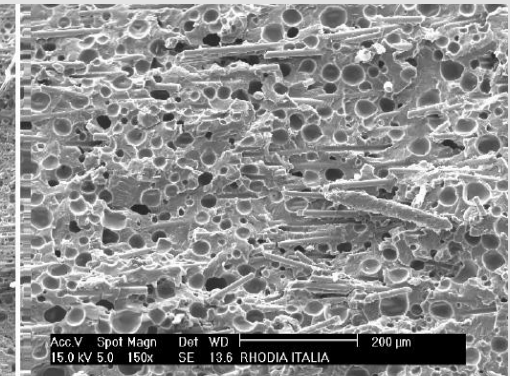


Surface

Source:



Material: Nylon 66 with 35% glass fibers

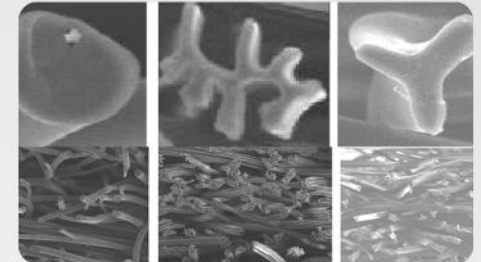


Material Replacements & process development

- **Weight reduction:**

Metal replacement by thermoplastic composites

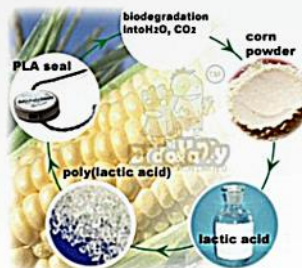
Natural fiber reinforced plastic



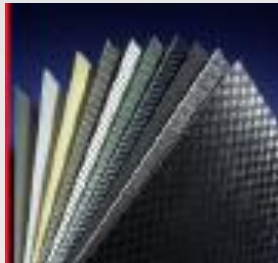
- **Sound absorption:** Smart, lightweight textiles for insulation

Material differentiation: Wood-plastics or recycled elastomer fillers

- **Sustainability:** Renewable, biodegradable parts from PLA compounds



Metal Replacement by Continuous Fiber



Advantages

- Metal Replacement
- Weight reduction up to design and expect.
- High physical strength
- Low weight comparing to metal



Challenges

- New part design criteria



WIT/PIT

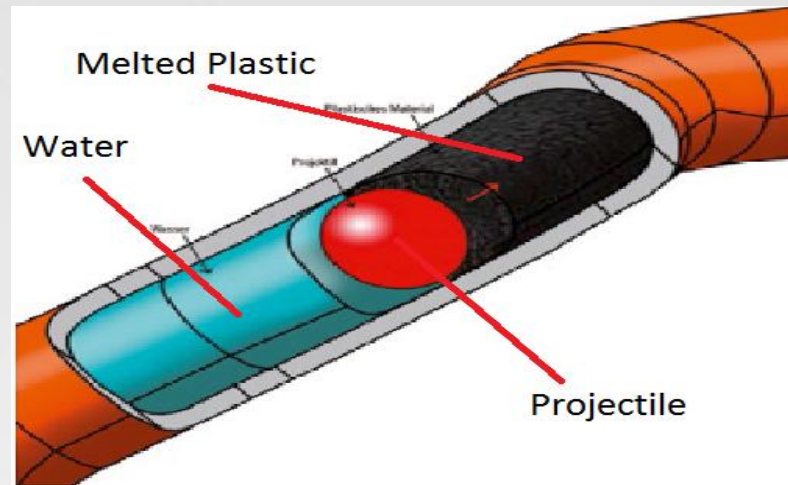
WIT-Process



PIT-Process



Projectile Injection Technique (PIT)

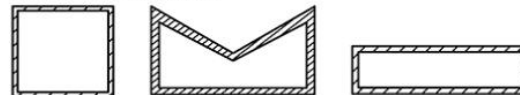


Overcoming Design Limitations Imposed by Conventional Fluid Injection Technology

Fluid Injection Technology (Airmould®, Aquamould®)



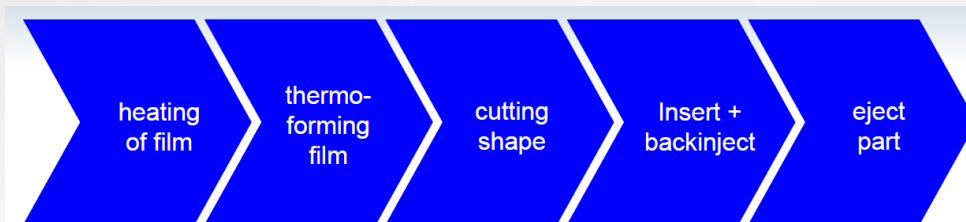
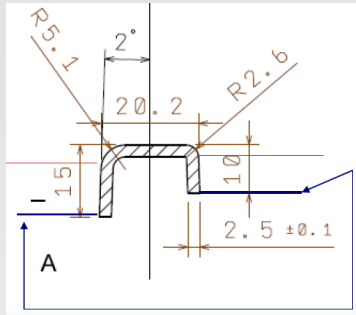
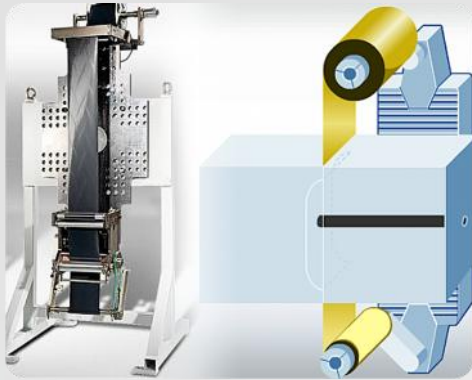
Projectile Injection Technology



Source: IKV, Aachen



IMD





foliotec
DECORATION FOR PLASTICS



PERFECTION IN PLASTICS

IML technology and applications in car interior

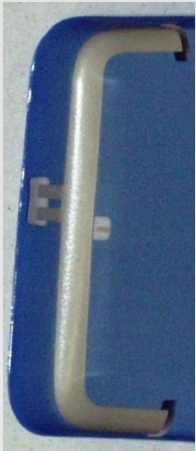
MyWave: Demonstrator for the technology of tomorrow



- 3D In Mold Labelling
- Capacitiv Sensors



Examples – Electrical Function



3D GSM Antenna

Antenna Integration:

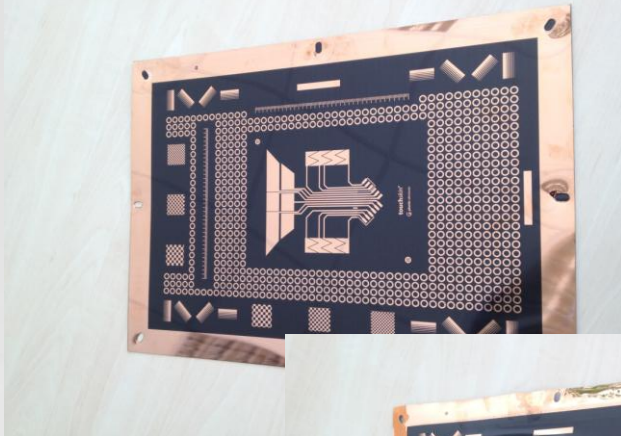
Bluetooth Antenna

Fully functional 3D GSM- and Bluetooth Antenna with integrated contact elements
Development project together with Molex Antenna Group, Copenhagen &
BayerMaterialScience



Examples – Electrical Function

Innovative MMI Concept:



- **PET/ABS Film 0,5mm**
copper cladded
- **High Pressure Formed**
Forming height ~45mm



- **Contour trim**

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Intelligent automotive exteriors surfaces

Easy-to-clean surface (plastics)



COMFORT & Style (hydrophobicity, easy-to-clean)

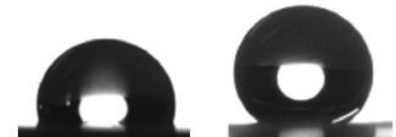
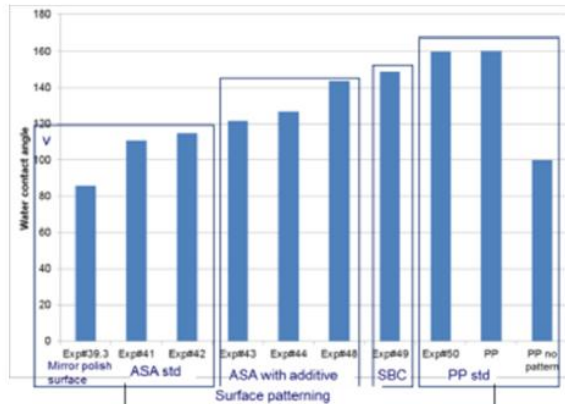
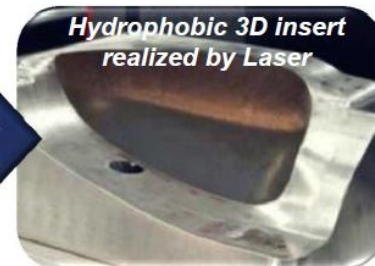
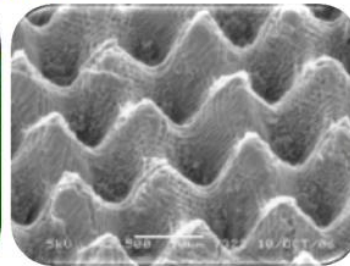
ADDITIONAL FUNCTIONALITIES (satin touch, matt effect, antiscratch)



- plastic components
- low cost processes to transfer to thermoplastic materials
- Conventional manufacturing process

- Injection moulding (patterning of surface)
- Additives (plastics)

Lotus leaf



Flat plastic surface

Patterned embedded plastic surface

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DECORATIVE AUTOMOTIVE PLASTICS
9th, 10th October 2012, Köln

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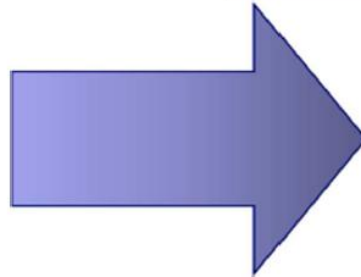
Automotive interiors surfaces

Chip-LED lighting systems



Advantages

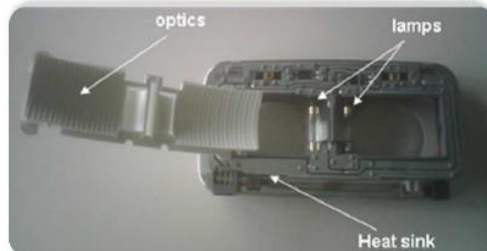
- Weight reduction
- Volume reduction
- Compactness
- Lower power consumption
- High lifetime



Conformable lighting module for
INTERIOR surfaces

- Lighting surfaces
- Functional dashboard
- Headlamps
- Courtesy lights

Current FronLamp → Weight 200g



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Novel FrontLamp → Weight 40g



Light-Rolls



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Xeros Bead Technology



The Xeros Machine

A revolution in laundry

What makes the Xeros machine special

At first glance the Xeros washing machine appears to be typical laundry hardware. The front-loading door is reminiscent of a high-efficiency washing machine, and the controls are designed to be familiar to a first-time user.



However, there is much more to this device than the reassuringly familiar exterior suggests. Behind the Xeros machine's not-so-different façade lies a revolutionary new technology. This unique system gives the Xeros machine the ability to:

- Wash laundry with special polymer beads.
- Remove the beads from the laundry once the clothes are clean, ready for hundreds more wash cycles.
- Save water, energy, and detergent on every load.

The proprietary Xeros polymer bead washing system includes several key Xeros-designed components that allow it to take full advantage of this bead-cleaning system:



THANK YOU

