



Skintec

the newest high tech
thermoplastic composite laminate
for competitive structural
automotive components

Gianluigi Creonti by Structura



Skintec PBT

what is it ?

A Composite Laminate

- With Glass fibers
- With Basalt fibers
- With Carbon fibers

A Thermoplastic Laminate

- In situ polymerized PBT resin impregnation

A Thermoformable Laminate

- With an industrial line at 15 sec/unit productivity
- Internally developed and patented IP

An Easily Recycling Laminate

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how is it produced ?

- i Continuous lamination technology

- i In a continuous feed line - max 3500 mm width
- i In a line with over 6 million m²/year capacity
- i In a plant located in Brandenburg, Germany

- i “In situ polymerisation” technology

- i Internally developed and patented IP
- i First and Unique in the world

SkinTec PBT

Mechanical Properties Overview

		SkinTec PBT -					
		1274-0	1275-0	1382-0	1385-0	1386-0	1492-0
No. of glass textile layers		2	2	3	3	3	4
Thickness	mm	0,90	0,93	1,26	1,30	1,34	1,59
Tensile Strength	MPa	165	167	257	250	284	227
Tensile Modulus	GPa	16,2	15,1	18,6	17,6	16,7	16,2

Tests carried out in accordance with ASTM D3039-07.

Fibre glass weight = 70% of the total

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supplies

i Laminates will be supplied as :

Coils

Preforms

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next step

- | **From laminates ?**
 - | **Panels** with patented technology
 - | Thermotec insulation panels
 - | Pantec structural panels

 - | No glue (Jeko technology)
 - | No VOC
 - | No Emissions
 - | Basically no limits to core inserts
 - | Foams (**PET panels are thermoformable**)
 - | Honeycombs
 - | Wood
 - | Other

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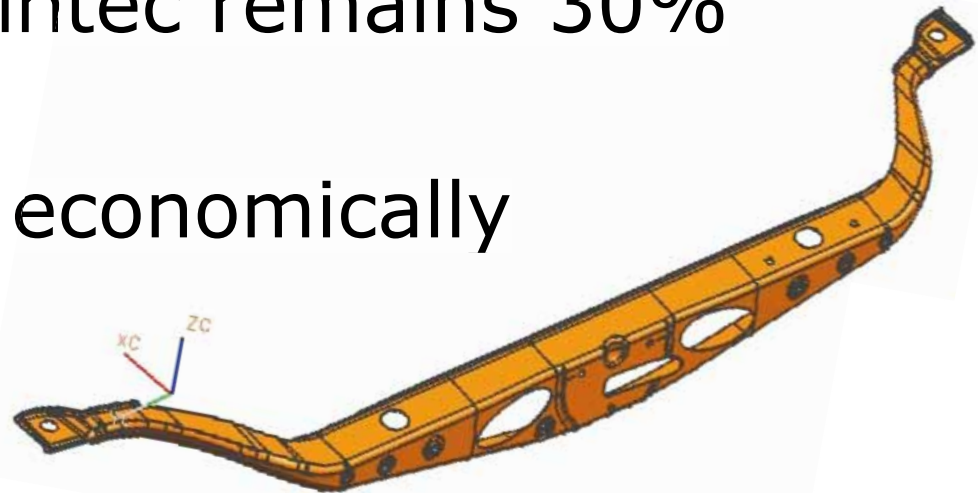
more next steps

- | **From laminates and preforms ?**
 - | Thermoformed parts with proprietary technology
 - | Structural
 - | Shaped
 - | Quasi isotropic
 - | Non isotropic
 - | Very fast - 15 sec max process
 - | Very high throughput
 - | Very Light and very tough
 - | Very competitive with steel

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“isotropic” consideration

- i A front end beam example
- i At equal mechanical performance and equal design with double steel thickness, Skintec remains 30% lighter
- i ... and is still, economically competitive



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"non-isotropic" considerations

- i Certain mechanical requirements are necessary only in certain areas of the beam
- i All other areas of the beam are over-designed
- i **Therefore a non-isotropic design is ideal**
- i **A more than 50% weight saving is possible**

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what is "anisotropic" design?

- i Specific **fiber design** in specific areas
- i Specific **thickness** in specific areas
- i Specific **fiber orientation** to create the required resistance in the required direction
- i Redesign with multiple function integration
- i Proper "anisotropic" component design by **MTAD** (Material and Technology Aided Design)

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today possible applications automotive and avionic

- i Front beam
- i Side front beam
- i Central beam integrated with dashboard
- i Front seats structure
- i Rear seats structure
- i Flat bottom
- i Structural underbonnet components
- i Crash boxes
- i Integrated chassis
- i Panelled components
- i

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tomorrow possible applications automotive and avionic

- i Bonnet
- i Hood
- i Doors
- i Fenders
- i Wings
- i ...body parts generally speaking ...

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Costs

- i All-inclusive Skintec part cost = **€ 9/kg**
 - i raw material with MTAD anisotropic design
- i Additional saving are possible with other function integration

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aesthetics

- | **Non-aesthetic as it is, but**
 - | Can be supplied with a primer for in line painting
 - | **Easy adhesion to a surface finishing layer**
 - | Powder coating
 - | IMC (aesthetic trim film, etc)
 - | Metal laminates
 - | **Easy solvent painting**
 - | **With primer or plasma, easy water painting**

Who is IQ?

- Producer of semi-finished composite products
- Offices in Switzerland and Germany
- Production is located in Germany
- Sales partners in Asia, North America, Scandinavia and Italy

Who is Structura?

- i South Europe Agent and strict partner of IQ
- i Producer, with IQ technology, of composite panels, in Italy
- i Offices in Italy

Crossfire MTAD

(Materials and Technology Aided Design)

New Technology development and their Industrial Applications

- ¡ Connection between Material transformation technology and Design
- ¡ Composites Know-how in Design and Processes
- ¡ Driver behind Structura marketing activity
 - ¡ Isothermal commercial vehicle transformations (freezer/refrigerator vans)
 - ¡ Automotive and camper applications
 - ¡ Architectural applications
 - ¡ Yacht applications
 - ¡ Jet applications

Thank you

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