



3A Composites - Corporate Profile



3A Composites History – More than 50 Years of Experience



algroup



SCHWEITER TECHNOLOGIES

Schweiter Technologies acquires Alcan Composites from Rio Tinto

ALUCOBOND™

Developed by Alusuisse in Singen, DE

Merger of Alusuisse and Lonza

Alusuisse Composites Group founded

Alcan acquires algroup; Alusuisse Composites becomes

ALCAN COMPOSITES

RIO TINTO

Rio Tinto acquires Alcan



1962 **ALUCOLUX™**

KAPA
Acquisition

BALTEK™ GATOR™
Acquisition Acquisition

Alcan Composites re-branded as


AIREX

Airex AG founded in Sins, Aargau by Lonza

Lonza

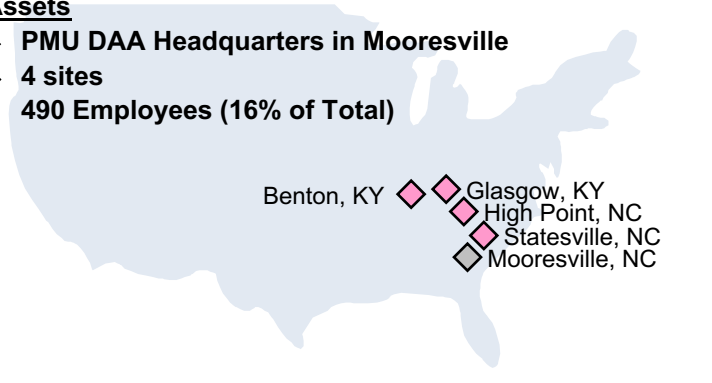



Global Footprint - Bridgeheads in High-growth Economies

USA 

Assets

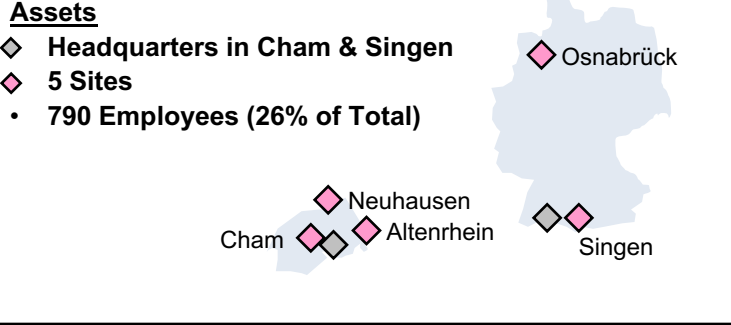
- ◆ PMU DAA Headquarters in Mooresville
- ◆ 4 sites
- 490 Employees (16% of Total)




Germany 

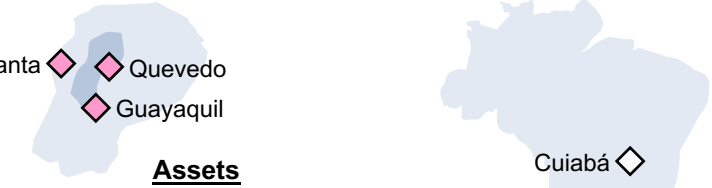
Assets

- ◆ Headquarters in Cham & Singen
- ◆ 5 Sites
- 790 Employees (26% of Total)




 **Switzerland**

Ecuador 




Assets

- ◆ 3 sites
- ◆ Sales office
- 8'500 ha plantations in Ecuador
- 850 Employees (44% of Total)

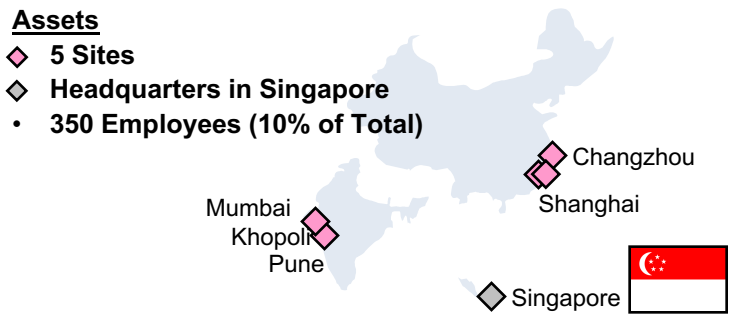
 **Brazil**


Cuiabá ◆


China 

Assets

- ◆ 5 Sites
- ◆ Headquarters in Singapore
- 350 Employees (10% of Total)



 Singapore ◆

 **India**



3A Composites

a Schweiter Technologies company

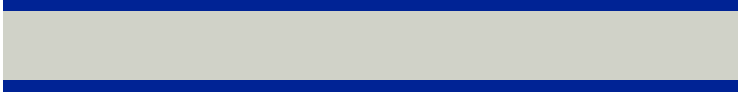
An Intelligent and Efficient Material Approach

Solid Material

- 
- Uniform mechanical properties



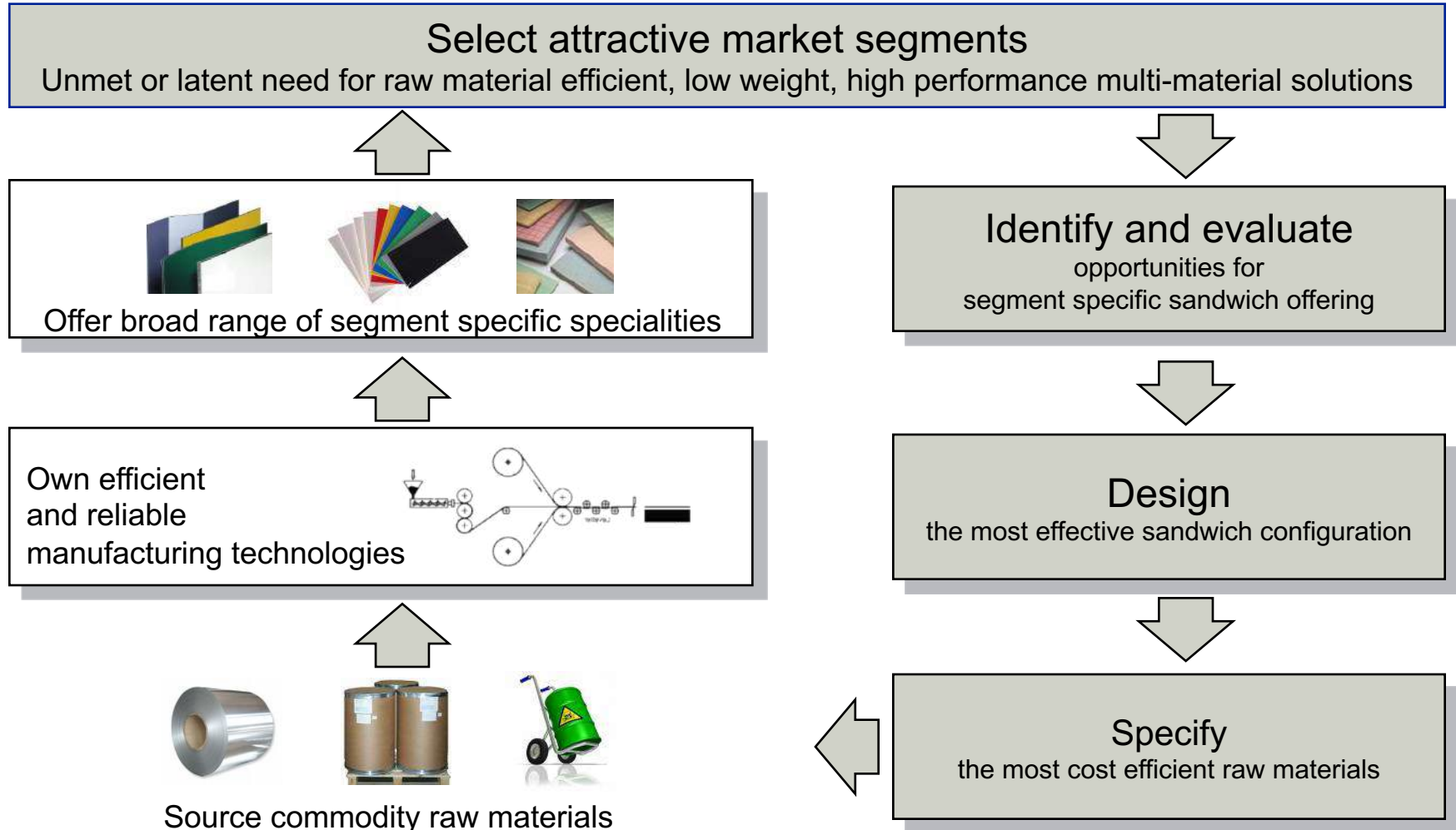
Composites Material

- 
- Thin, high performance skin material
 - Low weight core material
 - Adhesion between layers of highest importance

Advantages

- Low weight - high stiffness
- Excellent surface quality and thermal insulation
- Efficient use of raw materials
- Enables modular design concepts

The Business Idea



Broad Product Range and Market-leading Brands

Applications
Brands
Products

Structural Composites	Architecture	Display
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AIREX[®]
KITKORE[™]
BALTEK[®]
COLEVO | SUSTAINABLE LIGHTWEIGHT CONSTRUCTIONS

ALUCOBOND[®]
ALUCORE
ALUCOLUX[®]

FOREX[®] **DIBOND[®]**
GATOR[™]
FOAM-X^{NEW} **KAPA[®]**
FOME-COR[®]
SINTRA[®] **HYLITE[®]**

Structural Core Materials
 Engineering Foams and Balsa
 Structural Sandwich Components

Solid Aluminium Panels
 Pre coil coated
Sandwich Panels
 Aluminum skins and various core materials

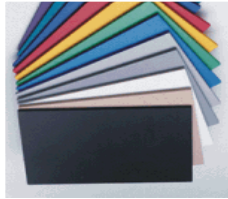
Sandwich Panels
 Metal, paper and plastic skins and foamed core materials

Display & Graphics Art put messages into focus

DIBOND®

FOREX®

HYLITE®

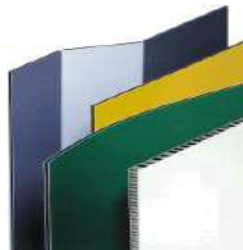


KAPA®

SINTRA®

FOME-COR®

GATOR™ FOAM-X® NEW



- Signage
- POS/POP
- Shop Fitting
- Exhibition
- Framing
- Fotomounting

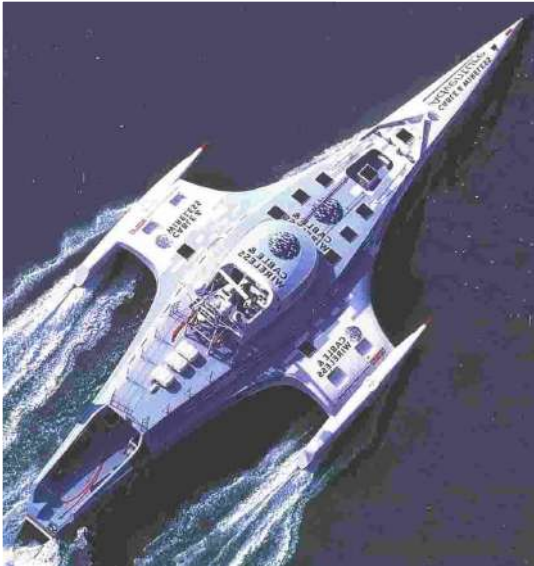


Core Materials enable lightweight mobile applications












AIREX[®]
KITKORE[™]
BALTEK[®]



- Wind Energy
- Marine
- Road
- Rail
- Aerospace
- Industry



Composite Structures is what OEMs rely on for the next generation mass transport solutions

Mass Transit		Automotive	Industry	Protected Mobility
<ul style="list-style-type: none"> Structural Sandwich Modules (Rail & Bus) (roofs, floors, panels, etc.) 	<ul style="list-style-type: none"> Structural Sandwich Rail Front Ends 	<ul style="list-style-type: none"> High Performance Car Components (spoilers, hoods, etc.) 	<ul style="list-style-type: none"> Industrial Applications (fan blades) 	<ul style="list-style-type: none"> Protected Mobility (motor hood)
  	  	  		



Composite Bridge Decks built from sustainable Balsa cores



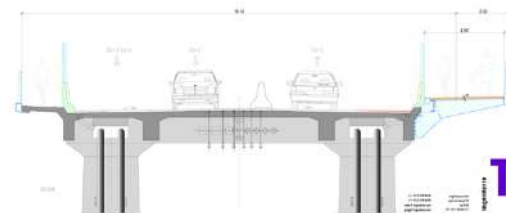
COLEVO Road Bridges

- COLEVO is the ideal lightweight composite bridge slab for road bridges or decks with a span of up to 8m
- Up to 85% weight reduction compared to concrete
- Faster and easier installation of prefabricated parts
- Highest durability for lower maintenance cost



COLEVO Pedestrian Bridges

- COLEVO pedestrian slab bridges can be used for free spans of up to 15m
- COLEVO bridge decks for slender large span bridges enable economic design
- COLEVO bridge extensions for pedestrians provide lowest load to existing bridges



The COLEVO Concept

- Sandwich with glass fiber reinforced vinyl-ester facing and FSC certified structural BALTEK® VBC core material
- Completely sealed surface on all sides for highest durability
- Industrial production in a clean and closed vacuum-infusion process

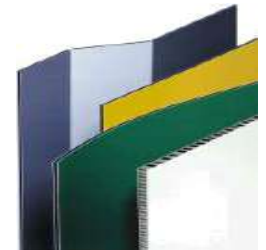


Architecture & CID is where we help protecting and dressing the best looking buildings

ALUCOBOND®
ALUCORE
ALUCOLUX®



- Facades
- Claddings interior & exterior
- CID applications



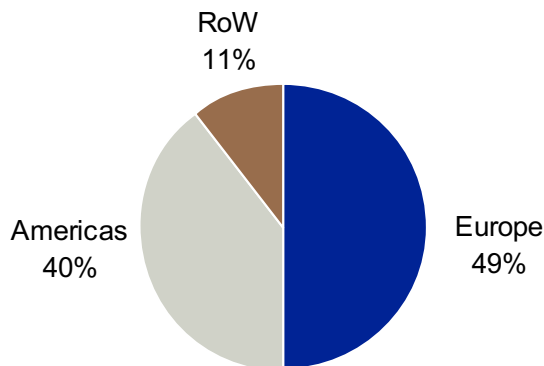


COMPOSITES

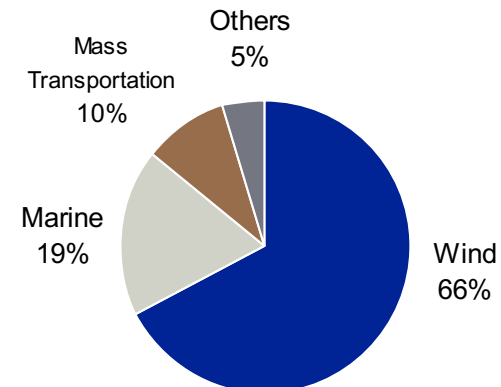
Business Focus and Strategy

- Manufacturer of high-performance, low-density core materials
- Used in structural and semi-structural 3D applications in the wind, marine and mass transportation industries
- Unique breadth of products available around the world
- Also includes specialty foams to complete its offering
- Supports customers with strong technical service on processability, material compatibility and sandwich design

Sales by geography



Sales by end market



Core Materials

Offering and competitive position

	Wind	Marine	Mass Transportation
AIREX[®] C70/71	<ul style="list-style-type: none"> – Unique closed cell, cross-linked PVC foam – high stiffness and strength to weight ratios with superior toughness 		
BALTEK[®]	<ul style="list-style-type: none"> – Certified kiln-dried balsa wood in the 'end-grain' configuration – Extremely high strength and stiffness to weight ratios, excellent fire performance 		
AIREX[®] T90/92	<ul style="list-style-type: none"> – Closed-cell, PET-based structural foam – Easy to process and high thermal stability, good fire performance 		
Specialties	<ul style="list-style-type: none"> – Structural foams: specialties with high damage tolerance, extreme FST properties – Kit offering, soft foams, etc. 		

Competitive position

#1 position

- Clear leader
- Backwards integrated in balsa

#2 position

- Strong position due to depth of product range

#1 position

- Clear #1 player in segment with significant growth potential

Snapshot Wind Market Dynamics and Strategy

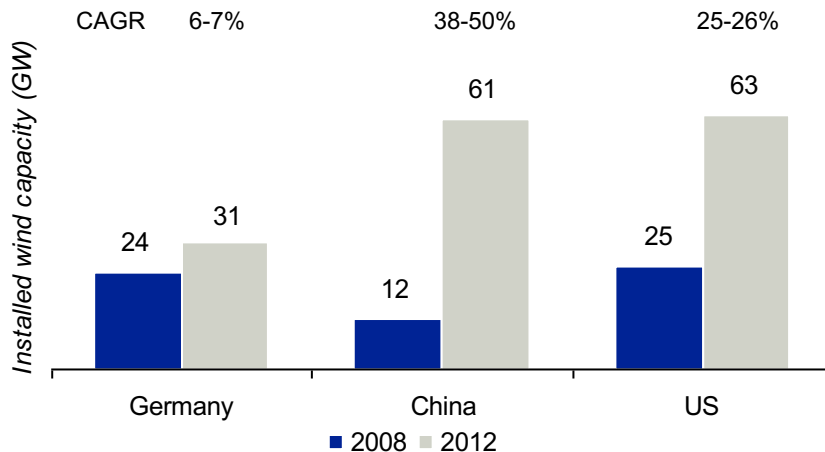
Market environment

- Driven by increasing demand for renewable energy
- Wind energy takes a large share within the segment of renewable energy
- Originated in Europe; both China and the US have also made significant commitments

Business strategy

- Offering a full range of universal and specialty core materials to serve wind energy OEMs
- Composites responsible for 70% of world balsa production
- Focusing on sandwich design being the most economical solution
- Follow leading global customers and manage capacity increases are key success factors going forward

Wind growth



Source: GWEC 2009, BTM Consult 2009, EER 2009





LM Glasfiber







Airex Composites Structures (ACS) – Leading supplier of components for road and rail

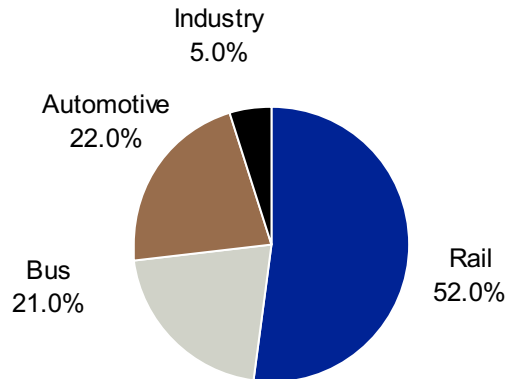
Business focus

- Manufacturer of 2-D and 3-D structural sandwich solutions for rail and bus applications
- Also supplies 3-D composite solutions for industrial and automotive markets
- ACS is primarily a project based business

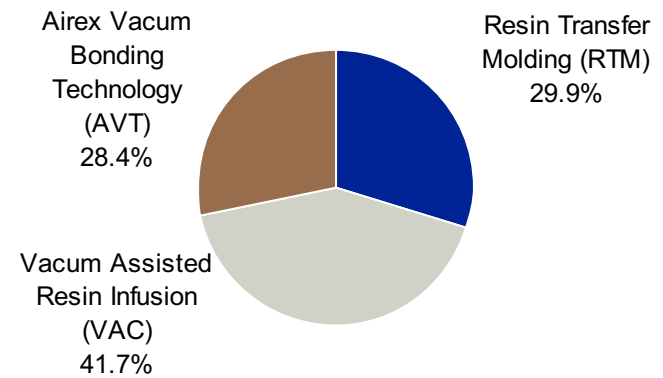
Fast facts 2009

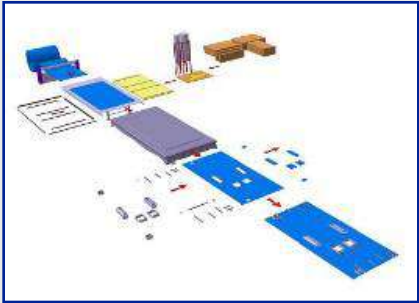

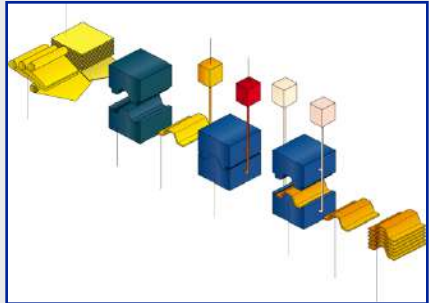
- Key Customer of Core Materials
- FTEs: 120
- Location: Altenrhein, Switzerland

Sales by end market



Sales by technology

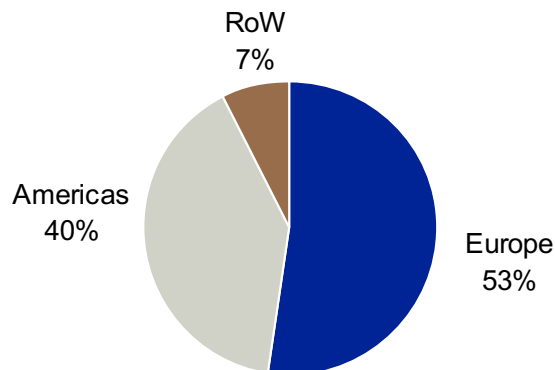


Airex Vacuum Bonding Technology (AVT)	Vacuum Assisted Resin Infusion (VAC)	Resin Transfer Molding (RTM)
		
<p>Application Area</p> <ul style="list-style-type: none"> ▪ Bus, Rail and Protected Mobility/ Defence <p>Raw Materials</p> <ul style="list-style-type: none"> ▪ Aluminium, Steel, GFR skins ▪ PVC, PS, PMI, and PEI foam cores as well as Balsa cores ▪ Integrated aluminium extrusions <p>Advantages</p> <ul style="list-style-type: none"> ▪ Low weight sandwich structures with high stiffness, ready for pre-assembling ▪ High potential for the integration of functions ▪ High dimensional accuracy ▪ Low tooling investment required 	<p>Application Area</p> <ul style="list-style-type: none"> ▪ Primarily Rail <p>Raw Materials</p> <ul style="list-style-type: none"> ▪ Glass fiber mats ▪ Filled UP resins ▪ PVC, and PMI foam cores as well as Balsa cores <p>Advantages</p> <ul style="list-style-type: none"> ▪ High dimensional accuracy ▪ Consistent product quality ▪ Function integration ▪ Closed process, low emission (EHS) 	<p>Application Area</p> <ul style="list-style-type: none"> ▪ Automotive ▪ Low noise fan blades <p>Raw Materials</p> <ul style="list-style-type: none"> ▪ Glass-, Carbon-fibers ▪ EP, VE, UP-resins ▪ PUR, PVC, and PMI-foam cores as well as Balsa cores <p>Advantages</p> <ul style="list-style-type: none"> ▪ ACS is technology leader ▪ Consistent product quality ▪ Class A surface quality ▪ Short-time from design to first part ▪ Best for complex shapes w/ hollow parts

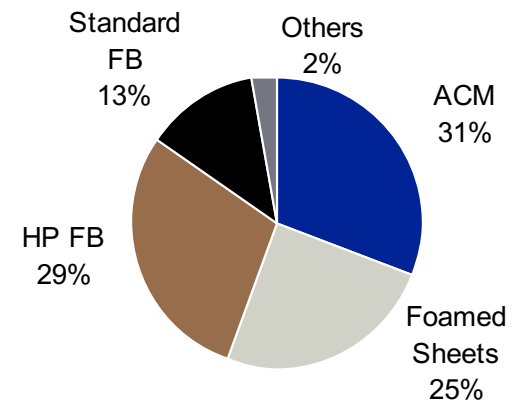
Business Focus

- Produces, markets and sells a wide range of rigid opaque substrates
- Major segments are general signage, shop fitting and print for advertizing
- High-quality graphics surfaces at premium pricing
- Focus on developing distributor relations, innovations and extension of product range
- Serving geographical markets with different products
- North America is a more paper foamboard oriented market
- Europe uses more foamed sheets and ACM
- Asia has little high-end substrate use yet, but a very large low-end market

Sales by geography



Sales by category



Display

Offering and competitive position

	Standard FB	HP Foamboard	Foamed Sheet	ACM Display
Offering	FOME-COR[®] FOAM-X^{NEW}	GATOR[™] KAPA[®]	FOREX[™] SINTRA[™]	DIBOND[®]
	<ul style="list-style-type: none"> ▪ Broadest display offering in the Western world offering substrates from \$1 to \$50/m² and up to 2 meters width ▪ Across categories, a specialized direct digital printing version is available ▪ Can supply combined shipments of a range of substrates ▪ Logistics, service and support expertise leverage the power of the bundle 			
Competitive position	#1 or #2 position	#1 position	#1 or #2 position	#1 position
	<ul style="list-style-type: none"> ▪ Mainly a US market ▪ Service for high-volume projects 	<ul style="list-style-type: none"> ▪ Very strong position for higher end advertising ▪ #2 player in US sources core materials from Composites 	<ul style="list-style-type: none"> ▪ Focused on Display needs, while others have significant construction business 	<ul style="list-style-type: none"> ▪ LCC competitors have recently gained share ▪ Leading through specialties and innovation

Source: Company

Markets and Customers

- North America's retail market drives majority of US sales and there is tendency to use lower end substrates at the bottom of the cycle
- Central European markets continue to be quality-oriented, while Southern Europe, UK and Eastern Europe show growing demand in lower end
- Digital printing technology changing both needs for specific substrates as well as structure of the printing industry

Business strategy

- Marketing to converters, printers, big box retail
- Focus on relationship with select distributors
- Achieve and single sourcing where feasible and promote value of the bundle
- Maintain a strong position and wide range of category-defining brands
- Lean sales force and focus on long term clients
- High penetration in US, Western Europe with further potential in South America, Eastern Europe, Russia, Middle East, India and Asia in general



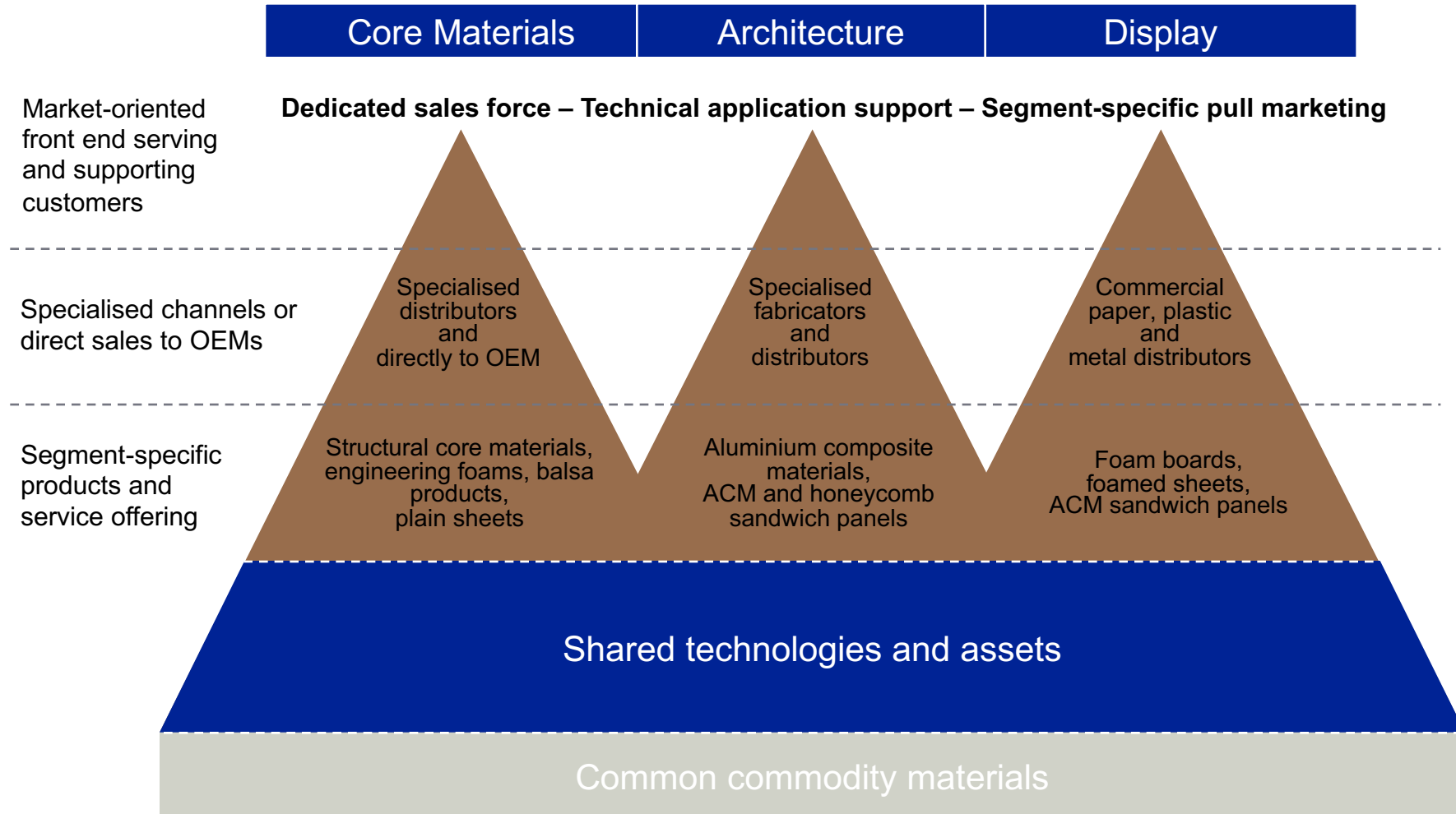
SABIC
Polymershapes



ThyssenKrupp

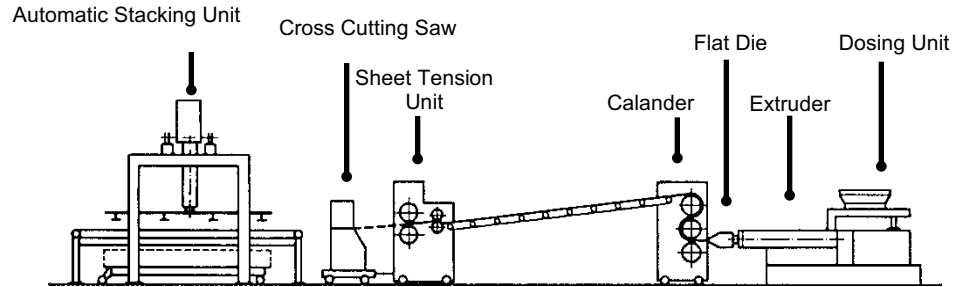


Specialised front end and synergistic back end



Extrusion / Co-extrusion Process

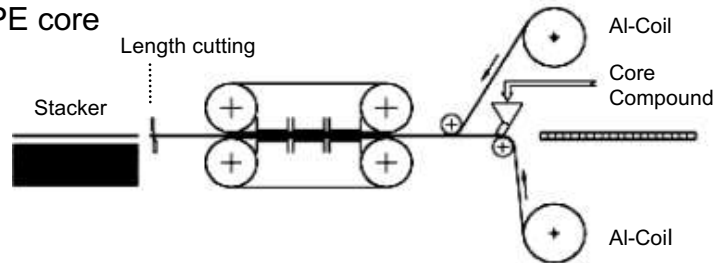
Production of foamed PVC sheets and rigid PS and PET foam planks



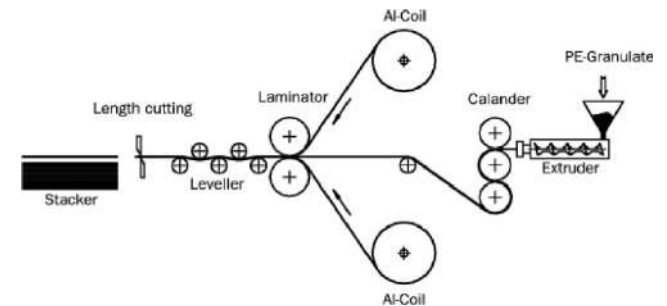
Continuous Lamination Processes

Painted aluminium skins are laminated to extruded PE core or to prefabricated honeycomb core

Double-Belt Press



Roll-Lamination

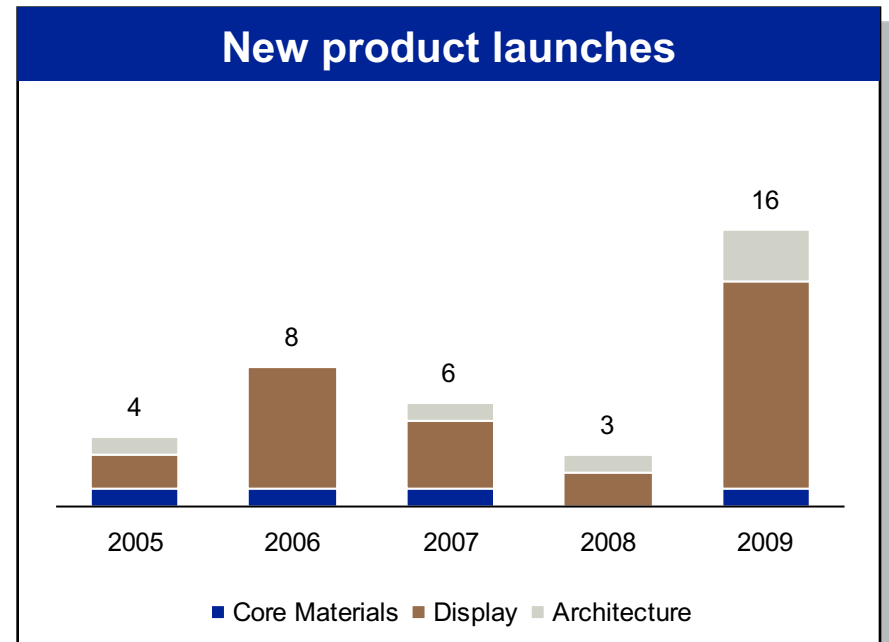


Integrated Sandwich Panel Production of PUR and PS Foamboards with paper liner or GRP skins



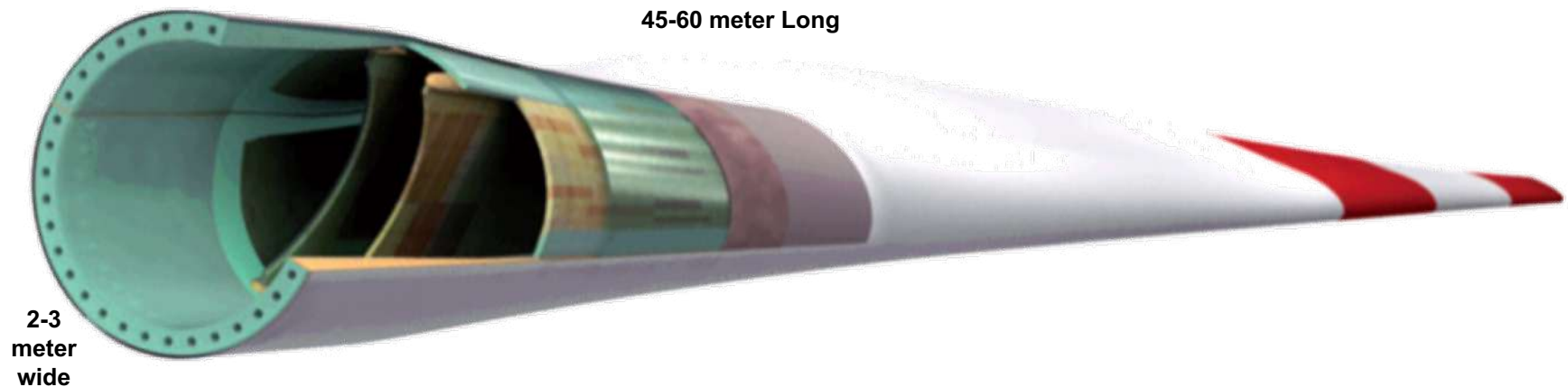
Best-in-class Development and Innovation Capabilities

- Composites focuses on product and process development
- The key elements are:
 - Innovation Management at Composites *im@c*
 - Central R&D in Neuhausen
 - Local R&D in key European and US sites
- R&D spend in 2009 is approximately 1.5% of net sales



- Innovation emphasis:
 - market, customer and technology scouting
 - strategic product development roadmaps
 - competencies identification and development

Business Segment Core Materials Typical Wind Blade Construction



- Manufactured using polymer matrix composite materials (PMC)
- Combination of monolithic (single skin) and sandwich composites
- Present day designs are mainly based on glass fibre reinforced composites (GFRP)
- Carbon fibre reinforced composites (CFRP) are being used increasingly for very large blades to reduce the weight
- Infusion, vacuum-assisted resin transfer molding (VARTM) and Prepreg in open molds are today the dominant manufacturing technologies

Industrial plantations are key for sustainable production of balsa wood

- The cultivation of our balsa is based on a long-term and environmentally sound strategy. The balsa is not lumbered in the rain forest, the reforestation with balsa trees in the plantations is an ongoing cycle.
- After lumbering the tree, foliage plants are grown to ameliorate the soil. The use of fungicides and herbicides are minimal and is limited to local application.
- The logs are cut to lumber already at the border of the plantation thus minimizing transport and therefore further reducing environmental impact

