Advanced Composites

Growing market or unattractive niche?

Composite Conference Kiev, 13.02.2020

Sascha Hübers, Plastic Department

Competence in figures
BYK at a glance

145 years Competence

22% of all employees are working in R&D and technical service

Around **2,300** employees worldwide

35 Laboratory locations worldwide

1,066 € million sales

16 End Uses

Definition Advanced Composites

High strength, light-weight materials created by combining a reinforcing fiber/textile (or particle) with a compatible resin system.

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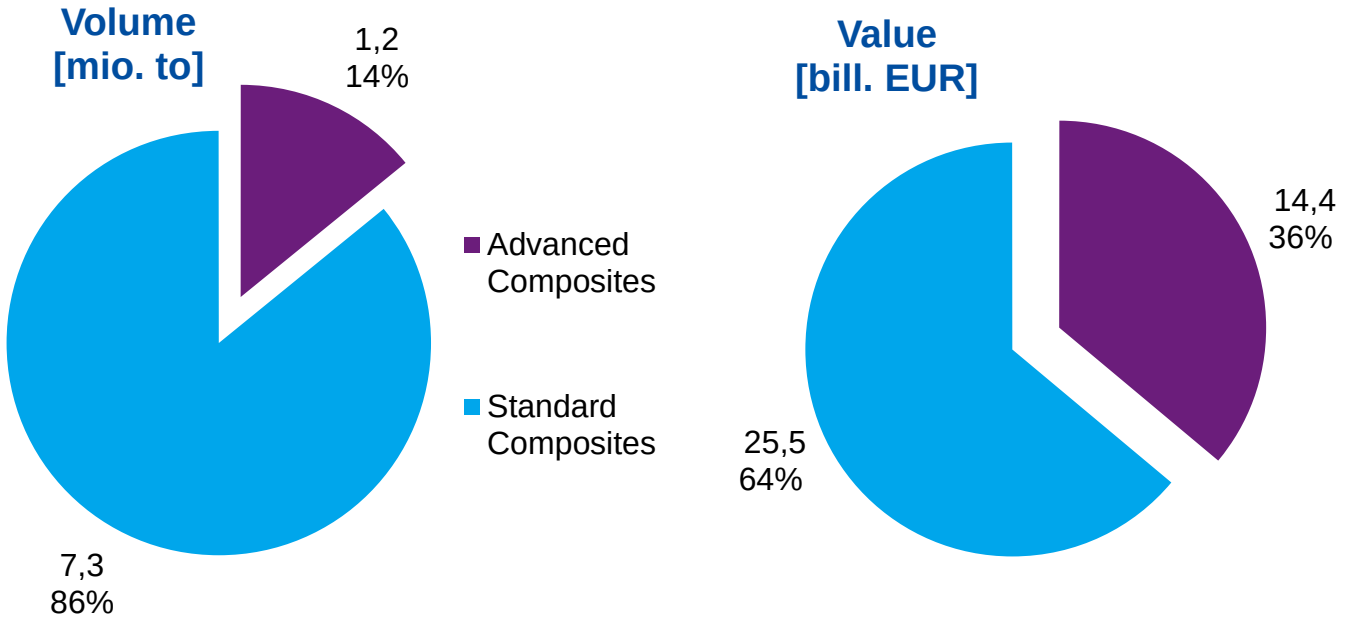
Characteristics

- Structural application
- Certified materials and parts
- Expensive raw materials
- Labor and time intensive
- High product price
- Smaller volumes

Market Share
Standard Composites vs. Advanced Composites



Advanced composites display only 14% of the total global composite market in terms of volume, but stand for 36% of the value.

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Focus Application

Automotive

Focus Application - Automotive

Market Driver: Regulation on CO_2 Emissions in the EU

By 2021, car manufacturer's have to achieve an average CO_2 emission with a maximum of 95g/km for new cars.
This correspond with 4l fuel/100km.
For each gram, to which this target is missed, a 95€ penalty is imminent.

http://www.zukunftstechnologien.info/auto-der-zukunft/organoblech-erobert-die-strassen
http://www.actu-environnement.com/

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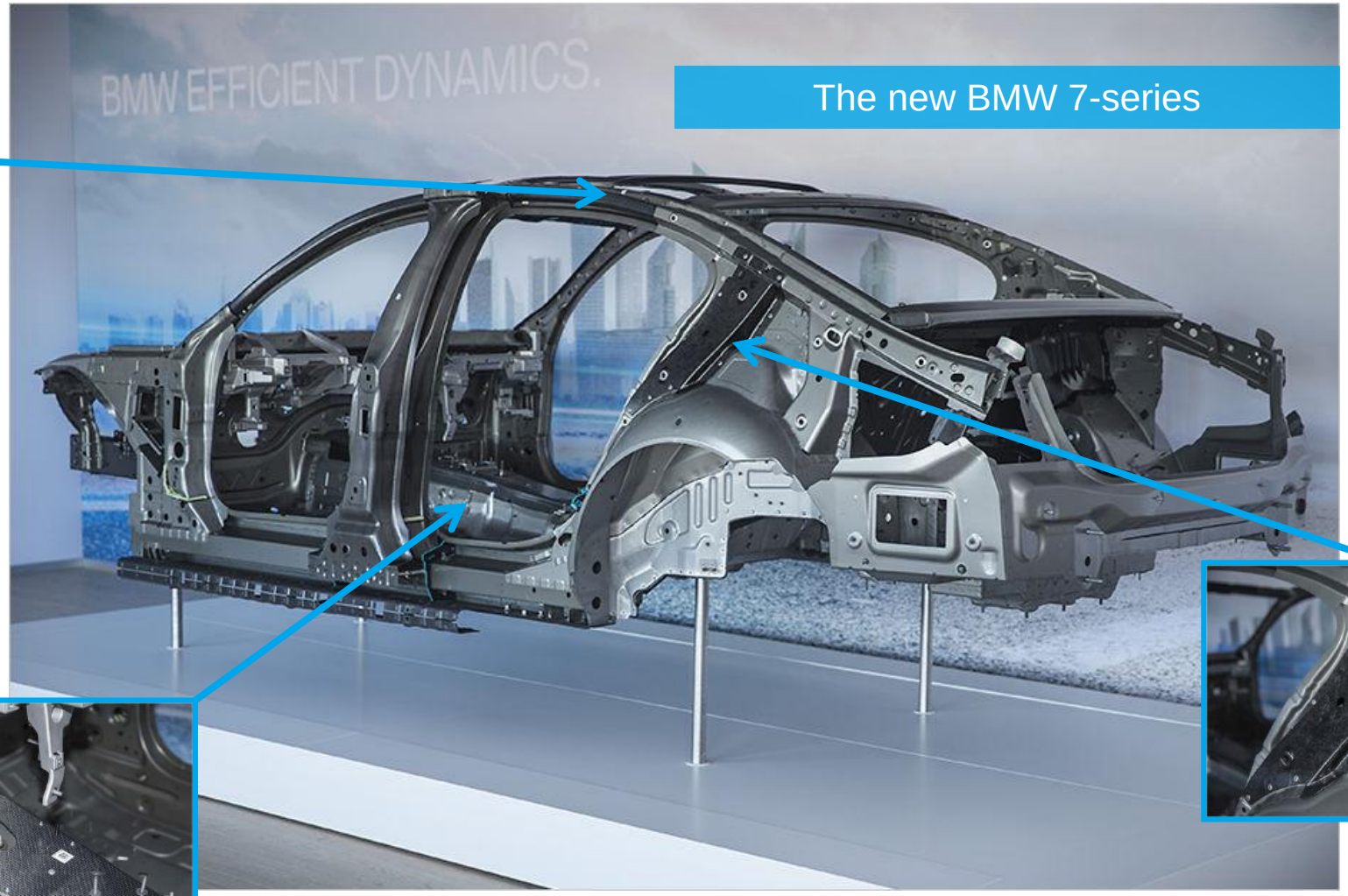
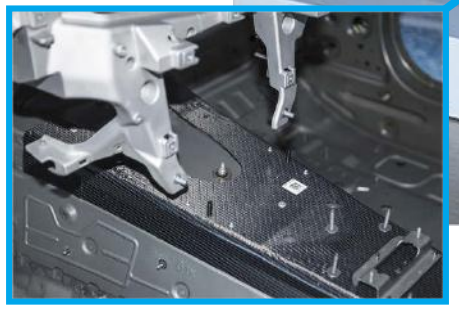
Focus Application - Automotive

Market Solution: Light Weight by CFRP



The new BMW 7-series



https://www.youtube.com/watch?feature=player_embedded&v=mFlMcOfO68M

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Focus Application - Automotive

Market Solution: Light Weight by CFRP

http://www.bmw.de

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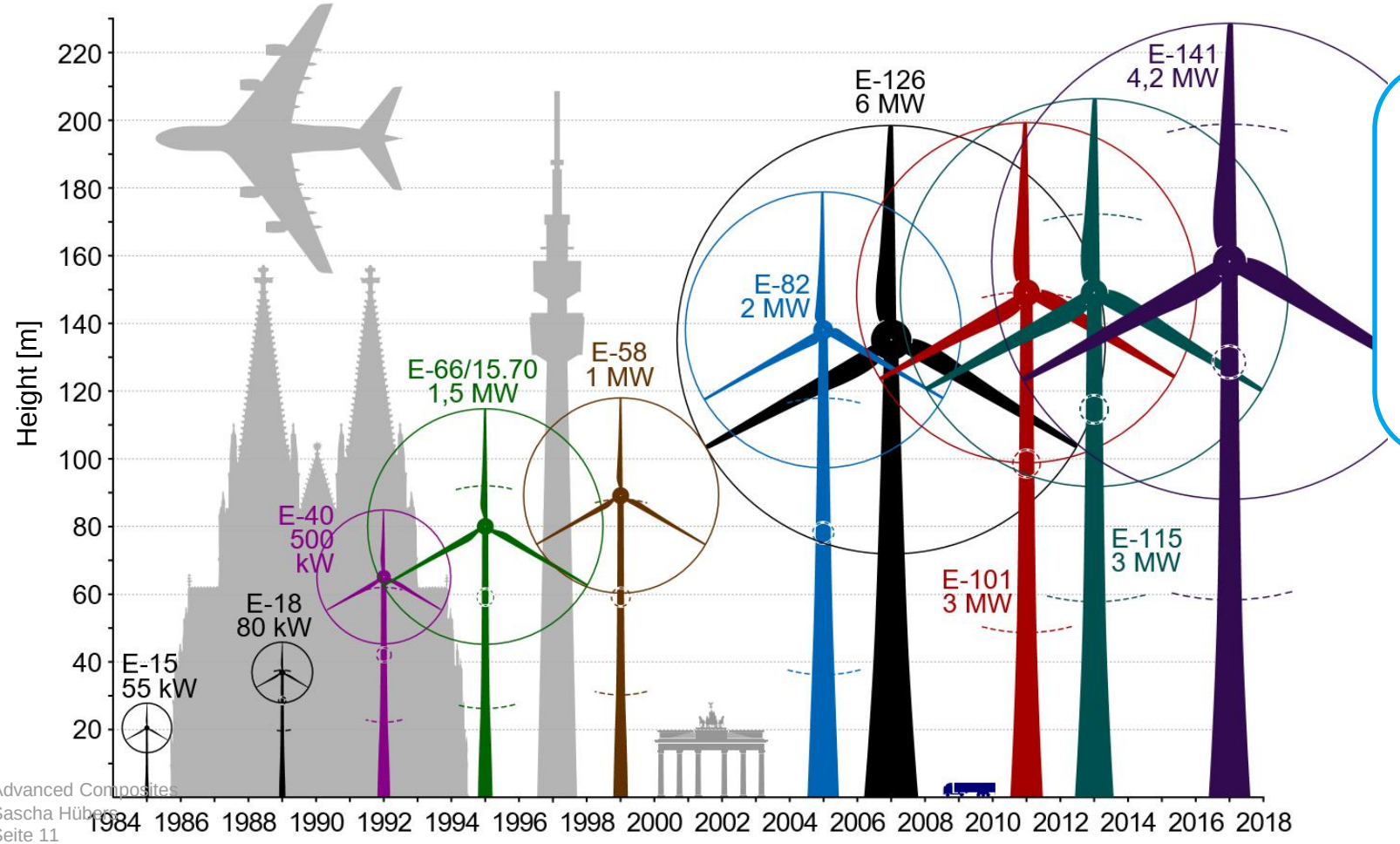
Focus Application

Windpower

Focus Application - Windpower
Market Driver: Efficiency



https://de.wikipedia.org/wiki/Windkraftanlage#/media/Datei:EnerconSizes_de.svg

The energy produced by windpower farms is too expensive compared to nuclear power or coal fired power plants etc.

The energy market is pushing for more efficiency, which leads to longer and lighter rotor blades.

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Focus Application

Aviation

https://www.evergladesuniversity.edu/wp-content/uploads/2015/11/Aviation-Maintenance-Technician-Schools-1.jpg

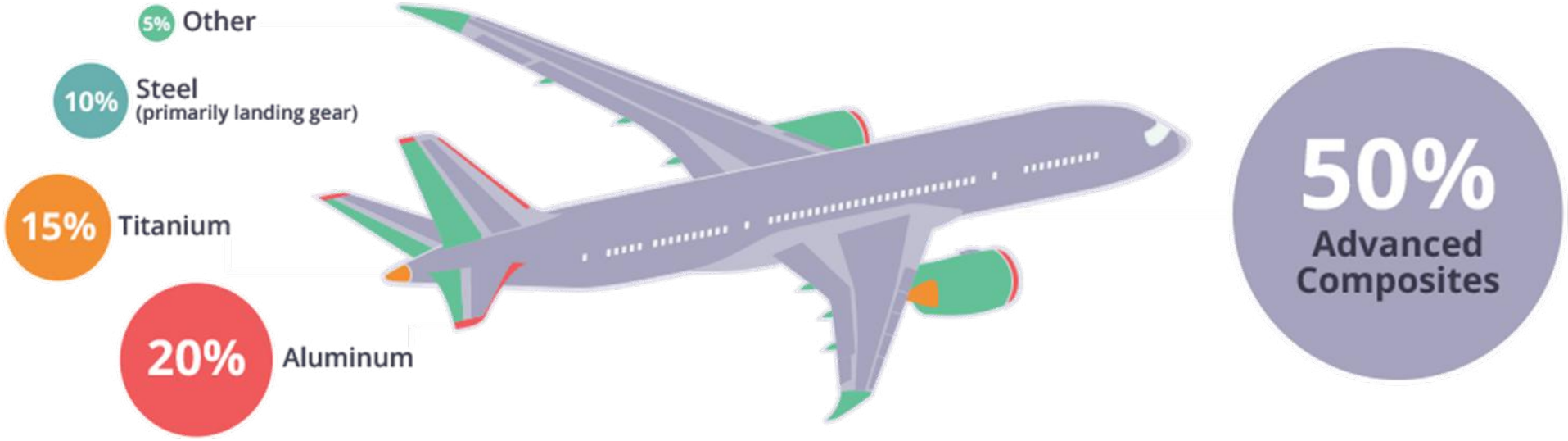
Focus Application - Aviation
Market Driver: Fuel saving

"One kilo less on all aircraft of Lufthansa German Airlines saves 30 tonnes of kerosene per year, according to the latest calculations."

http://www.lufthansagroup.com/fileadmin/downloads/en/LH-fuel-efficiency-0612.pdf

https://www.lufthansa.com/ar/es/aviones-especiales

Focus Application - Aviation
Market Driver: Fuel saving



Aircraft	Predicted Build Rate	Carbon fiber composite per aircraft	Total
Boeing 787	112	35 to	3.920
Boeing 777	80	10 to	800
Airbus A350	116	61.5 to	7.134
Airbus A380	45	35 to	1.575
		Annual demand for these four types of aircrafts	~ 13.500

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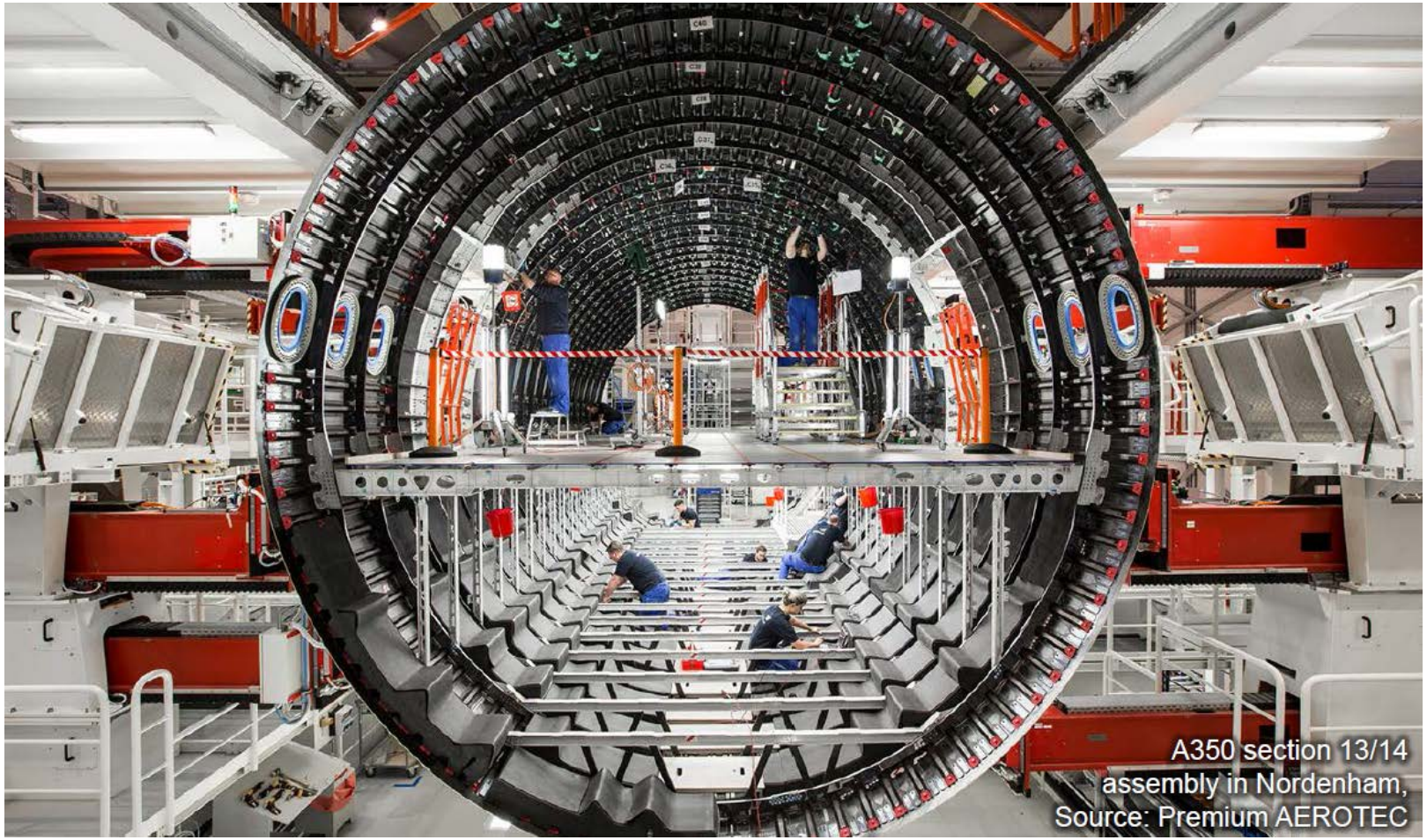
Focus Application - Aviation
Market Driver: Fuel saving


A350 section 13/14
assembly in Nordenham,
Source: Premium AEROTEC

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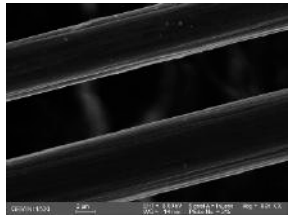
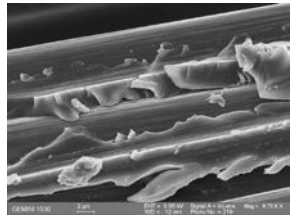
Interface Chemistry is Key for Advanced Composites





Interface

- Strength – Coupling Technology
- Light Weight – Processing Technology
- Easier Handling – Rheology Technology
- High Quality Parts – Processing Technology
- Processing Speed – Surface Technology

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BYK-C 8013
Coupling Additive for Vinyl ester / Carbon fiber Composites
Second Sizing

Advanced Composites

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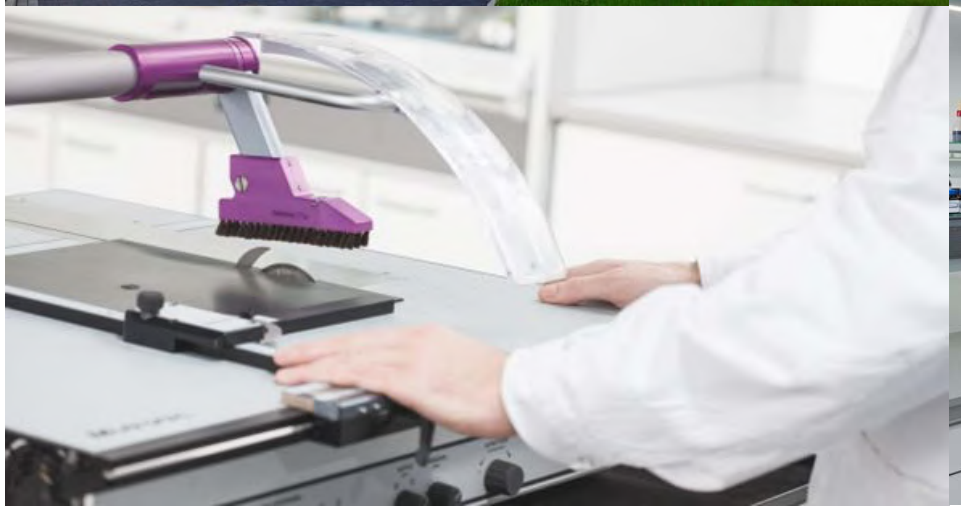
CIS Conference Baku, September 2019
Sascha Hübers, Plastic Department

Investments Advanced Composites



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