

Polytron[®]

Intelligence in every fiber

 **Polyram**
Group

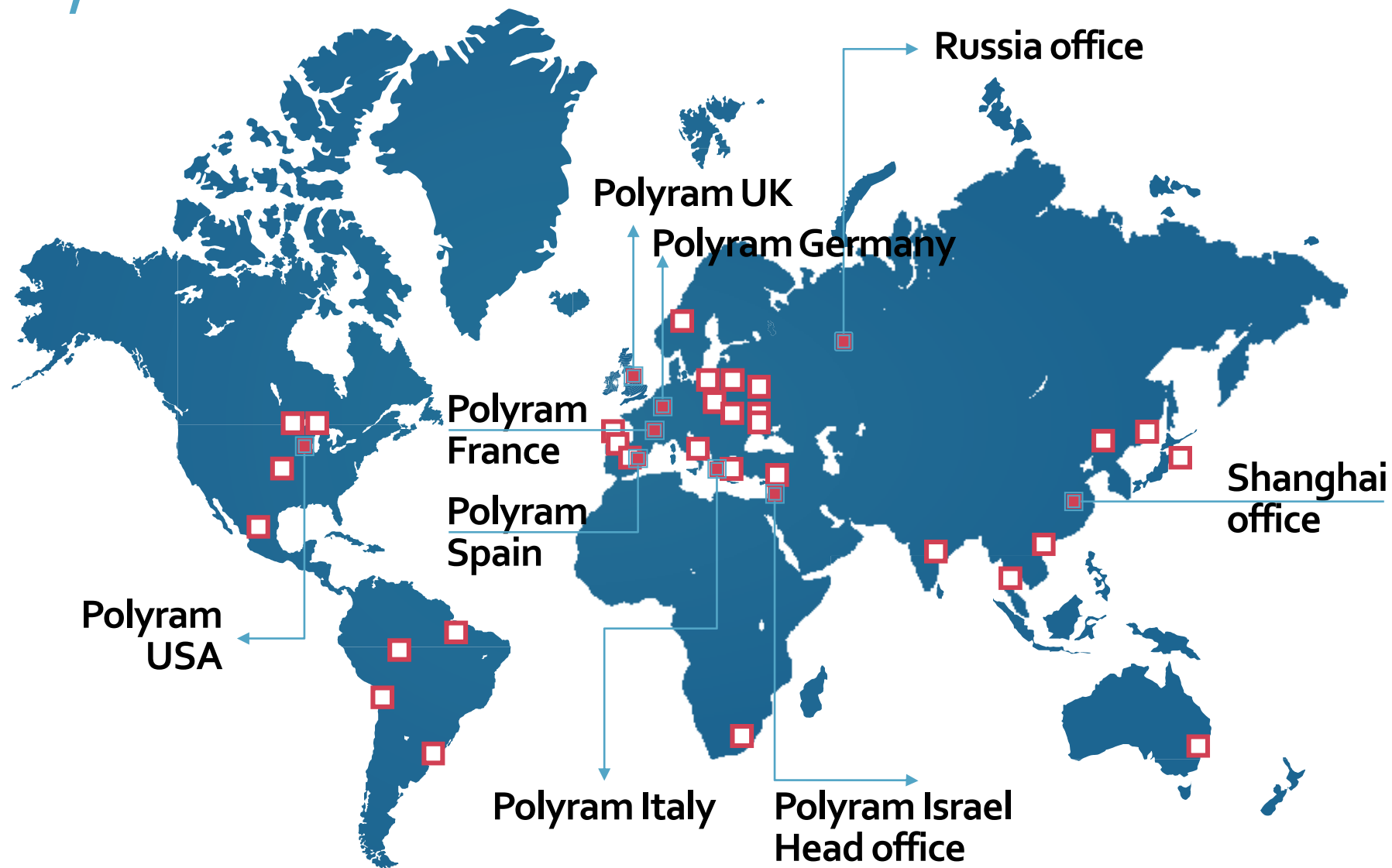




01

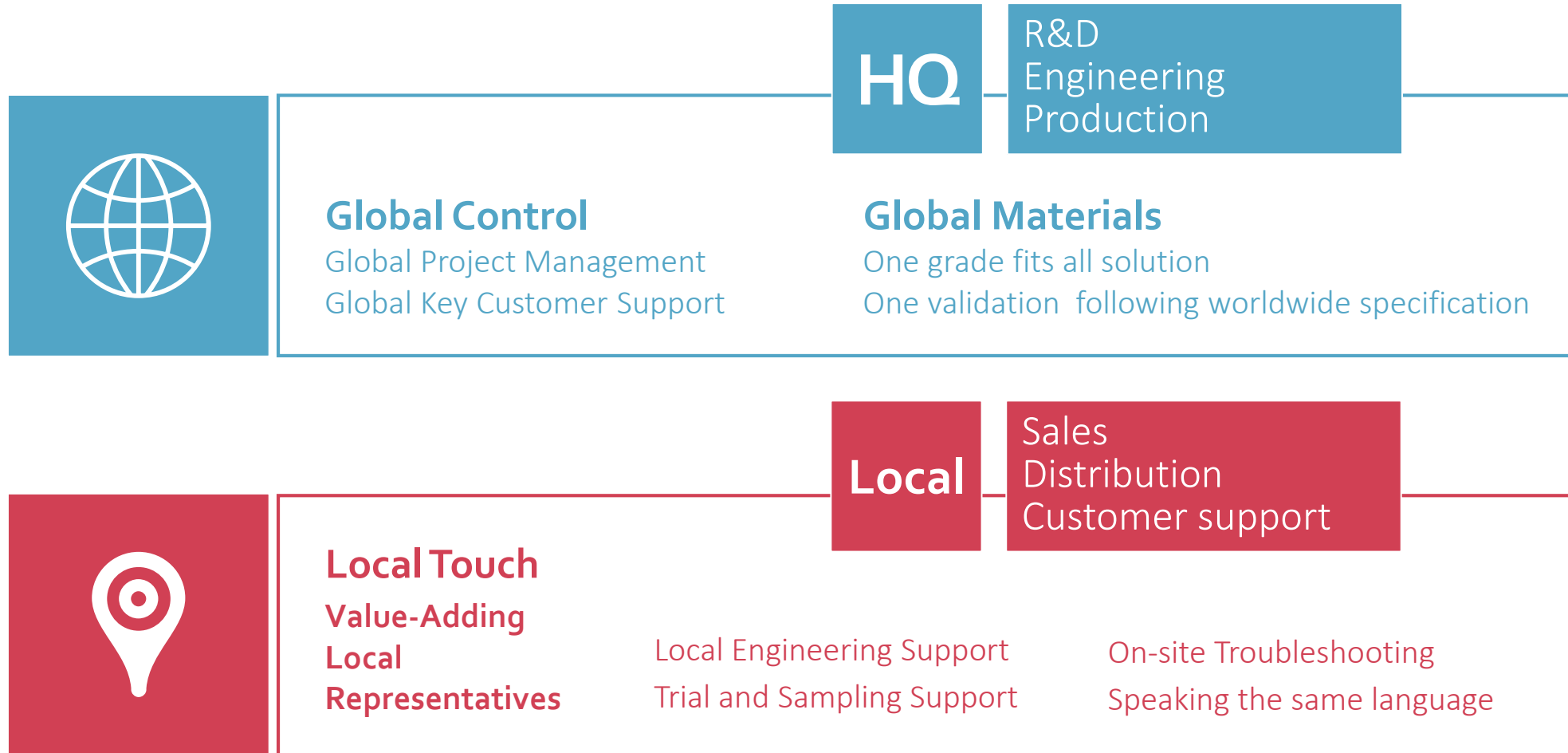
IDENTITY

A Global Player, Operating Close to You



Polyram Production	3 +1
Subsidiaries	6
Sales Offices	4
Distributors	40

■ Delivering Global Control and Local Support

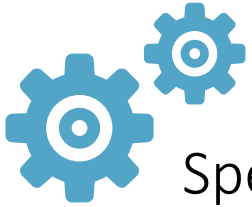


02

DNA



■ Polytron® - A Leader in Intelligent Thermoplastics



Specializing in
LFT solutions
that deliver:

01

Advanced Processes

02

High-performance

03

High-quality assurance

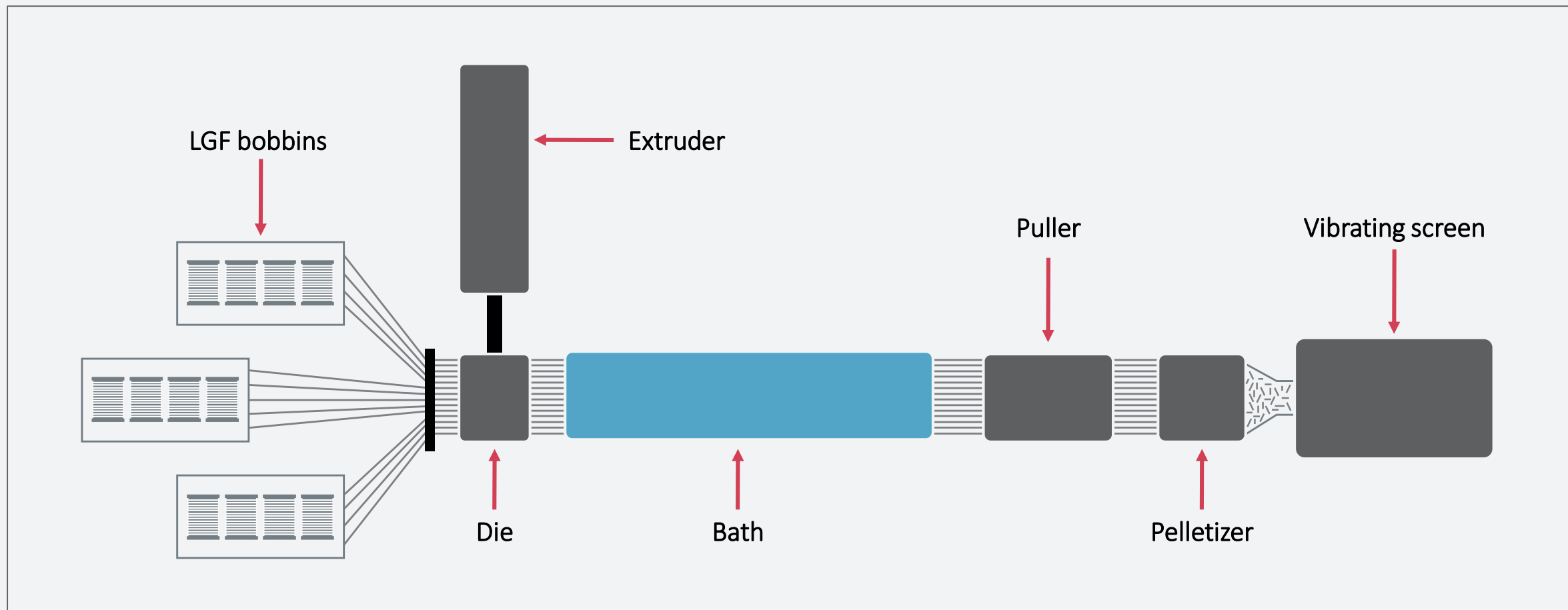
04

Cost-effectiveness



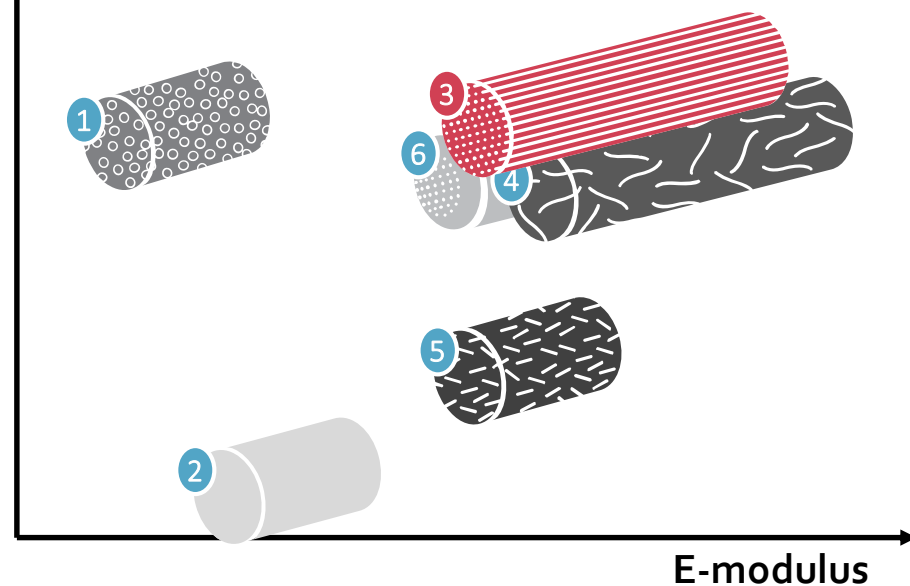
Driving you to
innovation
and competitiveness.







Impact
Behavior



1. Elastomer modified Plastic

2. Unreinforced Plastic

3. 'Pultruded' LGF Granules

4. LGF direct injection molding

5. Short Glass Fiber

6. Coating Fiber pellet

Superior Mechanical Properties & Performance

- ✓ Stiff and tough, even in cold temperatures
- ✓ Excellent dimensional stability
- ✓ Sound dampening
- ✓ Design freedom
- ✓ Superior mechanical properties
- ✓ Elevated temperature performance
- ✓ Creep resistant
- ✓ Ability to incorporate high fiber loadings

03

Committed to...

high-quality assurance



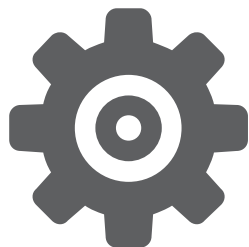
ISO TS certified in all Polyram production facilities



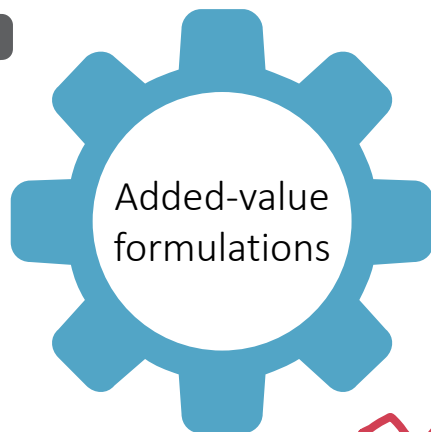
Safety dedicated quality assurance and production



State of the Art in-house testing and evaluation capabilities
Including computerized Fiber length analyses



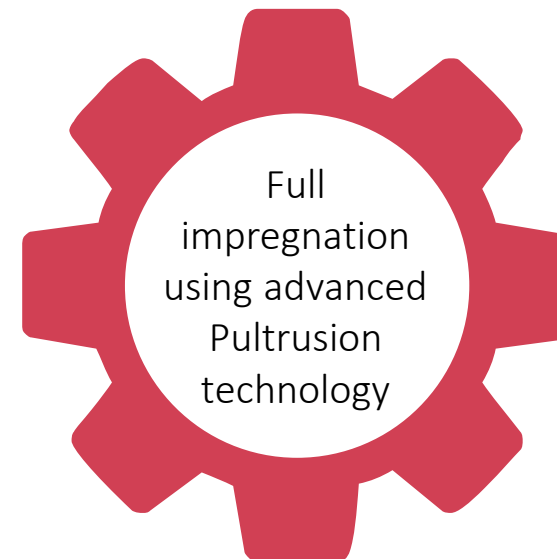
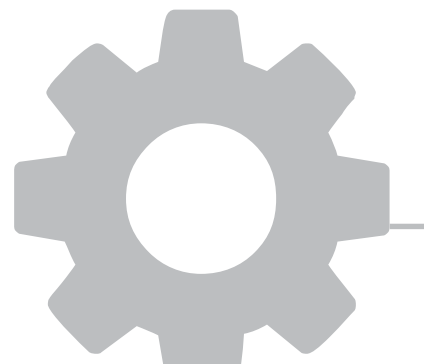
Freedom of high-performance raw material sourcing



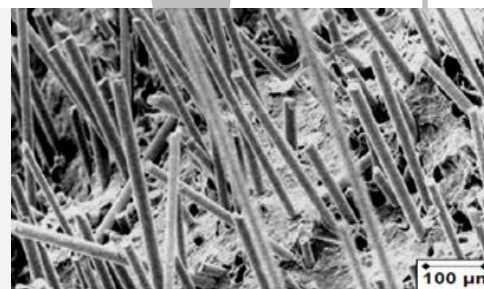
Added-value formulations



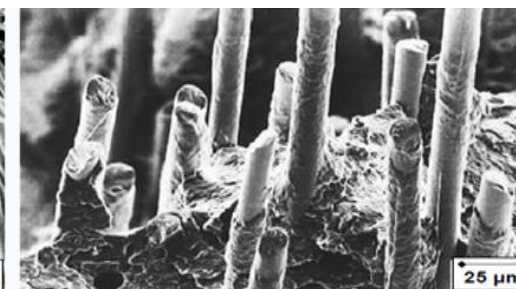
Added value in-house coupling agent production (Bondyram)



Full impregnation using advanced Pultrusion technology



poor coupling – „pull-out effect“

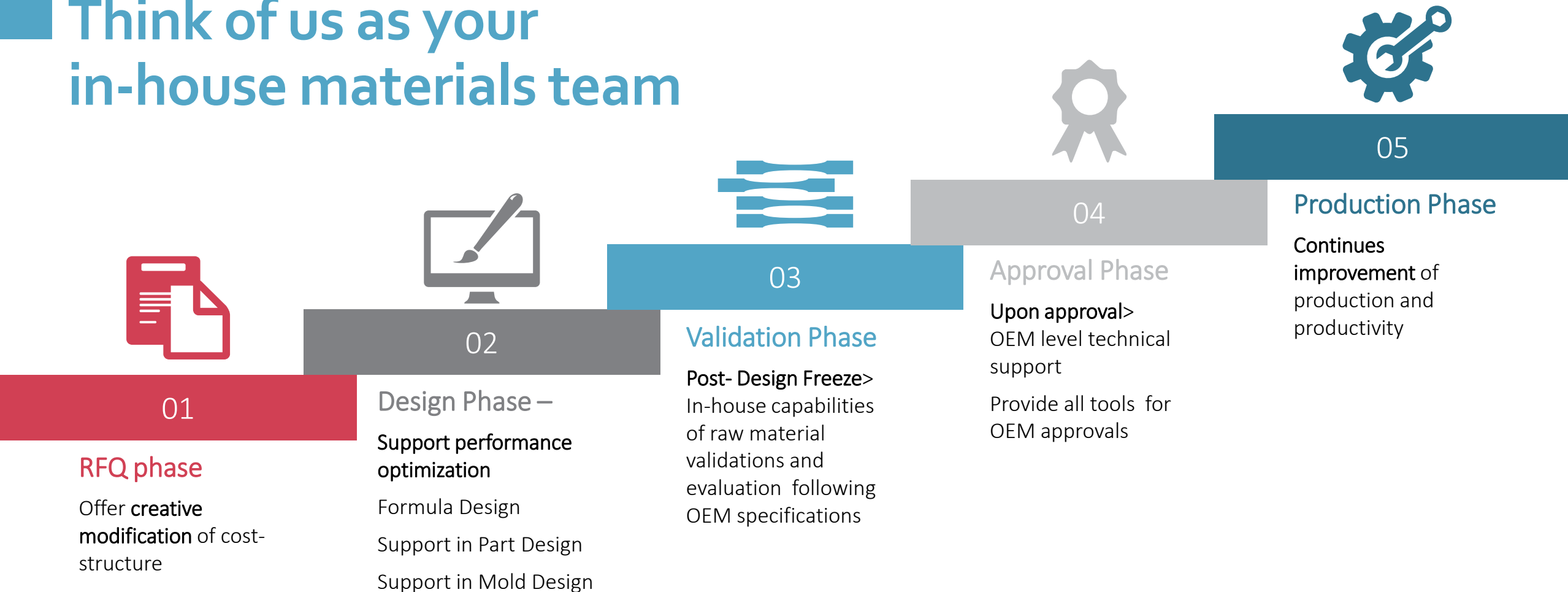


good coupling – „matrix deformation“



100%
focused on
supporting
your success

Think of us as your in-house materials team



Adding value to your product, every step of the way

Polytron® Product Portfolio

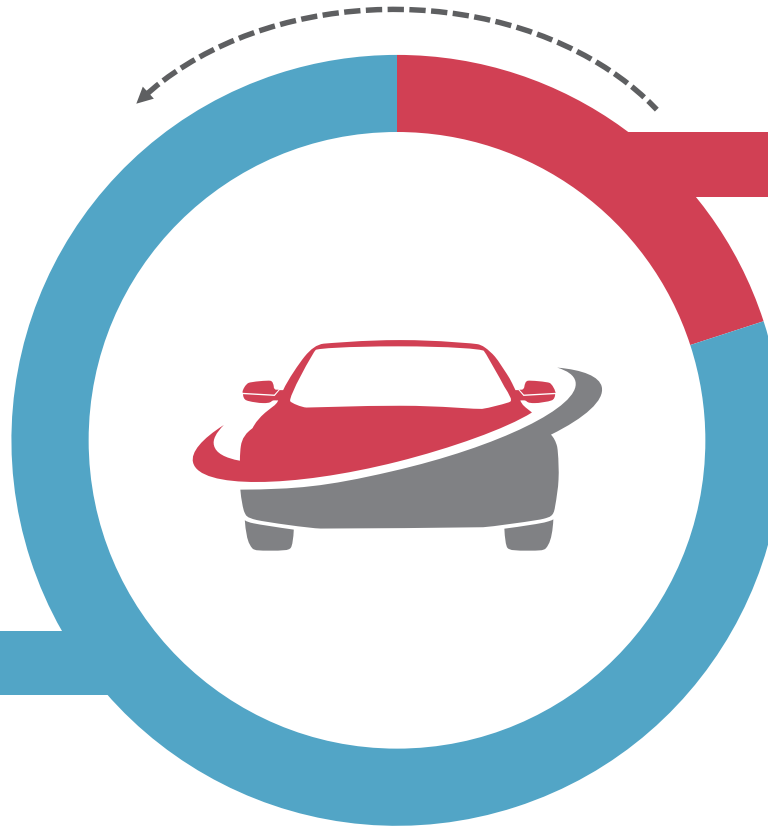
80%

Offering Materials
from Portfolio
(running applications)

High volume

High performance

Competitive solutions



20%

Developing innovative
formulas for NEW
applications

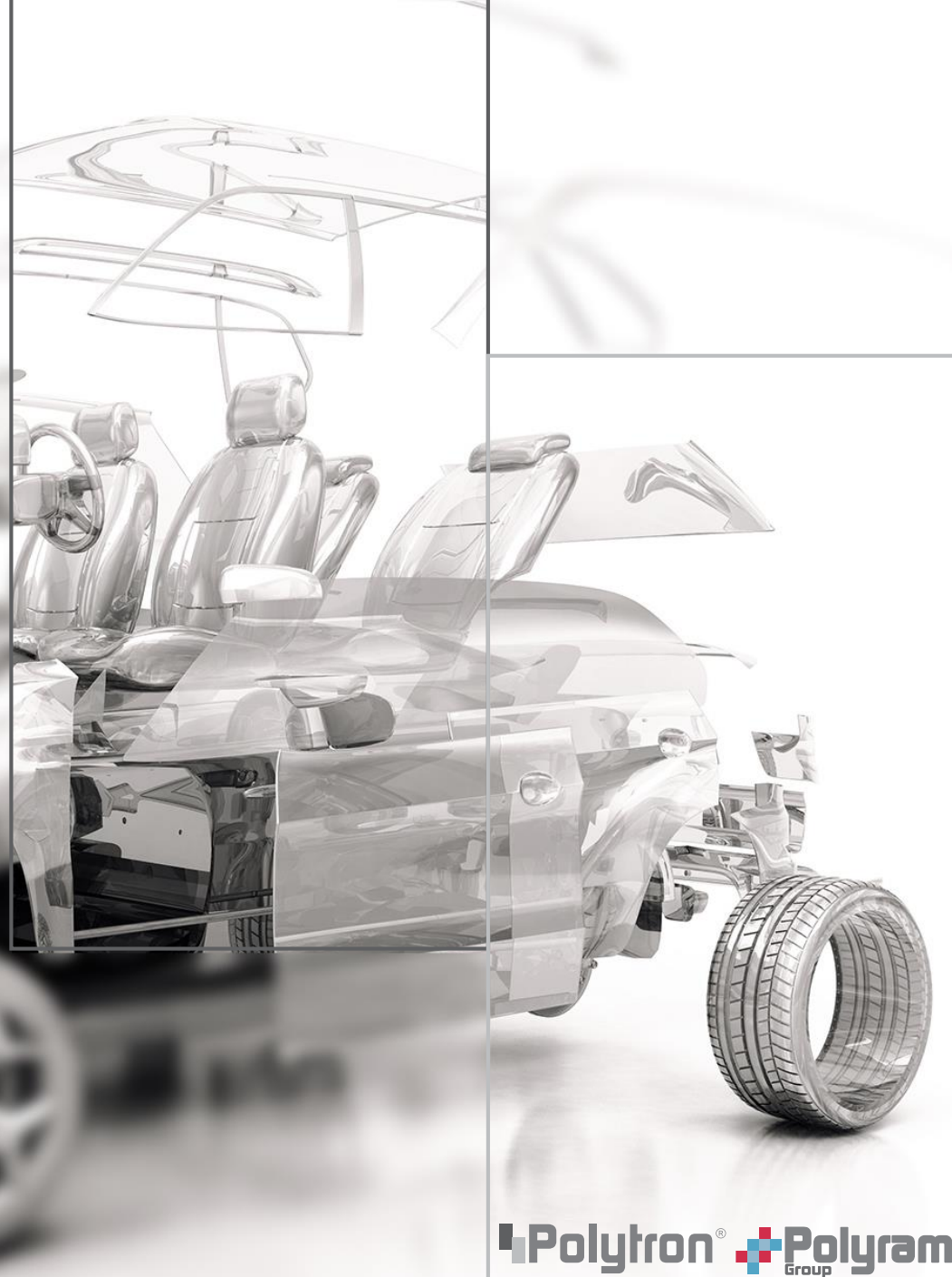
Ultra Performance



Driven by real-world innovation and customer needs

03

SOLUTIONS





Superior!
Innovative!
Competitive!

Polytron's families

LE

Low
Emission

CE

Cost-
Effective

HS

Heat-
Stabilized

UP

Ultra
Performance
and safety

CR

Climate
resistance

LE

Low Emission
PP LGF Compounds



Reducing emissions in your environment



Formulation:

PP 20%-60% LGF



Special feature:

Emission-Reduced formulas



Application:

Interior applications

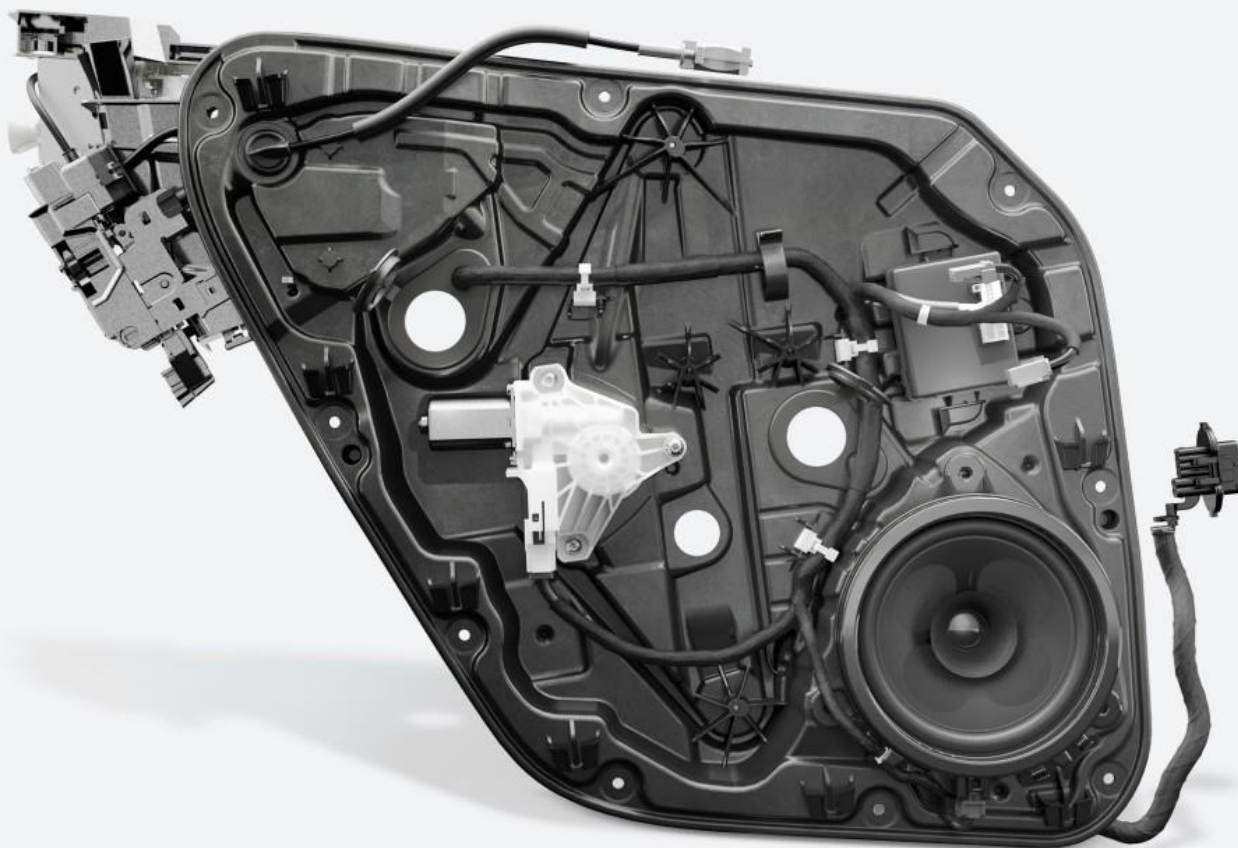


Validation:

Following specifications of German,
US and European OEMs

CE

Cost-Effective
Dilution Grades



Optimizing engineering to cost



Formulation:

PP 60% LGF



Special feature:

High quality to cost ration



Application:

wide range



Validation:

Following specifications of American,
German and European OEMs

Carrier Plate
Polytron – P60B09 SLE



brose
Technik für Automobile



Center Console Box
Polytron – P20B11



Arm Rest Parts
Polytron P50B01



Fehrer
AUTOMOTIVE



HS

Heat-Stabilized



Intense durability under the hood



Formulation:
PP 20%-60% LGF



Special feature:
Extreme heat stability



Application:
Under the hood
functional
applications



Validation:
Following specifications
of US, German
and European OEMs

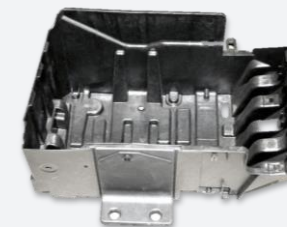
Service Panels
Polytron P30B01 & P50B01



Front End Module Carrier
Polytron – P60B08S



Battery Tray & Cover
Polytron – P50B01/P40B01





UP

Ultra Performance
& Safety
PA, PP LGF
Compounds

Getting you there first



Formulation:

PP/PA 20%-60% LGF



Special feature:

Tailor-made ultra performance properties



Application:

Safety & special applications



Validation:

Following specifications of US, German
and European OEMs

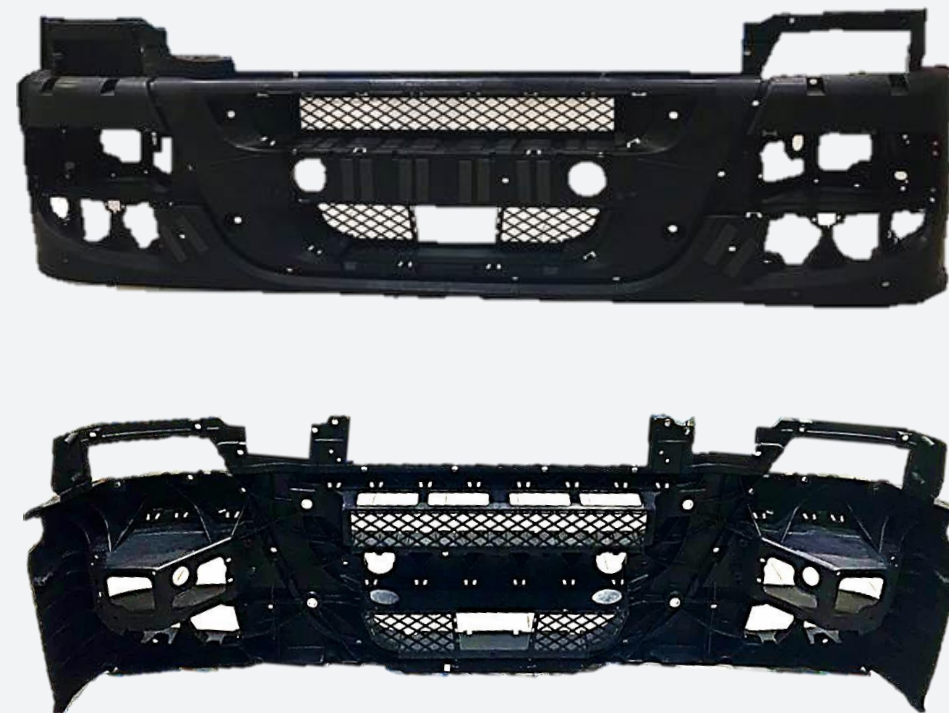
Airbag Retainer Box
Polytron P30B03 LC



Autoliv



Front Bumper
Polytron – P60B09



IVECO

CR

Climate
resistance

Standing up to the toughest weather



Formulation:
PP 20%-60% LGF



Special feature:
Extreme weather resistance
and UV stability



Application:
External Application



Validation:
Following specifications of American,
German and European OEMs

Door Mirror Polytron P50B07



FICOSA
International

SMI



Sun Roof Components Polytron P50B11 & P60B11



Webasto
Feel the drive

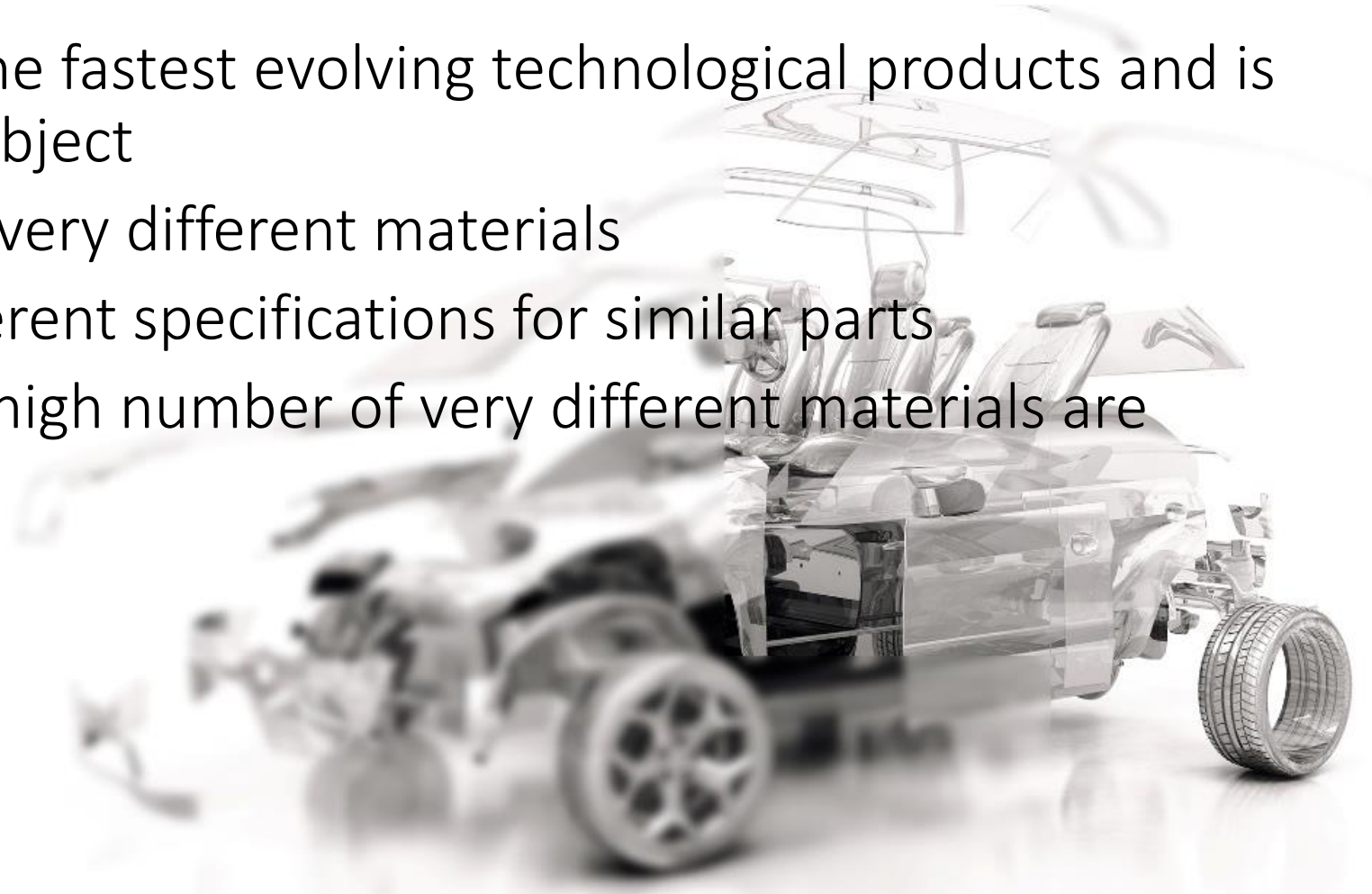
ATI
Advanced
Auto Trends

INTEVA
PRODUCTS



The CAR today - assembled with more than 15 000 parts

- Car represents one of the fastest evolving technological products and is an extremely complex object
- Each part is made from very different materials
- Each OEM has very different specifications for similar parts
- As result: an extremely high number of very different materials are required



■ PPH + LGF - One grade fits all applications

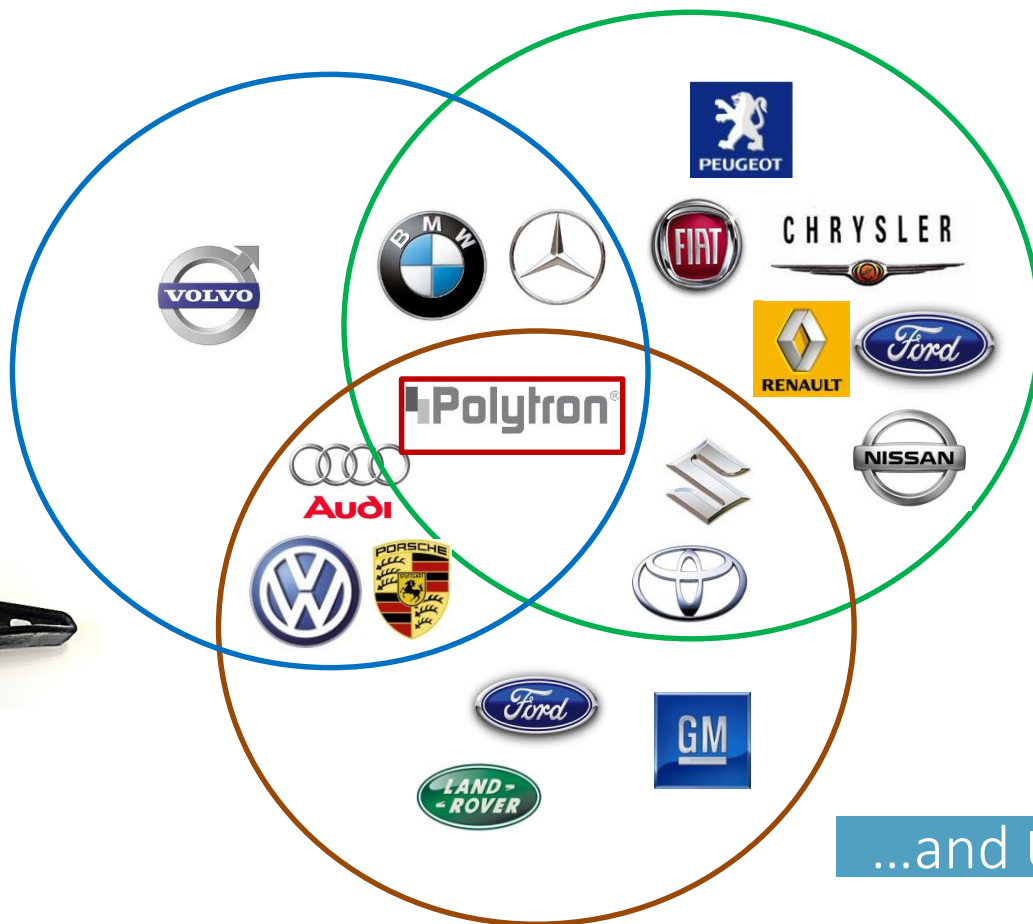
What if there is 1 material extremely versatile that can be used in any application for any OEM*

- High flow material
- Ultra high heat stabilization
- Low emission properties
- High Mechanical performance

Polytron - One grade fits all applications



Low
Emission



Ultra-High Flow
- MFI 150 -



...and Under the Hood

Heat Stabilization- 150°C/1000h -

Polytron - One grade fits all applications

❖ Ultra high flow.

Grade name	Base material MFI	Low wall thickness parts (1.4 mm) fill
Polytron P60B10-SLE 60% LGF concentrate plus PP dilution PP-M145)	150 g\10 min	☒



■ Polytron - One grade fits all applications

❖ Ultra Heat stabilization.



Grade name	OEM heat stabilization standard (Wall thickness < 2mm)	Result
Polypropylene 30%LGF (supplied as Polytron P60B10-SLE 60% concentrate plus PP dilution PP-M145)	DAIMLER (1000H @ 120C) VW\BMW(1000H @ 150C)	☒ ☒

Polytron - One grade fits all applications

✦ Emission properties.

Grade name	OEM Emission properties standard	Result
Polypropylene 30%LGF (supplied as Polytron P60B10-SLE 60% concentrate plus PP dilution PP-M145)	VDA 278 (VOC + FOG) VDA 270 (ODOR) PV3015\DIN 75201(G. fogging) GS 97014-3 (TVOC)	☒ ☒ ☒ ☒

Description	Spec	@ BMW spec / LH	Value
Fogging (100°C, 16h)	DIN 75201	-	0.48
VOC (<250 ppm toluene equivalent)	VDA 278 & VDA 270 A2	in Lastenhelfft	29
FOG (<500 ppm hexadecane equivalent)	VDA 278 & VDA 270 A2	in Lastenhelfft	165
TVOC ($\leq 3000 \mu\text{g}/\text{m}^3$ pro kg)	GS 97014-3 & VDA 270 C2	in Lastenhelfft	1845
Odor (grade ≤ 3)	VDA 270 A2	in Lastenhelfft	2.5

■ Polytron - One grade fits all applications

✦ Mechanical performance.

Grade name	OEM standard	Result
Polypropylene 30%LGF (supplied as Polytron P60B10-SLE 60% concentrate plus PP dilution PP-M145)	DAIMLER (DBL 5418) BMW (GS) VW (PV)	☒ ☒ ☒

 Polytron - One grade fits all applications

Thank you!