



Capital Market Days 2020

ContiTech: Material Science Enabling The Way Beyond Rubber

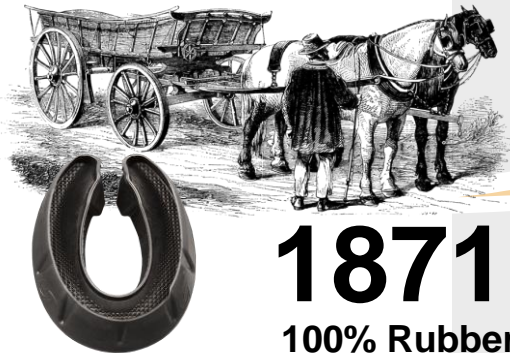
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<http://www.continental-ir.com>

Dr. Jens Hoegermeier, Head of Advanced Technology Development, ContiTech
December 11, 2020

Today's ContiTech Is Already Moving Beyond Rubber

150 YEARS

of material expertise at the heart of our development. And the story continues beyond rubber...



1871

100% Rubber



30% Rubber



ContiTech
SMART SOLUTIONS
BEYOND RUBBER

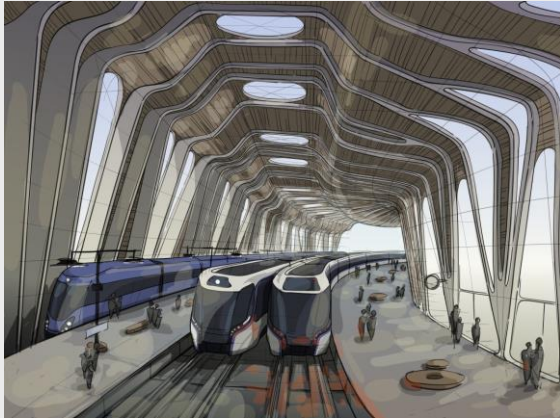


We are material experts and provider of complex systems



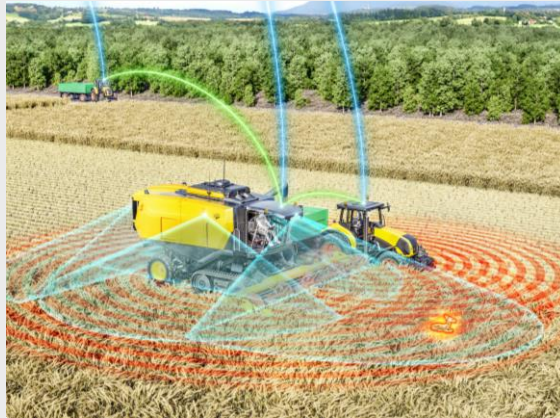
The World Is Changing: Industry Megatrends

Why We Are Developing Beyond Rubber



Infrastructure changes

- › Trainlines and transportation
- › Alternative energies



Automation

- › Automated harvesting
- › Automated production



Industry solutions

- › Predictive maintenance
- › Connectivity
- › Internet of Things in production



The World Is Changing: Automotive Megatrends

Why We Are Developing Beyond Rubber



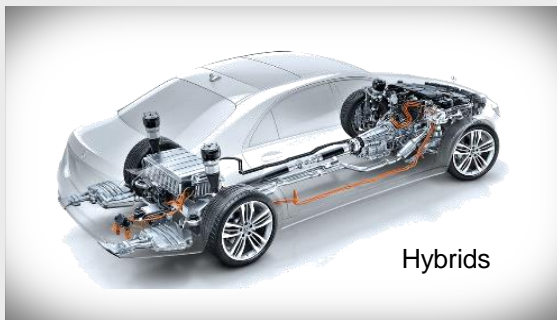
ICE¹ Technology

Gasoline engine

- › ~ 78 connections
- › ~ 14.3 m plastic lines
- › Up to 6 sensors

€135

Content per vehicle



Hybrids

Hybrids

- › ~ 89 connections
- › ~ 20.7 m plastic lines
- › Up to 9 sensors

€190

Content per vehicle



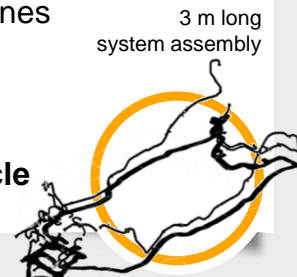
BEV²

Electrified powertrain engines

- › ~ 95 connections
- › ~ 26.8 m plastic lines
- › Up to 12 sensors

€230

Content per vehicle

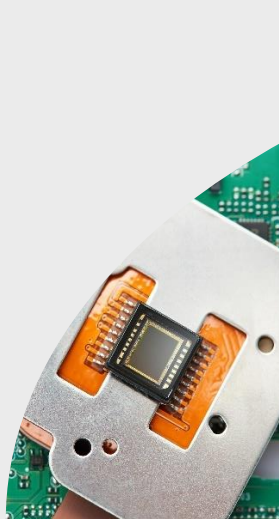


¹ ICE: Internal combustion engine

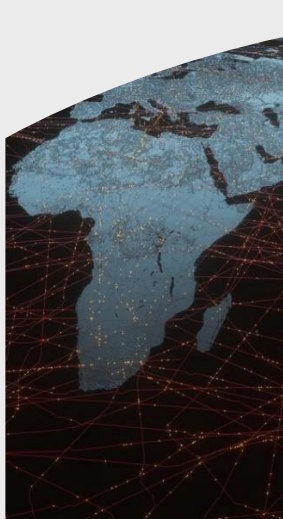
² BEV: Battery electric vehicles

ContiTech Innovation Fields

Material Science Beyond Rubber



Sensorics



Connectivity



**Mobile &
Web SW**



**Data Analytics &
AI**



Thermoplastics



**Sustainable
Materials**

Digitalization

Materials

Thermoplastics

Enabler to Solve Customer Challenges

Customer challenges

BEV ¹ range (battery temperature)	Remote area breakdowns
Digital integration in interior	Internet of Things in production
Automated tooling recognition	Demand for information
Metal structures in cars (weight)	

Solutions

Active thermal battery management	Functionality interior sensor integration
Smart tooling (RFID ² etc.)	Predictive maintenance
Composites to replace metal for weight reduction	

Enabler

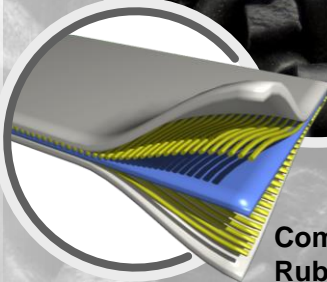
- › Engineered thermoplastics
- › Rubber/thermoplastics hybrid materials
- › Composites (fibers etc. in rubber/thermoplastics matrix)

¹ BEV: Battery electric vehicles

² RFID: Radio frequency identification



Engineered
thermoplastics



Composites:
Rubber/thermoplastics
and fibers etc.



Rubber/thermoplastic
hybrid materials

Thermoplastics

Enabler to Solve Customer Challenges

Battery management system ID.3 enabled by thermoplastics technology



¹ Content in electric vehicle versus in a same sized internal combustion engine vehicle

Sustainable Materials

Research for a Greener Tomorrow

Customer challenges

A sustainable future

Recycling Renewable materials Waste reduction

Solutions

Use of renewable materials	5 projects
Integration of recycled materials	4 projects
Waste reduction	5 projects

Enabler

- › Renewable materials compounding
- › Sustainable supply chain (focus on natural rubber)
- › Conflict mineral elimination



First consumer product:
Garden hose from renewable rubber based on sugar cane

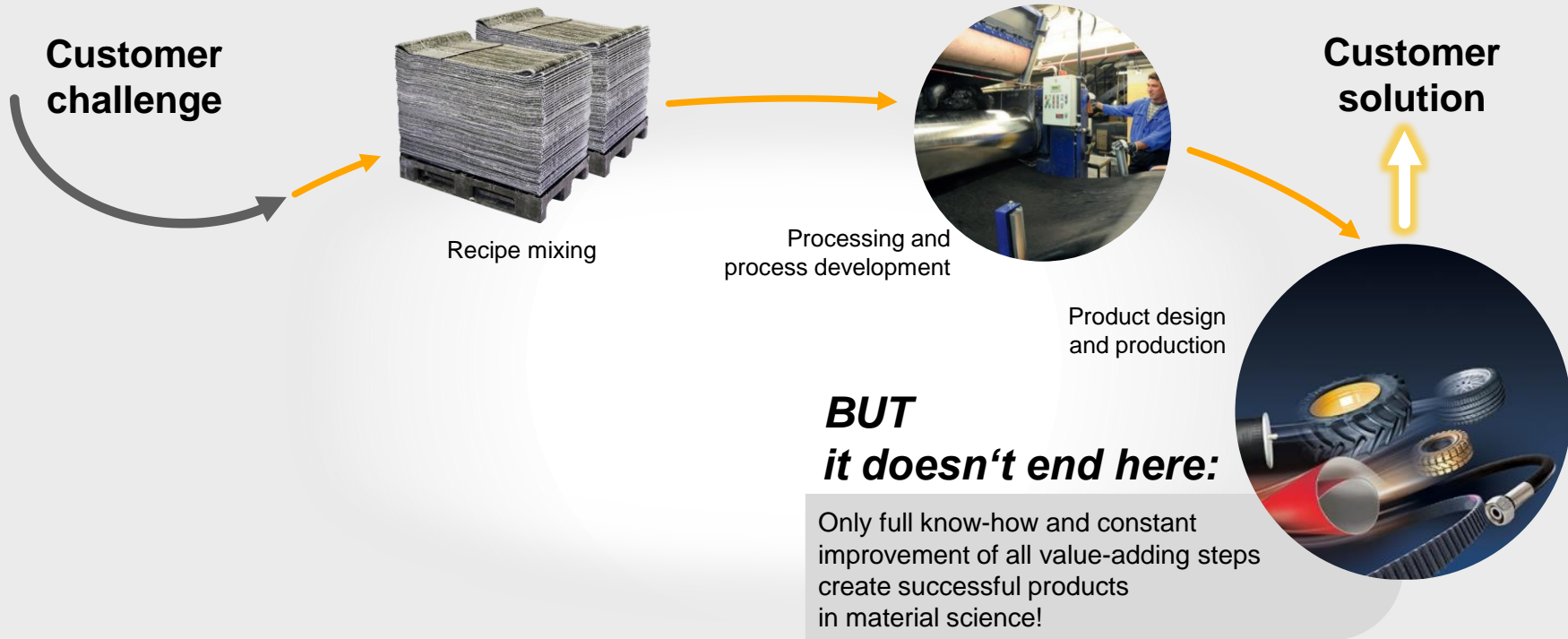
How To Be Successful

Material Science: Chemistry Meets Processing



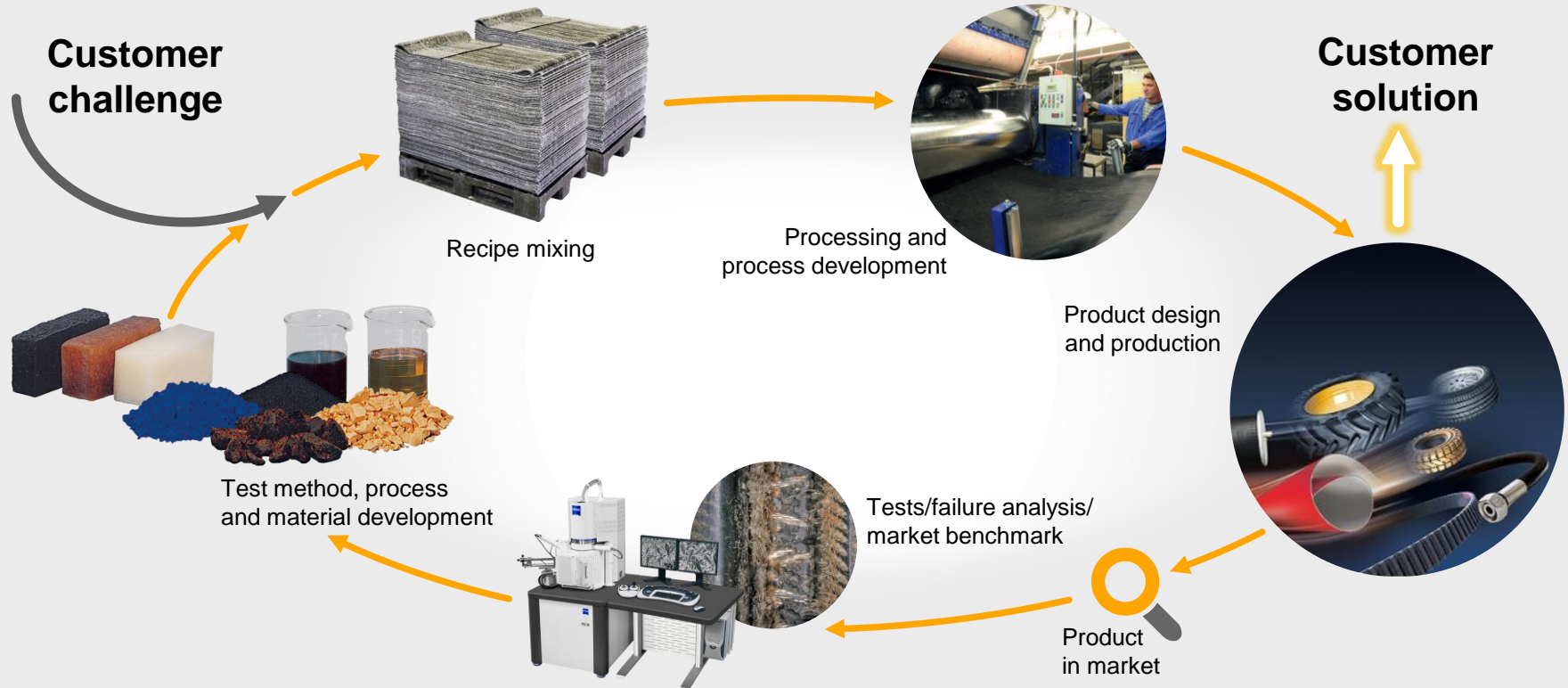
How To Be Successful

Material Science: Chemistry Meets Processing



How To Be Successful

Material Science: Chemistry Meets Processing

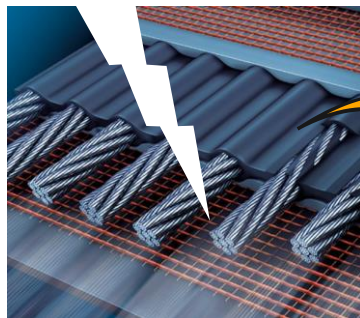


How To Be Successful

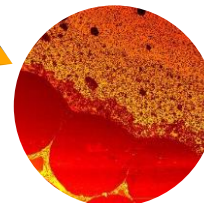
Competences Beyond Chemistry: Analytics

Our steps for fast product improvement

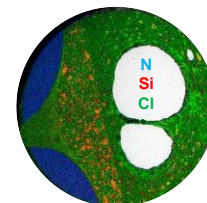
- 1) Collect customer feedback
- 2) In-house analytics and know-how
- 3) Generate understanding
- 4) Initiate product improvement



Composites:
Gradient materials



Composites:
Elementary composition



Full analytics in house

- › Electron microscopy
- › Material composition analysis
- › Gas and liquid chromatography
- › ...



Advanced
analytics



Quick reactions to
market feedback
and benchmarking

Why We Are Strong in Material Science

Summary



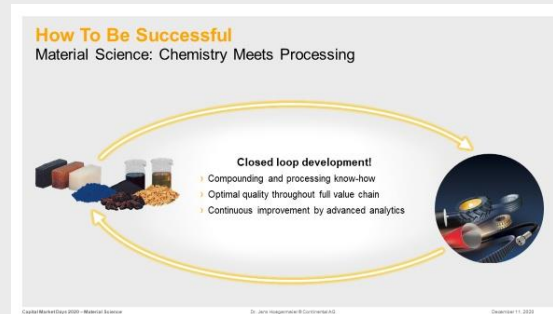
Strong base

Material Science
is part of our **DNA** –
for 149 years and counting!



Customer focus

Material science beyond rubber enables **customer focused solutions**



Agile inventor

Our closed loop development and unique analytics allow us to create new solutions

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The Future in Motion