

Resource Efficiency

Ensuring efficiency and sustainability –
for business as well as everyday life

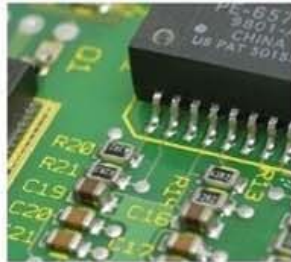
Dr. Claus Rettig, Head of Segment Resource Efficiency

September 26, 2018





Resource Efficiency



At Resource Efficiency, we ensure efficiency and sustainability – for business as well as everyday life.



Strategic growth focus of Evonik

Addressing two growth engines as drivers for profitable & balanced growth

Four growth engines

NUTRITION & CARE



Health & Care



Animal Nutrition

RESOURCE EFFICIENCY



Smart Materials



Specialty Additives

Resource Efficiency

True specialty segment as strong value driver for Evonik

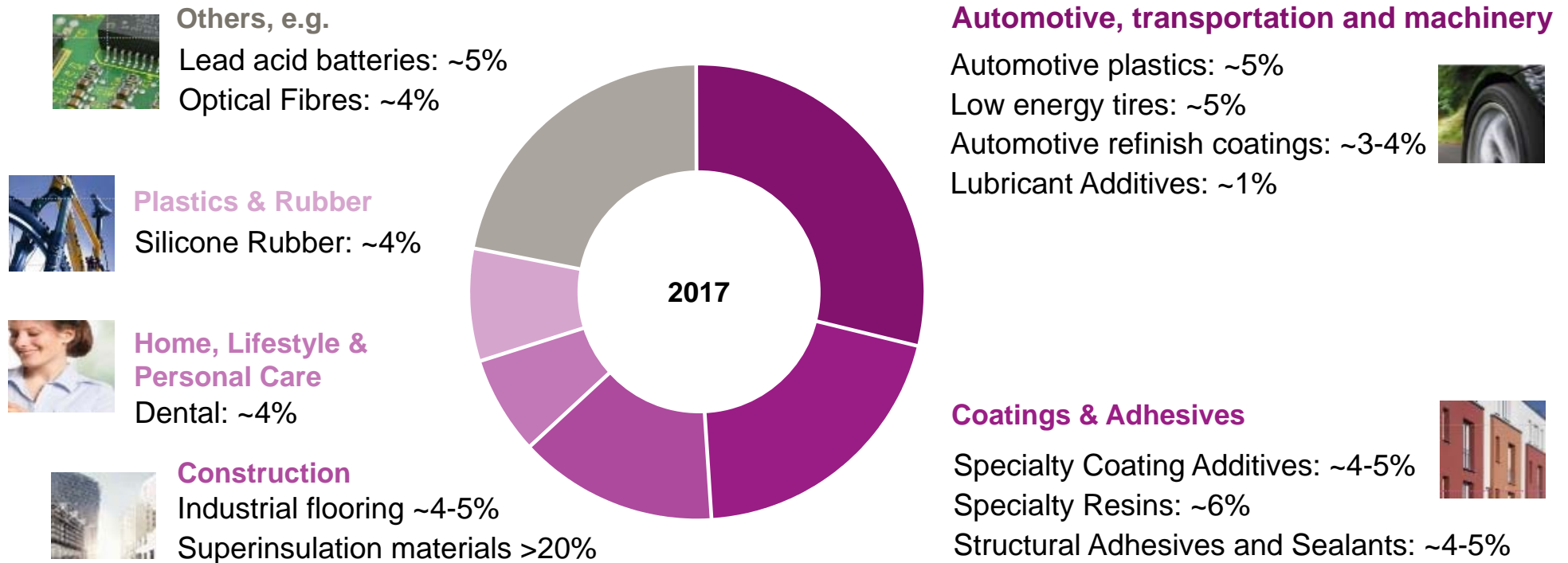
High profitability and high-value specialty portfolio

- 1 Portfolio** High-value and resilient specialty business with broad application scope
- 2 Financials** Commitment to continue growth track record with resilient EBITDA margins >20%
- 3 Innovation** Strong technology platforms, application know-how and innovation focus
- 4 Efficiency** Continue efficiency improvement with focus on SG&A, digitalization and process efficiency



Growth engines supported by RE's attractive products and applications

Achieving consistent GDP+ growth in attractive end markets



End market growth rate, CAGR 2016-2022

RE's key investments will secure future growth (selected examples)

Investment into Specialty Additives



1 Expansion of Oil Additives in Singapore

- Creates largest oil additives plant of Evonik worldwide & serves as Asian hub

2 Expansion Coating Additives in Germany and China

- Strengthens Coating Additives hub in Asia

Extending Smart Materials growth engine

3 Expansion of Fumed Silica capacities (Antwerp) JV with Wynca to produce fumed silica

- Ensures Evonik's position as leading global producer of fumed silica
- First fumed silica plant in the attractive Chinese market

4 Polyamide 12 powder expansion (Marl) Increase of PA 12 capacities by >50% (Marl)

- Secure leading position in New Growth Business Additive Manufacturing

5 New precipitated silica plant (South Carolina)

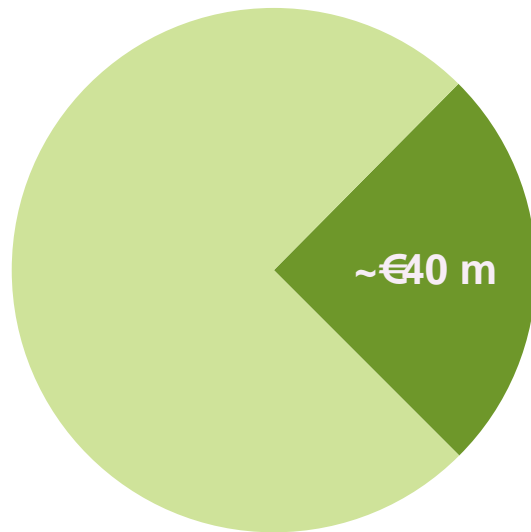
- World-scale facility close to production plants of large tire manufacturers

6 Expansion of membrane business for gas separation (Austria)

- Doubling capacities for New Growth Business Membranes

Innovative products and applications for mid- and long-term growth

R&D projects are bundled to high value efforts



Significant share of R&D investments dedicated to New Growth Businesses

RE's New Growth Businesses

- Each New Growth Business with sales potential of > €100 m
- New Growth Businesses selected, which show average CAGR of >20%
- Acceleration of business development through capturing M&A opportunities outside RE's core

Example of recent successes:

- Investment into capacity expansion at joint venture abcr labs
- Successful market entry with SEPURAN® Natural Gas prototypes
- CALOSTAT® as finalist for the German Innovation Award (Thermal Insulation)

Specialty Metal Organics & Oxides

Advanced Tire Solutions

Additive Manufacturing

Thermal Insulation

Membranes

Digitalization initiatives at Resource Efficiency

„Simplify the way to operate“ and „increase customer intimacy“



„Machine Learning / AI“

- Next-generation artificial intelligence technology for managing materials data
 - Advanced analytics
 - Constant learning
- Targeted prediction of product composition or preferred product



„eLab Journal“

- Cross-segment initiative for all R&D and AT labs
- Phase 1: Digitalization of all lab results
- Phase 2: Take advantage of AI/Machine learning to accelerate experiments



Alibaba Group eBusiness ALIBABA

- Gain eCommerce experience with selected products
- Collect dynamic market insights (price elasticity, promo feedback)
- Spread market coverage (small / medium customers)



Resource Efficiency is clearly committed to continue delivering strong financial performance

Historical financial performance 2014-2017

Sales growth ~6%

EBITDA margin of >20%

EBITDA growth ~7%

Strong free cash flow generation





EVONIK

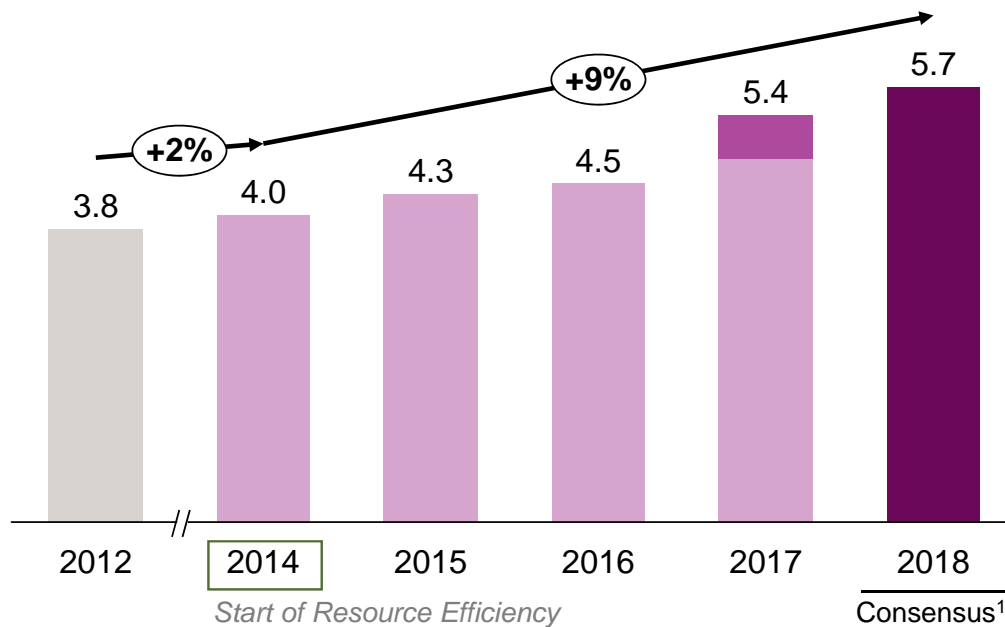
POWER TO CREATE

Resource Efficiency with accelerated growth track record

Air Products and Huber on top of high organic growth

Consistent above GDP sales growth

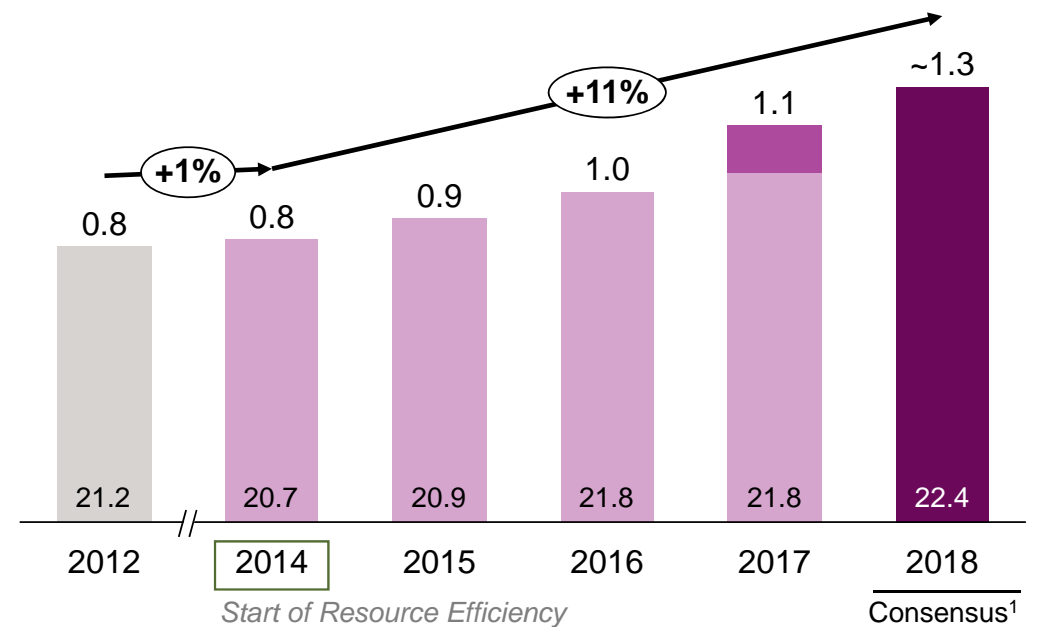
Sales (EUR bn)



Favorable EBITDA development with high margin resilience

EBITDA (EUR bn)

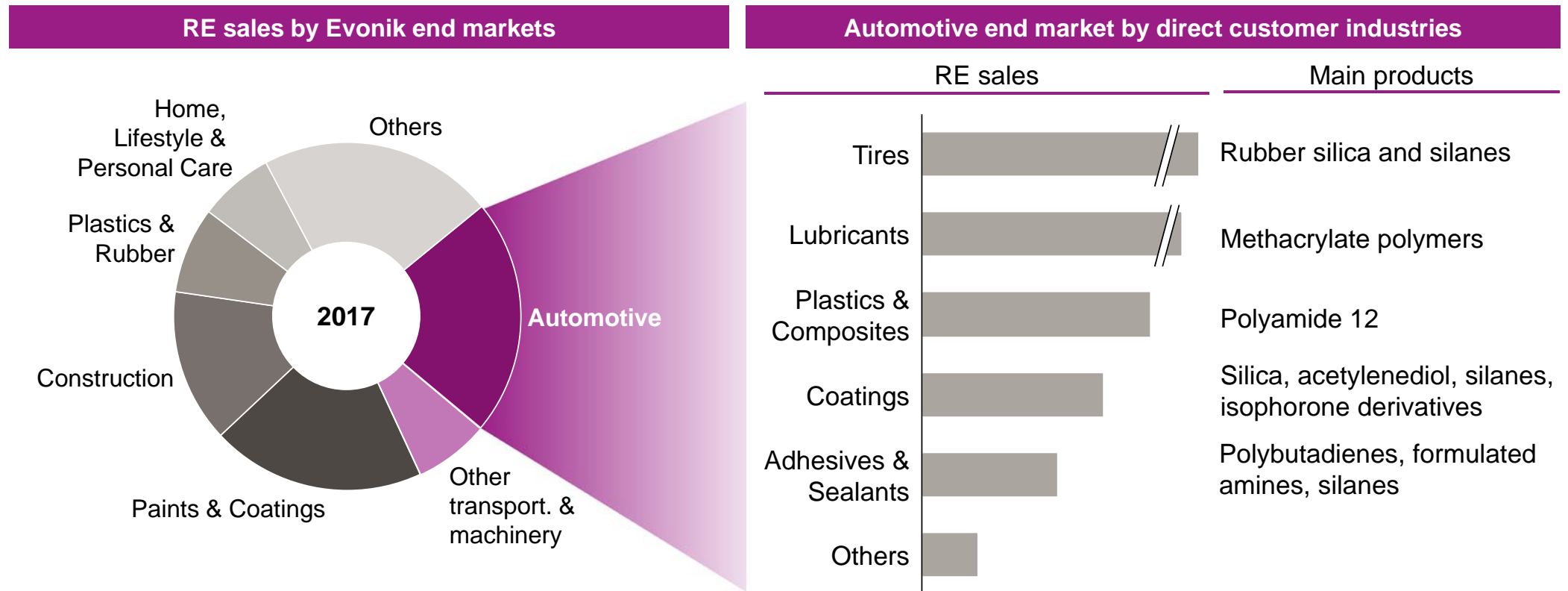
AP & Huber Organic



1. Vara analyst consensus as of August 23, 2018

Resource Efficiency

Diversified auto product portfolio with broad OEM and replacement exposure



RE sales split 2017

Business Line Silica

Investment highlights

Start-up	Investment	Rationale	Precipitated Silica	Fumed Silica
2017	Acquisition of Huber Silica Business	Excellent complementary fit for high-growth and resilient Silica business	X	
2018	New precipitated silica plant in South Carolina, USA	World-scale facility close to production plants of large tire manufacturers	X	
2019	Capacity expansion, Antwerp 2020	Investment in additional fumed silica capacities in Antwerp		X
2020	Capacity expansion in Adapazari, Turkey	Investment into additional precipitated silica capacities mainly for tire applications	X	
2021	Joint Venture with Wynca to produce fumed silica	First fumed silica plant in the attractive Chinese market with strong local partner		X

Business Line Silica

Innovation pipeline goes beyond the existing business

1 Re-innovate product solutions for existing markets

New ULTRASIL® grade for SUV tires

- Growing demand for larger SUVs tires
- Challenge for tire manufacturers: Sufficient stiffness in spite of their size
- **ULTRASIL® 7800 GR** offers the right mix to give SUV tires the needed stiffness, low rolling resistance and improved “grip”
- This reduces **CO2-emissions** and **lowers fuel consumption** by up to **8%**



2 Tap into new markets via application development

AEROXIDE® as additive in Li-ion batteries

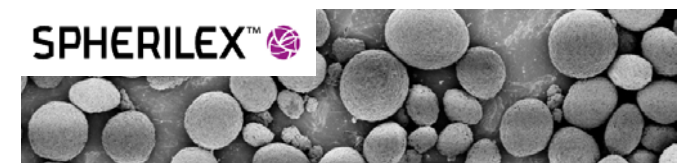
- Li-ion battery market shows a continued high growth rate, ultimately fueled by the **electric vehicle** market
- Key industry challenges are **performance**, **life-time**, and **safety** of the battery
- **AEROXIDE®** fumed metal oxides from Evonik help addressing these challenges as additives in Li-ion battery components



3 Create new technology options to enlarge the playing field

SPHERILEX® a new silica class

- New product class, unique, **patented manufacturing process** and materials
- Able to produce **novel, precipitated silica morphologies** with traditional raw materials
- Ability to control pore size, pore size distribution and surface area
- Applications examples: oral care, cosmetics and coatings



Business Line Silica

Silica as an eco-friendly answer to micro plastics beads

Industry needs

- Environmentally-friendly alternative for micro plastics for example in shower-peelings
- Regularly controlled microbiological quality
- Need for regulatory support



Evonik offering

- SIPERNAT® 2200 PC & SIPERNAT® 22 PC
- ECOCERT certificate and NATRUE listing for natural cosmetics
- Microbiological specification
- Regulatory documentation
- Economically attractive raw materials

Business Line High Performance Polymers

Several growth markets benefitting from unique Polyamide 12 properties

Additive Manufacturing

Mid-term CAGR¹



VESTOSINT® >15% p.a.

- PA12 powders for Selective Laser Sintering (SLS) and Multi Jet Fusion (MJF)

Unique PA12 benefit:
powder quality (shape & precision)

Automotive



VESTAMID® 5-10% p.a.

- E.g. fuel lines for conventional vehicles & cooling lines for battery packages

Unique PA12 benefit:
impact & chemical resistance

Oil and Gas



VESTAMID® NRG >10% p.a.

- PA12 for large diameter pipes for offshore Oil and Gas production
- PA12 for onshore gas distribution

Unique PA12 benefit:
high strength & chemical resistance

Medical



VESTAMID® Care 5-10% p.a.

- Heart catheters and tubes
- Durable medical equipment in imaging devices

Unique PA12 benefit:
biocompatibility

1. Evonik estimates

Innovation example: Membranes

Internal innovation and strategic partnership as key elements

Membranes



Leading gas separation solution

- Already mid-double digit million € business¹
- Strongly growing with 20% CAGR
- Modules and applications in all relevant markets
- 250 projects in 20 countries already realized



Revenue
~€200 m
by 2025

based on

Evonik owned unique polyimide chemistry

- Superior biogas purification developed by Creavis
- Strong in-house competence in polyimide chemistry and fiber business



Strategic partnership with Linde

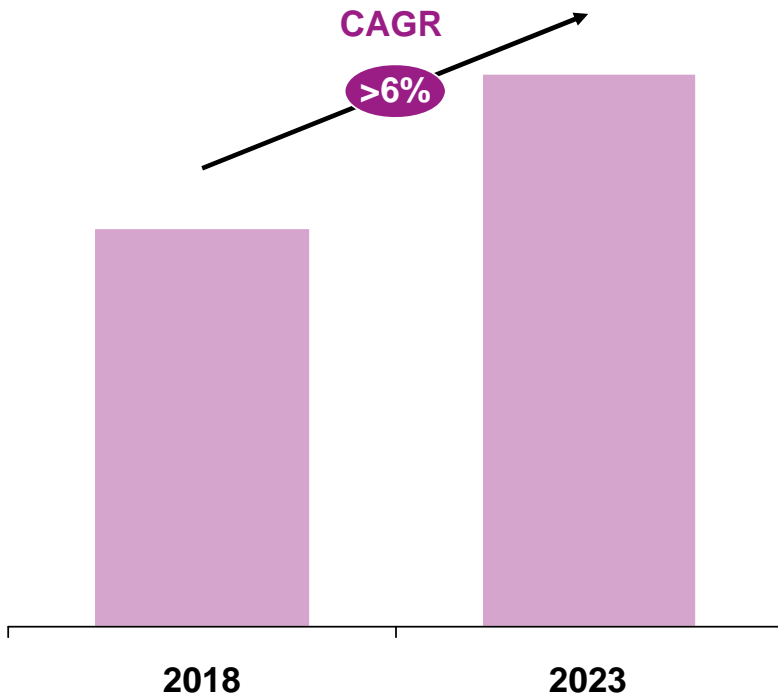
- Expertise in plant engineering and gas separation
- Holistic portfolio and market access

1. 2017 Revenue

Business Line Active Oxygens

H₂O₂ as efficient technology with resilience and growth from various industries

Global hydrogen peroxide market



Overview selected applications



Chemical Synthesis

>10%

- Preparation of peracetic acid, persalts, propylene oxide and other chemicals

Pharma & Healthcare

>4%

- Medical applications
- Wound treating
- Cleaning of contact lenses



Food & Beverages

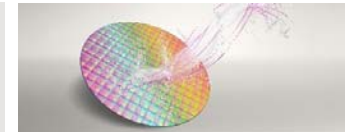
>3%

- Aseptic packaging
- Food processing
- Veterinary applications

Electronics

>7%

- Cleaning & etching of semiconductors



Business Line Coating Additives

Serving the high demand for eco-friendly, water-borne coatings

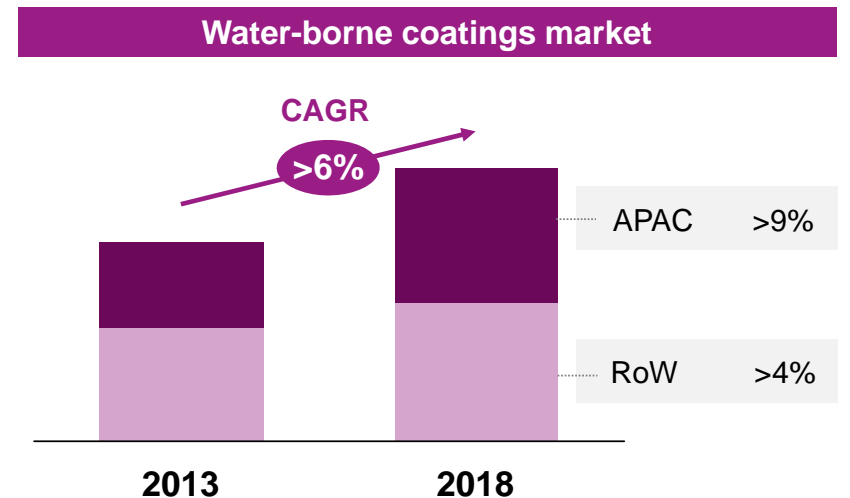
Challenges & needs:

- Chinese government introduced new coating-regulations to prevent solvent-borne coatings
- First step: only water-borne coatings allowed for container-paintings (China accounts for 90% of worldwide containers-production)
- Increasing use of waterborne coatings also for e.g., wood coatings, protective coatings, industrial coatings

Approach & Solution:

- Evonik as leading player for water-borne coatings
- Strong and innovative portfolio to serve the growing demand for water-borne coatings and applications from various industries

→ **Additional double digit million € sales in 2018**



Business Line Oil Additives

Innovation leadership in fuel-economy lubricants ...

... via customer and OEM driven innovation towards future mobility needs

Benefits of Evonik's lubricant additives

- Reduce fuel consumption and friction and wear
- Disperse oxidation products
- Increase life-time



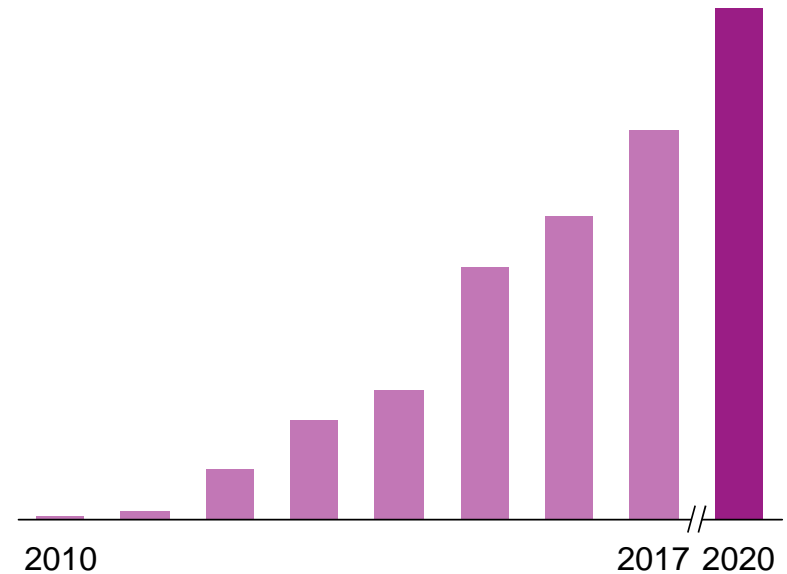
Flow efficiency solutions for future mobility

- Additives for hybrid and electric vehicle lubricants and coolants
- Increase heat transfer
- Reduced conductivity
- Additives for electric grease



Successful innovation of VISCOPLEX® comb polymers

Sales development 2010 to 2020



Additive Manufacturing

Evonik to expand its leading position in powdered PA 12 for Additive Manufacturing

- Evonik VESTOSINT products have clear USP for powder-based 3D printing (e.g. chemicals resistance, melting point etc.)
- Strong growth potential with ongoing transition from prototyping to manufacturing
- Strong relationships with leading printer manufacturers (e.g. EOS, HP)
- New polyamide 12 powder plant in Marl
 - Investment in the mid double-digit million € range
 - New facility primarily produces high-performance powders for the 3D printing market, which is expanding heavily with double-digit growth rates

