Enabling sustainable growth through innovation

Capital Markets Day May 11, 2022

Harald Schwager, Deputy CEO

Next Generation Innovation





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- 2. Operational innovation
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EVONIK PURPOSE

Leading beyond chemistry to improve life, today and tomorrow

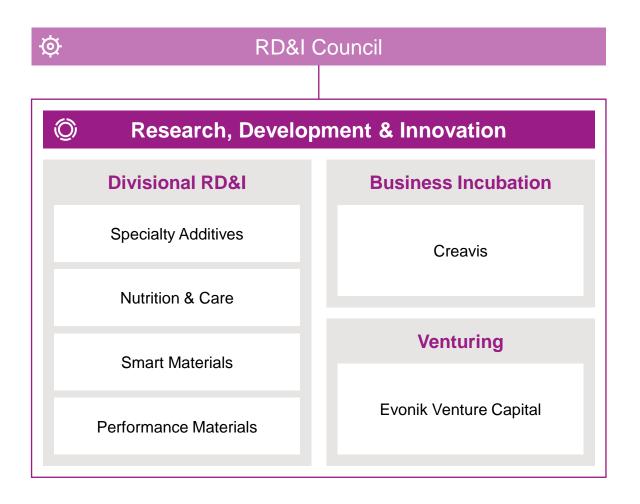
RD&I particularly contributes to the "beyond" and "tomorrow" — by pioneering sustainable solutions

RD&I MISSION

Delivering innovative solutions by combining technology and business to promote sustainable growth



RD&I steers innovation based on clear alignment and continuous exchange across the entire Evonik organization



Consistent focus on the same strategic direction as a Group

Knowledge sharing and use of different technology platforms

Efficient use of resources and competencies; flexible setup of interdisciplinary project teams

Full integration of sustainability criteria into decision making and allocation of resources



Sustainability is fully integrated into innovation portfolio steering



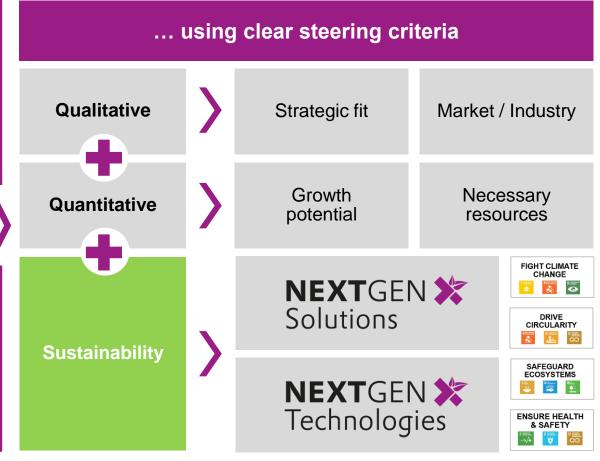




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 - Product innovation
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Innovation Growth Fields on track to achieve target of >€1 bn sales

Innovation Growth Fields





Additive Manufacturing



Sustainable Nutrition



Cosmetic Solutions



Membranes

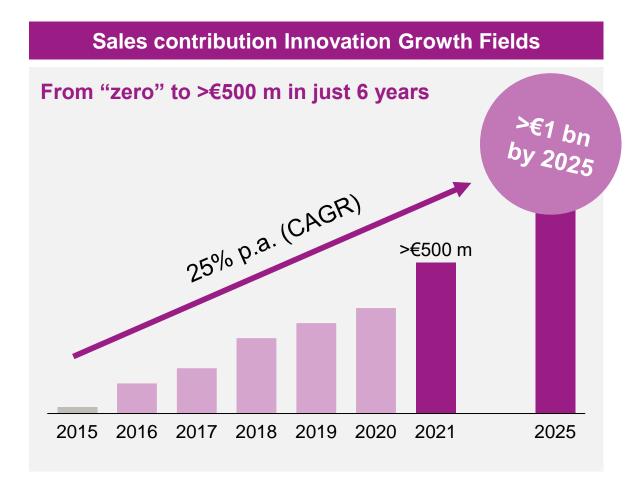


Healthcare Solutions



Sizeable sales base established in all growth fields

Above-average margin contribution





Innovation Growth Field "Membranes" as blueprint for future innovation

~2008

Idea for gas separation membranes created within Creavis



2014 - today

Expanding into separation of further gases such as helium, nitrogen and natural gas

Beyond today

Big growth opportunity esp. in hydrogen



Business handed over to BL High Performance Polymers

Commercialization in first reference plants focusing on biogas separation



2022

>1,000 reference plants worldwide

>€30% sales CAGR since 2015 to mid-doubledigit million sales in 2021



Continuous RD&I efforts to improve product characteristics and scope of application



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Driving sustainability through process innovation in new technologies

Breakthrough technology – Catalytic membrane reactors



- Development of two-in-one reactor:
 Efficient catalytic reactor technology
 and sustainable downstream processing
- Demonstration of CO₂ saving potentials (up to 35%) and increase in energy efficiency (up to 70%)
- New business opportunities by technology enabled alternative reaction pathways

SAM 3D – Disruptive digital design for sustainable processes



- New generation of reactors designed to drive decarbonization
- Perfectly adjusted reactor geometries by simulations, additive manufacturing and Al for production accurate to the molecule
- Minimized emissions & energy costs in tailored reactors with enhanced process control

New solvolysis process for PET recycling



- Development of sustainable engineering packages backed by life cycle assessments
- Technology as building block and differentiating factor for strategic alliances
- Enabling new business for Evonik alkoxides in chemical recycling of PET



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 - Business Incubation: Creavis
 - Evonik Venture Capital



Creavis acting as business incubator within Evonik

The Creavis approach ...

Using this approach Creavis pursues New Business

Development for the divisions and the group















Innovation with clear focus on Sustainability Focus Areas

FIGHT CLIMATE Hydrogen Economy **CHANGE Membranes** 13 KUNIDUET Renewable Carbon **DRIVE** Circularity **CIRCULARITY** Cosmetic Solutions **New Formulation Business** >€1 bn sales **Evonik Innovation Growth Fields Creavis New Growth Areas** by 2025 **SAFEGUARD** Farm to Fork **ECOSYSTEMS** Sustainable Nutrition 15 UFE ON LAND **New Data Business ENSURE HEALTH** Healthcare Solutions **Novel Therapeutic Concepts & SAFETY Prevention & Wellbeing** Advanced Food Ingredients



New Growth Area: Hydrogen Economy

Tapping into a major opportunity with our DURAION® membrane

Challenge

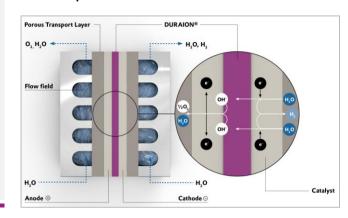
Currently two major technologies in place for hydrogen electrolysis – both with major downsides:

- State of the art Proton Exchange Membrane (PEM) electrolysis requires rare precious metals and expensive materials
- Established Alkaline Electrolysis (AEL) does not require precious metals, but is not very flexible

Evonik Proposition

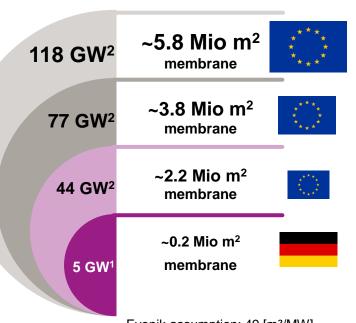
Evonik's novel Anion Exchange Membrane (AEM) is the most cost-efficient way to ramp-up green hydrogen with key advantages:

- High production rates
- Dynamic operation
- Pressurized H₂ production
- Inexpensive materials & electrodes



Market potential scenarios





Evonik assumption: 49 [m²/MW] membrane area required for 1MW



^{1.} Study IndWEDe-NOW GmbH, 2018 2 Green Hydrogen for a European Green Deal A 2 x 40 GW Initiative, Hydrogen Europe; Translation with internal assumptions (Creavis)

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Evonik Venture Capital enables access to technology leaders globally

- Investments in global innovation leaders with disruptive technologies and business models
- High relevance for Evonik portfolio aim to support and accelerate the growth of Evonik

€250 m designated funds

46 investments to date

exits to date

>2x financial returns¹

Integration into business

Structured Polymers (US)

- Formulations and Materials for 3D-Printing
- Acquisition by Division
 Smart Materials in 2018

JeNaCell (DE)

- Nature identical biomaterials
- Acquisition by Division
 Nutrition & Care in 2021

Value creating exit

FRX Polymers (US)

■ IPO in May 2022

Cooperation with Division Specialty Additives



¹ Based on capital invested

Evonik Sustainability Tech Fund

for investments in technologies towards carbon neutrality

Hydrogen

Economy

New **Venture Capital fund** with volume of

€150 m

Start in May 2022 Investments made with the primary objective to achieve CO₂ mitigation by reducing and removing emissions and foster carbon sequestrations Drive Feedstock Switch **Future Mobility** Circularity and Substitution

Renewable

Carbon



Clean

Energy Production

Enabling sustainable growth through innovation

Our new RD&I organization enables clear alignment across divisions and functions – ensuring consistency and efficiency

Sustainability is fully integrated into innovation portfolio steering – aiming at both handprint and footprint optimization

Innovation Growth Fields on track to achieve target of >€1 bn sales in 2025

Creavis focused on potential beyond 2025 – aligned with our four Sustainability Focus Areas

New Sustainability Tech Fund to capture business opportunities and position Evonik as sustainability leader





RD&I at a glance

RD&I AT EVONIK

FIGHT CLIMATE CHANGE







>€450 m SPENT

>€500 M SALES IN 2021 FROM INNOVATION GROWTH FIELDS

DRIVE CIRCULARITY







~24,000 PATENTS¹

>€2,500 EMPLOYEES

SAFEGUARD ECOSYSTEMS







100% SUSTAINABILITY-INTEGRATED

ENSURE HEALTH & SAFETY



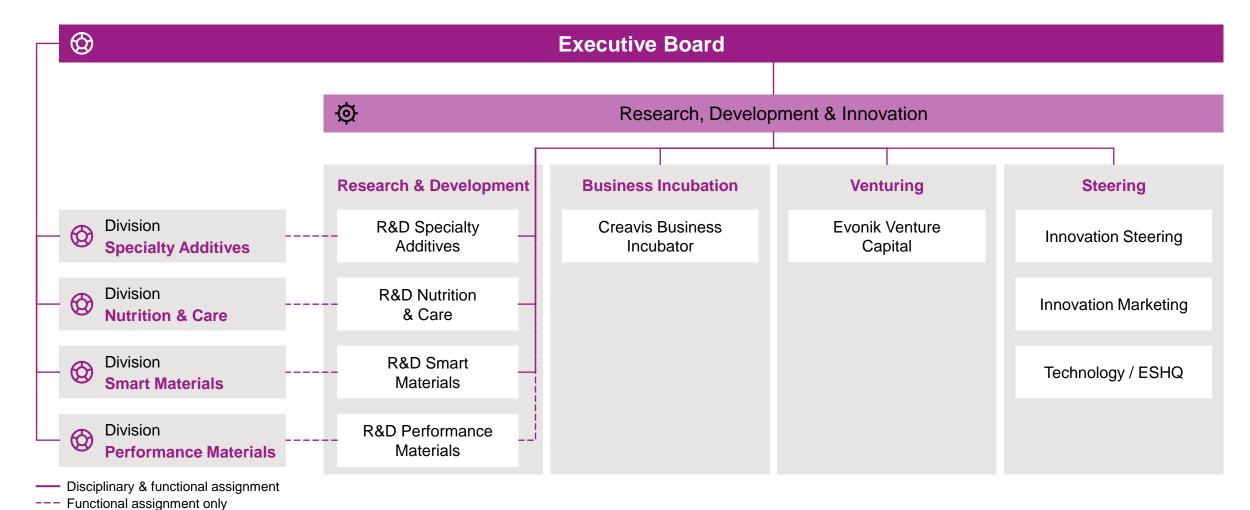






^{1.} Patents and patents pending

RD&I well aligned across divisions and functions





Four focus areas where RD&I is adding value for Evonik

What we do



Sustainability



RD&I is a key enabler for the sustainability strategy of Evonik.

We support our businesses and drive the transformation towards a sustainable portfolio.

How we do it



Technology Platforms



RD&I develops technological expertise to secure & expand competitive advantage for Evonik.

We leverages synergies across Evonik for the technology platforms of today and tomorrow.

Where we do it



Internationalization



RD&I actively supports the internationalization efforts of Evonik.

We are looking proactively for opportunities in the regions, close to our customers, close to our partners and in close alignment with the business.

Who does it



People & Partners

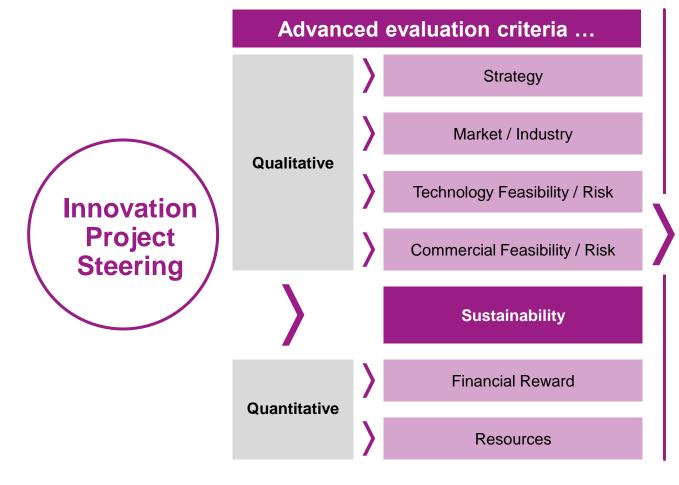


RD&I plays a key role for the attractiveness of Evonik for talents and partners globally.

We attract & develop top talents for a corporate or expert career and establish partnerships to safeguard the future of Evonik.



Evonik's RD&I projects are steered using clear criteria for optimized innovation performance and sustainable growth



... enable best innovation performance

Optimize resource allocation

State of the art evaluation criteria enable best innovation & financial performance management and resource allocation

Leverage synergies

Harmonization of project management process support synergies and guarantees comparability of innovation pipeline data across all units

Drive Sustainability

Strict rating of the sustainability impact of innovation project pipeline drives the transformation of Evonik's businesses

Focus on growth

Close strategic alignment with the business units and risk adjusted projections enable RD&I to deliver robust growth



Driving sustainability through process innovation in new technologies

Energy integration via heat pumps for site steam supply



- High-temperature heat pumps for steam generation out of waste heat at chemical multiuser sites
- Energy saving of 65% for steam generation by heat recovery
- Substantial CO₂ reduction through total avoidance of natural gas boiler
- Central step for CO₂ neutral production site

Sustainable processes via electrochemical pH-shift



- Development of sustainable processes avoiding acids, bases and salt containing waste streams
- pH induced reactions by applying electrochemical process steps – "electrons replace chemicals"
- Technology as enabler to minimize carbon footprint

Turning old mattresses into value by new PU foam recycling process



- Integrated process development as enabler for circular economy of Polyurethane (PU) foams
- Significant CO₂ footprint reduction of recycled PU monomers of high quality
- Securing and supporting the growth of core business for PU foam additives



Smart enabler of the sustainable gas economy with our membranes



With our **membrane technology**, we significantly contribute to the transition to a sustainable gas economy:

1 SEPURAN® Green

Raw biogas from organic waste is converted into sustainable biomethane and "green" CO₂

2 SEPURAN® Noble

- Our hydrogen extraction membranes enable to use existing natural gas pipelines to transport and extract green hydrogen
- In the production of synthetic biomethane from CO₂ and green hydrogen, we ensure efficient product separation

3 Anion Exchange Membrane

 With our ion-conducting AEM membranes, we contribute to the breakthrough of electrolytic production of green hydrogen in the future



New Growth Area: Circularity

Novel PU additives enabling chemical recycling of flexible foam

Challenge **Evonik Proposition** Solution 40 million mattresses are discarded in Vita EVONIK Europe per year \rightarrow 300 kt/a of PU waste **Evonik offering is twofold:** an components Tailored Evonik PU additives to allow for high use level of recycled PU components Landfill Incineration Downcycling 50 % 33 % 17 % Recycling **New proprietary hydrolysis** process providing high quality Retailers, OEMs & EU pushing for recycled raw material for circular solutions of flexible PU foam re-use in polyurethane foam PU industry threatened if PU foam production cannot be recycled Disposal

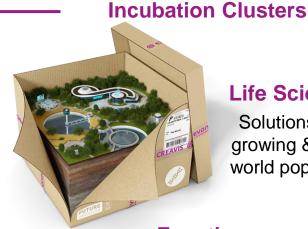


We have aligned Creavis to address key global challenges



Defossilation

Solutions for a climate-neutral society



Life Sciences

Solutions for a growing & aging world population



Solutions Beyond Chemistry

Data-based solutions for system renewal





Foresight

Identification of future chances and challenges



Networks

Link to external innovation partner & organizations



Technology & ESHQ

Providing the technical and organizational basis



Incubation Cluster



Defossilation

What the planet needs Solutions for a climate-neutral society

What drives us

Supporting industries to become independent of fossil raw materials and to enable a climate-neutral hydrogen economy



Life Sciences

What the planet needs

Sustainable solutions for nutrition and health promotion of a growing and aging world population

What drives us

Supporting the transition to a global, sustainable food production and developing new solutions to prevent and cure diseases



Solutions Beyond Chemistry

What the planet needs

Solutions to replace outdated, unsustainable and wasteful systems

What drives us

Improving the transparency, efficacy and thus sustainability of complex systems based on data analysis combined with comprehensive domain knowledge



Unboxing Defossilation

What the planet needs

Solutions for a climate-neutral society

What drives us

Supporting industries to become independent of fossil raw materials and to enable a climate-neutral hydrogen economy





Unboxing Defossilation

RENEWABLE CARBON

Closing the carbon cycle by carbon capture, biotechnological as well as chemical conversion technologies. Creating products based on new sustainable feedstocks



HYDROGEN ECONOMY

Enabling a green hydrogen economy as key element of a climate neutral society with specialty chemicals & materials for the production, logistics & storage of hydrogen

Enabling the development of circular economies in existing Evonik polymer and additive markets, commodity plastics, and key industry relevant metals



Incubation Cluster Life Sciences

What the planet needs

Sustainable solutions for nutrition and health promotion of a growing and aging world population

What drives us

Supporting the transition to a global, sustainable food production and developing new solutions to prevent and cure diseases





Unboxing Life Sciences

PREVENTION & WELLBEING

Promotion of health and wellbeing & prevention of undesirable health conditions by providing sustainable solutions of demonstrated efficacy in the sectors of nutrition, personal care and cleaning



NOVEL THERAPEUTIC CONCEPTS

Providing innovative solutions for vaccines, medical devices & pharmaceutical products to enable novel therapeutic concepts for diseased people

Addressing the entire value chain from farm to fork to enable sustainable and healthy food production



Solutions Beyond Chemistry

What the planet needs

Solutions to replace outdated, unsustainable and wasteful systems

What drives us

Improving the transparency, efficacy and thus sustainability of industry systems based on data analysis combined with comprehensive domain know-how





Unboxing Solutions Beyond Chemistry

NEW FORMULATION BUSINESS

Developing additive solutions based on data analysis and domain know-how as key enabler for a sustainable chemical industry

Our business solutions are nuclei for new and asset light Evonik business platforms.



FUTURE MOBILITY*

Supporting the ongoing transformation of mobility with solutions that significantly increase electrical efficiency, sustainability and connectivity

*Innovation Domain

DATA-DRIVEN BUSINESS

Developing novel solutions for proof of origin and affordable status read-outs from biological and chemical systems, and for recording and prediction of animal and human health status



