



SOLVAY

asking more from chemistry®



**Specialty Polymers,
Inventing the future every day**

Capital Markets Day
June 10-11 2015

Augusto Di Donfrancesco
President, Specialty Polymers

A hand is shown from the bottom left, holding a glowing blue ring. The background is a cityscape at sunset, with the sun low on the horizon. The sky is a mix of orange, yellow, and blue. The city buildings are silhouetted against the bright sky. The overall mood is futuristic and innovative.

SPECIALTY POLYMERS, INVENTING THE FUTURE EVERY DAY

**Augusto
Di Donfrancesco**

President, Specialty Polymers

Solvay Specialty Polymers at a glance

Diversified end markets with superior growth potential

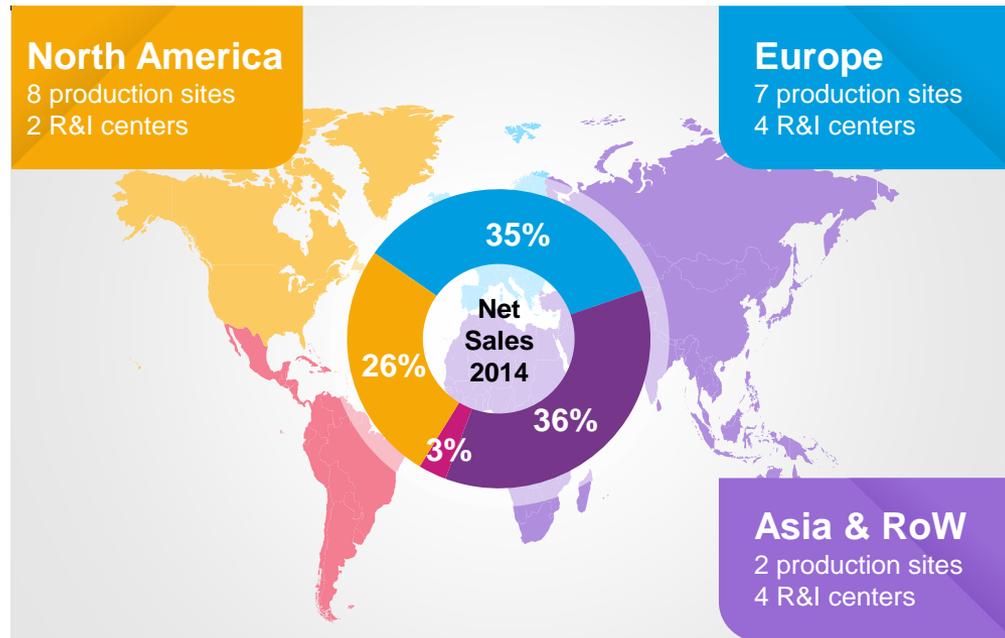


North America

8 production sites
2 R&I centers

Europe

7 production sites
4 R&I centers



Asia & RoW

2 production sites
4 R&I centers



€ 1.5 bn
Net sales 2014



~3,000
employees



17 production sites
10 R&I centers

Solvay, THE industry leader in high performance polymers

**Unmatched
portfolio breadth**

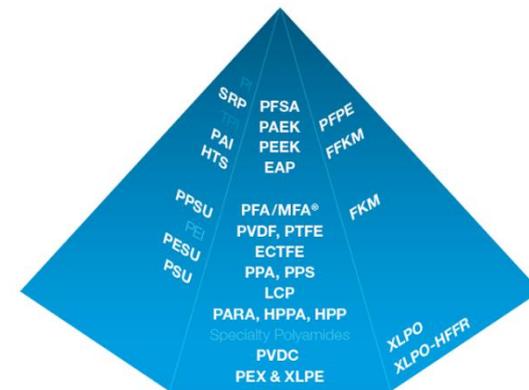
Innovation edge

**Customer intimacy
& market knowledge**

**Sales &
REBITDA
>10% growth**

**Superior value
creation
CFROI >> WACC**

Unique solution offering, Differentiating Solvay from competition

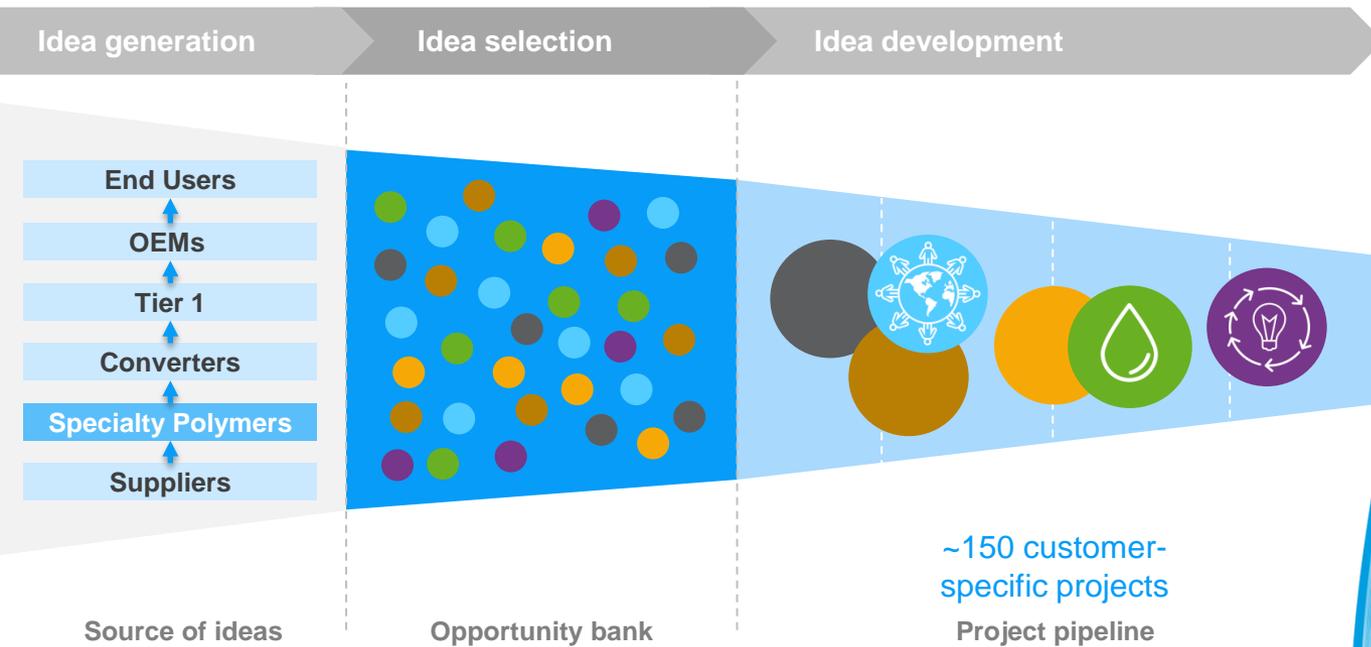


	Aromatics					Fluoropolymers					High-barrier polymers	X-linkable compounds	
	LCP	HPPA	PPS	PEEK	PAI	PSU	PTFE	PVDF	PFA	FKM	PFPE	PVDC	XLCP
SOLVAY	●	●	●	●	●	●	●	●	●	●	●	●	●
ARKEMA		●						●					
BASF The Chemical Company		●				●							
DAIKIN							●	●	●	●			
DUPONT	●	●					●		●	●	●		
DYNEON							●	●	●	●	●		
EMS		●											
Celanese	●		●										
DSM		●											
victrex				●									
TORAY Innovation by Chemistry			●										
AGC						●			●				
KUREHA			●					●				●	
EVONIK INDUSTRIES		●		●									

... further strengthened through innovation and acquisitions

Innovation edge

Effective and timely delivery...



... high quality projects generating
€ 500 m expected sales by 2018

2014 data



32%

of net sales realized
with products < 5-y



50+

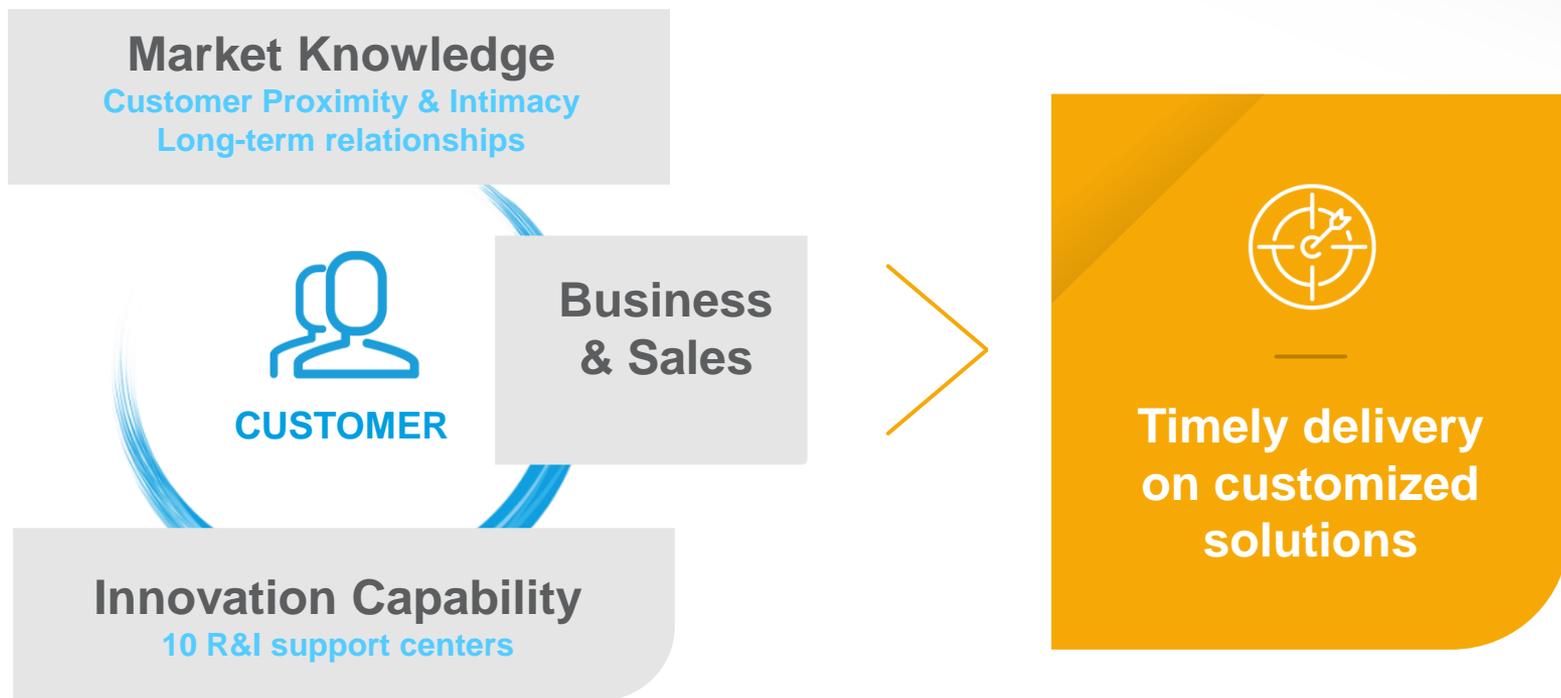
New product grades



3,300+

Patents in force

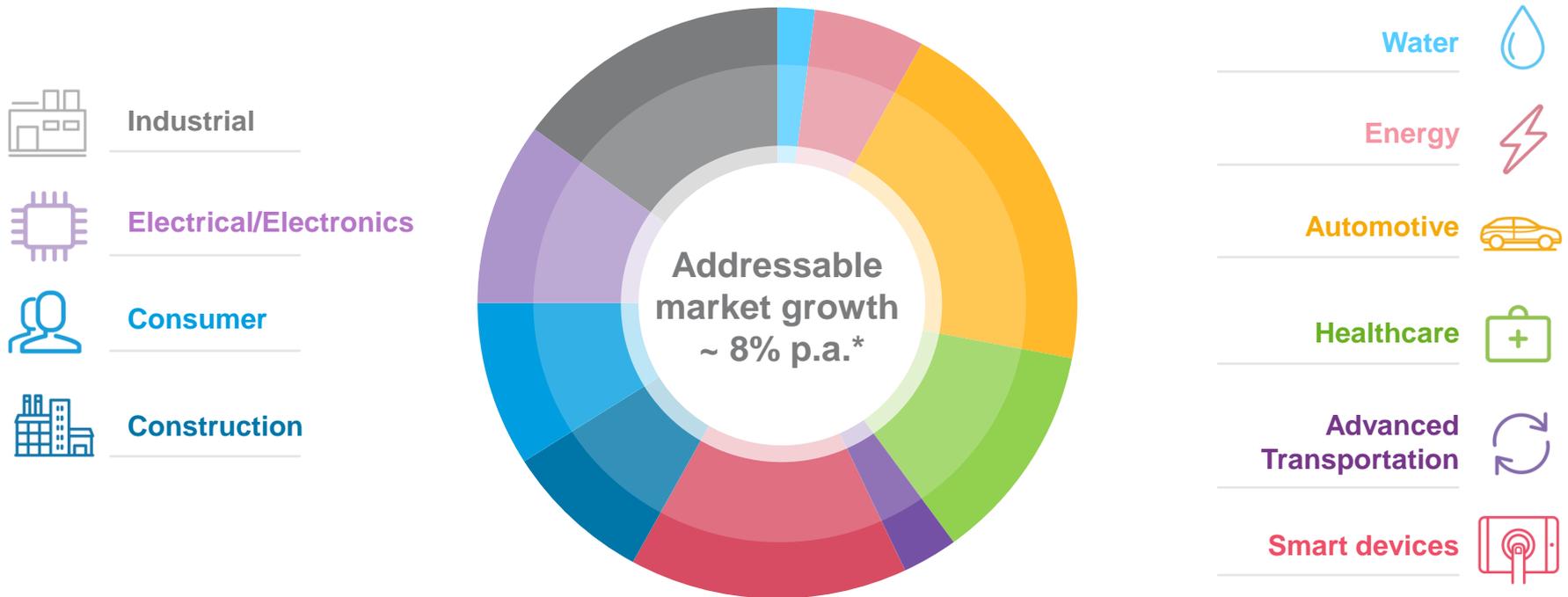
Strategic solution partner for over 40 years



Creating value for our customers...

Outgrowing markets

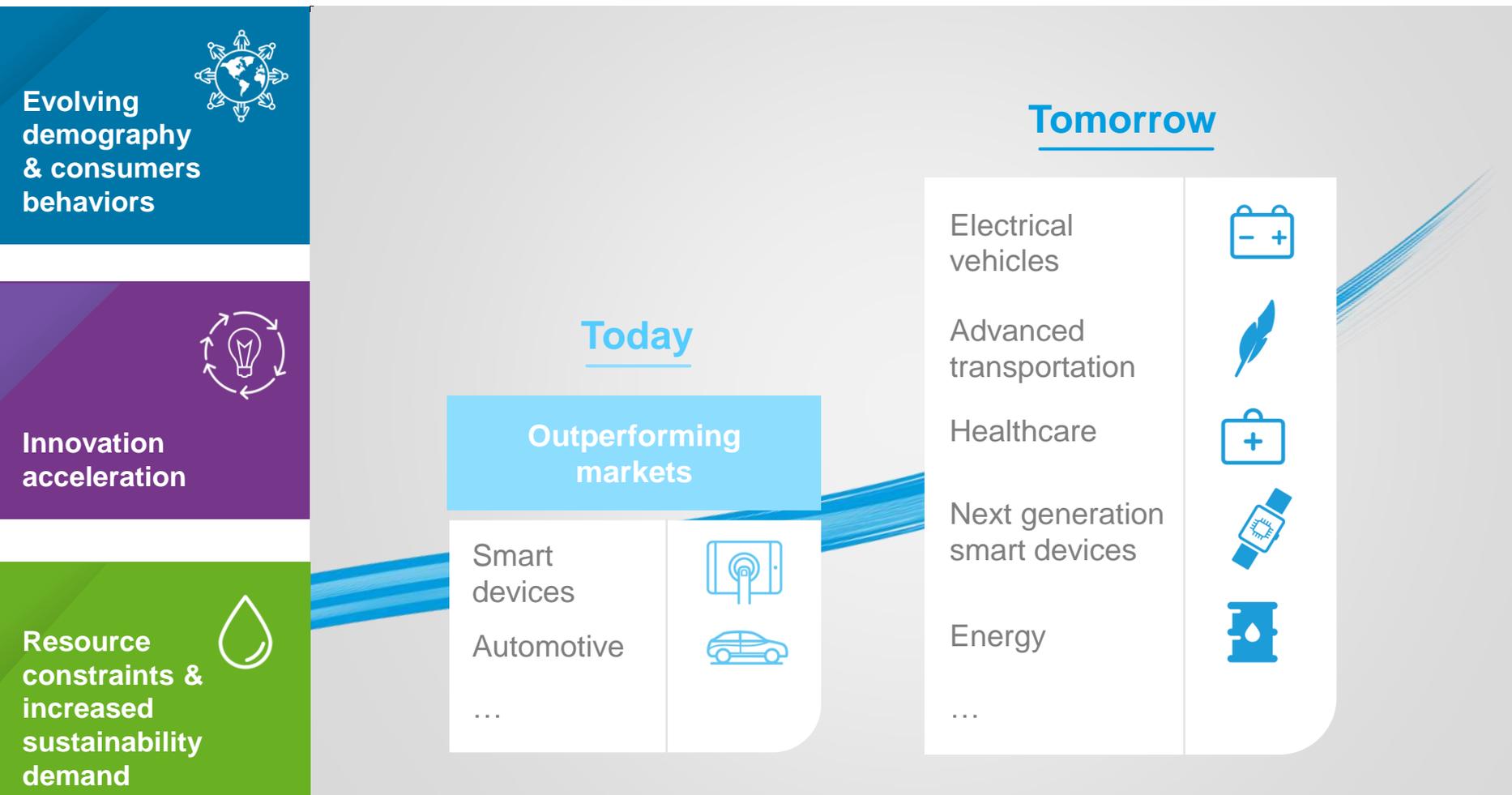
Solvay Specialty Polymers 2014 sales by end markets



Sales CAGR 2013/15 ~ 15%

* CAGR 2013-2015

Exciting sustainable growth momentum



Investing to capture growth



Acquisitions

- PPS

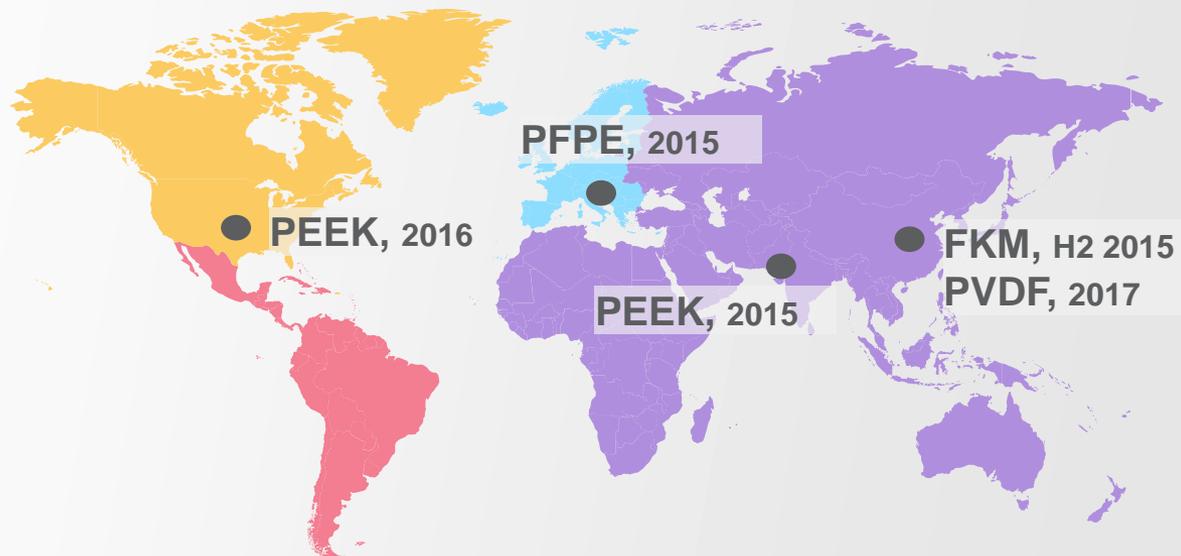


Enabling new technologies

- Composites
- Foams



Capacity expansion



Specialty Polymers, inventing the future every day



Creating value and delivering growth

- REBITDA double digit CAGR over 2013-2016
- CFROI well above WACC



THE industry leader, outgrowing markets



A strategic solution partner to our customers

A hand is shown from the bottom left, holding a glowing blue ring. The background is a cityscape at sunset, with the sun low on the horizon. The text is overlaid on the top left of the image.

SPECIALTY POLYMERS, IDENTIFYING AND DELIVERING ON SUSTAINABLE DEMANDS

**Jens
Hoeltje**

*Head of Strategy and Marketing,
Specialty Polymers*

Capturing market potential in Automotive, Aeronautics and Healthcare



Helping our customers with
critical sustainability challenges

Automotive

CO₂ emissions

Aeronautics

Improved
economics

Healthcare

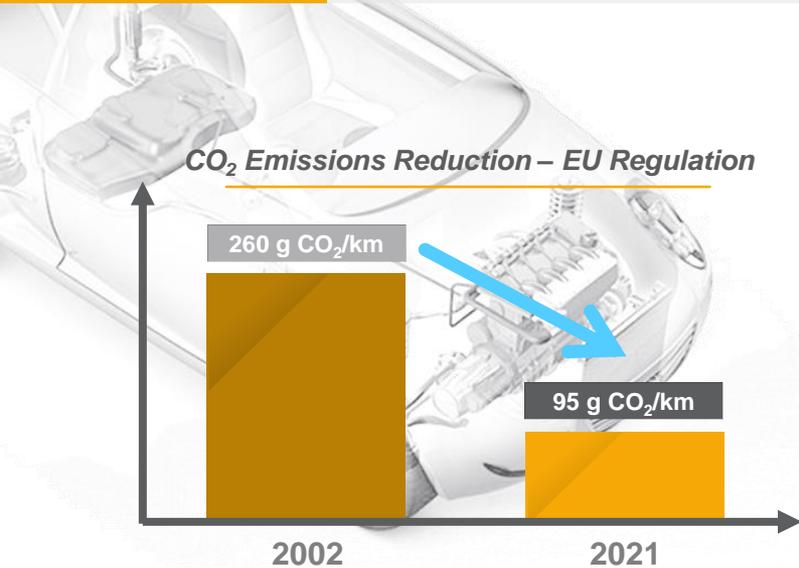
Growing demand
& cost efficiency

Enabling technologies for Automotive's critical sustainability challenges



CO₂ emission reduction

- **Electrification**
- **Lightweight materials**
- **Powertrain efficiency**



Source: International Energy Agency

Applications

- **Li-Ion Batteries:** Cathode and Anode binder, separator, ...
- **Traction motors:** magnet wire, ...
- **Fuel cells:** membrane, housing, ...
- **Structural and semi-structural parts (Composites, ...)**
- **Turbo charging:** hoses, sealings, bearings
- **Transmission:** sealings, bearings, anti-foaming agents
- ...

Our technologies

- **Solef® PVDF**
- **KetaSpire® PEEK**
- **Aquivion® PFSA**
- **Amodel® PPA**
- **Ryton® PPS**
- ...
- **Amodel® PPA**
- **Ryton® PPS**
- **Ixef® PARA**
- **KetaSpire® PEEK**
- ...
- **Tecnoflon® FKM**
- **Torlon® PAI**
- **KetaSpire® PEEK**
- **Amodel® PPA**
- **Fomblin® PFPE**
- ...



Uniquely positioned to capture full growth potential

Building a superior portfolio of new lightweight materials for Aeronautics

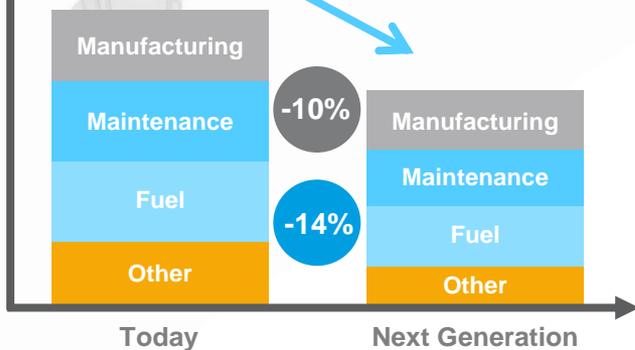


Improve cost of production and ownership

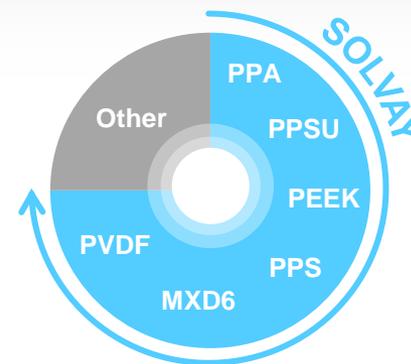
Lightweight materials

- Manufacturing effectiveness
- Maintenance
- Fuel consumption

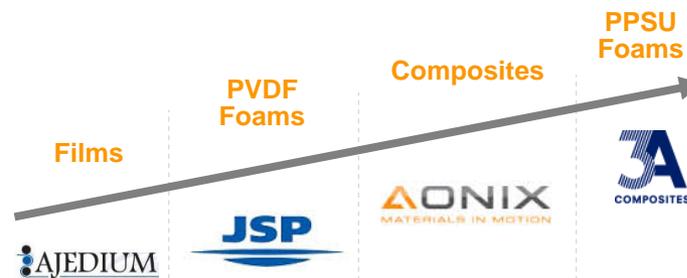
Double-digit % Cost Reduction



Source: Airbus



Building the Ecosystem since 2008



Partnering with leading technology companies for highest performing materials



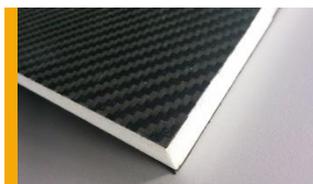
Tegralite™: Enabling improved economics



**Tegracore™
PPSU Foams**



- Thermoformable



PVDF Foams



- Injection moldable / direct part production



**UltraMaterials™
Composites**



- Semi-continuous process / suitable for mass production



**Manufacturing:
higher effectiveness,
lower cost**



**Shortened
maintenance time**



**Lower fuel
consumption**



**Establishing a leading position in
high performance lightweight materials**



Our strategy to meet evolving Healthcare needs

A semi-transparent illustration of a human torso, showing the spine and ribcage. The spine is highlighted with a glowing pink and red light, indicating a focus on spinal health or surgery.

Growing demand



- Growing world population
- Increasing size of middle classes in China, India and other emerging countries
- Aging society

Cost efficiency of Healthcare systems



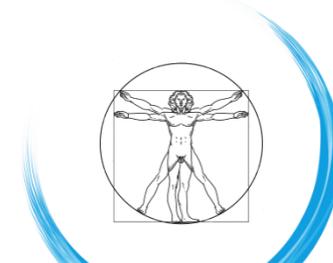
- More minimally invasive surgeries
- Implants with better patient outcomes
- Reducing hospital acquired infections

Increasing quality of life



- At home treatment/monitoring (mHealth)
- Patient mobility and pain relief
- Time for treatment in clinic/hospital
- Use of wearable devices

A large breadth of materials for high-tech applications



Growth drivers

Our technologies



Medical instruments and equipment

- Replacing metal devices
- Hospital acquired infections:
 - frequency & intensity of cleaning/ disinfection
 - single use instrumentation
 - upgrading polymers

- Radel® PPSU
- Udel® PSU
- Ixef® PARA
- AvaSpire® PAEK



Hemodialysis treatment systems

- 20+ years trust with Solvay
- Available to growing number of patients

- Udel® PSU
- Veradel® PESU



Orthopedic and cardiovascular implants

- Acceptance of polymers
- Expansion towards applications beyond structural parts

- Zeniva® PEEK
- Radel® PPSU
- Udel® PSU



Pharmaceutical blister packaging

- 15+ years serving high barrier materials
- New product: ultra-high barrier, strong value creation
- Future trend: Paper / Diofan® SuperB laminate replacing Aluminum

- Diofan® PVDC
- Diofan® Super B PVDC

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SPECIALTY POLYMERS, ENGINEERING BREAKTHROUGH SOLUTIONS

**George
Corbin**

*Head of Research and Innovation,
Specialty Polymers*

Sealing performance at very low temperatures

Precursors

Monomers

Polymers

Alloys

Downstream



Automotive

- Advanced engine technology (GDI) reduces CO₂ emissions but requires very low temp performance
- Requires low temperature performance and resistance to automotive fuels



Oil & Gas

- Explore and produce in more severe operating environments
- Requires low temperature performance and resistance to drilling fluids



Aerospace

- New low temp operating specifications to reduce fuel consumption & CO₂ emissions
- Requires low temperature performance and resistance to aircraft fluids



Tecnoflon® VPL:
the unique solution

Tecnoflon® VPL: a unique solution

Precursors

Monomers

Polymers

Alloys

Downstream

Innovation approach

Breakthrough technology uses new building blocks

Novel precursor, monomer and polymers

Industrialized new chemistry



Protected by
7 patent families

Business impact

Created new family of high-value “Specialty” elastomers

Enables double-digit growth in Auto

Leverages existing industrial assets

Creates sustainable competitive advantage

Pushing the limits of metal replacement

Precursors

Monomers

Polymers

Alloys

Downstream



Electronics

- More reliable performance with greater design freedom
- Requires innovative materials that enable next-generation technology



Automotive

- More fuel efficient vehicles with reduced emissions and uncompromised safety
- Requires high-temperature plastics that withstand the increased heat of downsized, turbocharged engines.



Aircraft

- More energy efficient aircraft with passenger comfort and safety along with faster assembly times
- Requires ultra-lightweight materials with metal-like performance that meet regulatory approvals



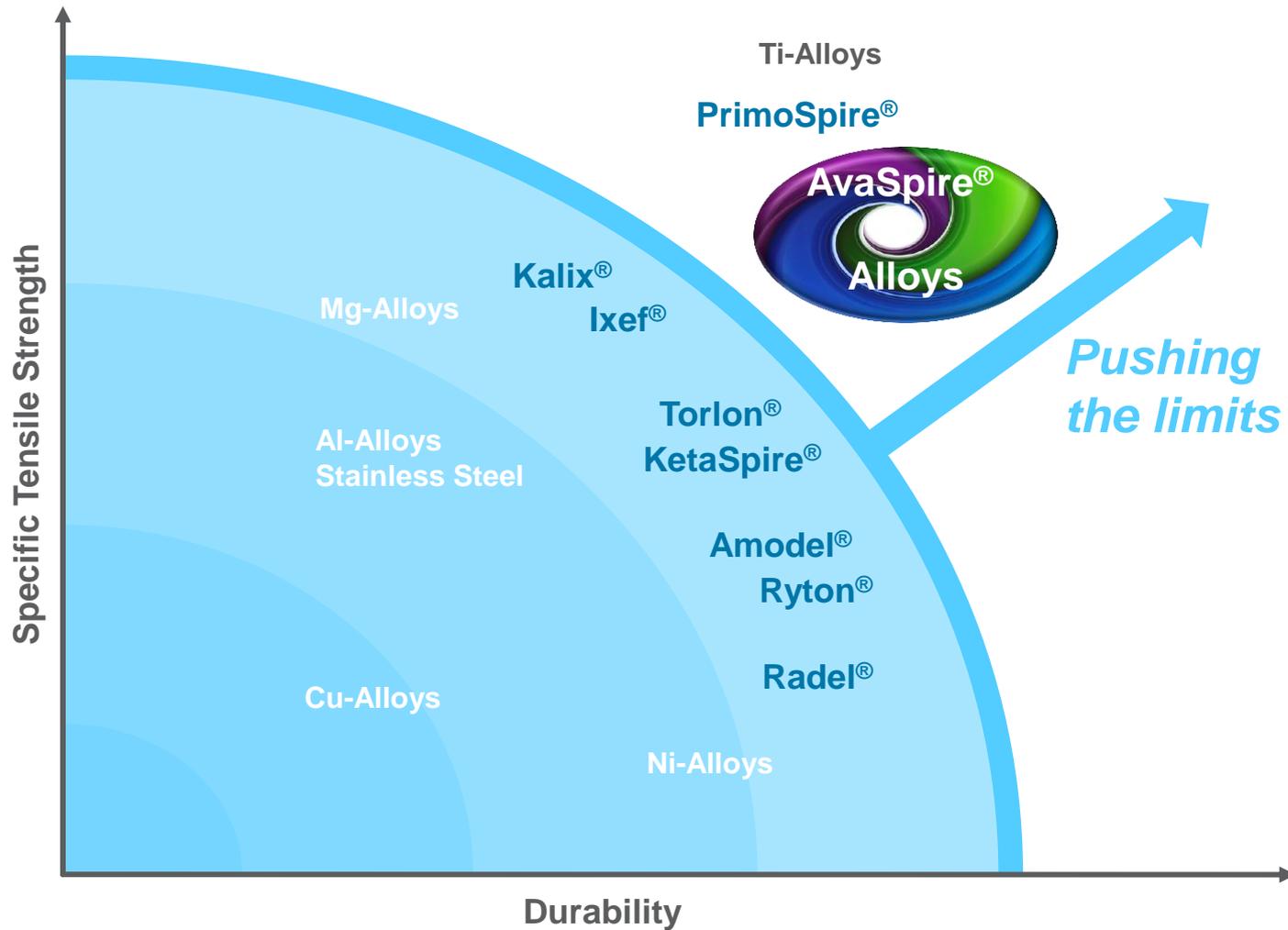
Healthcare

- More portable technology with reduce risk of spreading of infectious diseases
- Requires durable plastics that withstand rough handling plus repeated cleaning and sterilization.



AvaSpire[®] PAEK:
customized performance

Strength and durability



AvaSpire® PAEK: customized performance

Precursors

Monomers

Polymers

Alloys

Downstream

Innovation approach

Leveraged broad portfolio to create a family of **AvaSpire® PAEK** products that provide new and unique combinations of performance and value

Developed new process technology to improve compatibility of polymer blends

Capitalized on large cost-performance gap in ultra-high performance polymer solutions



Protected by
14 patent families

Business impact

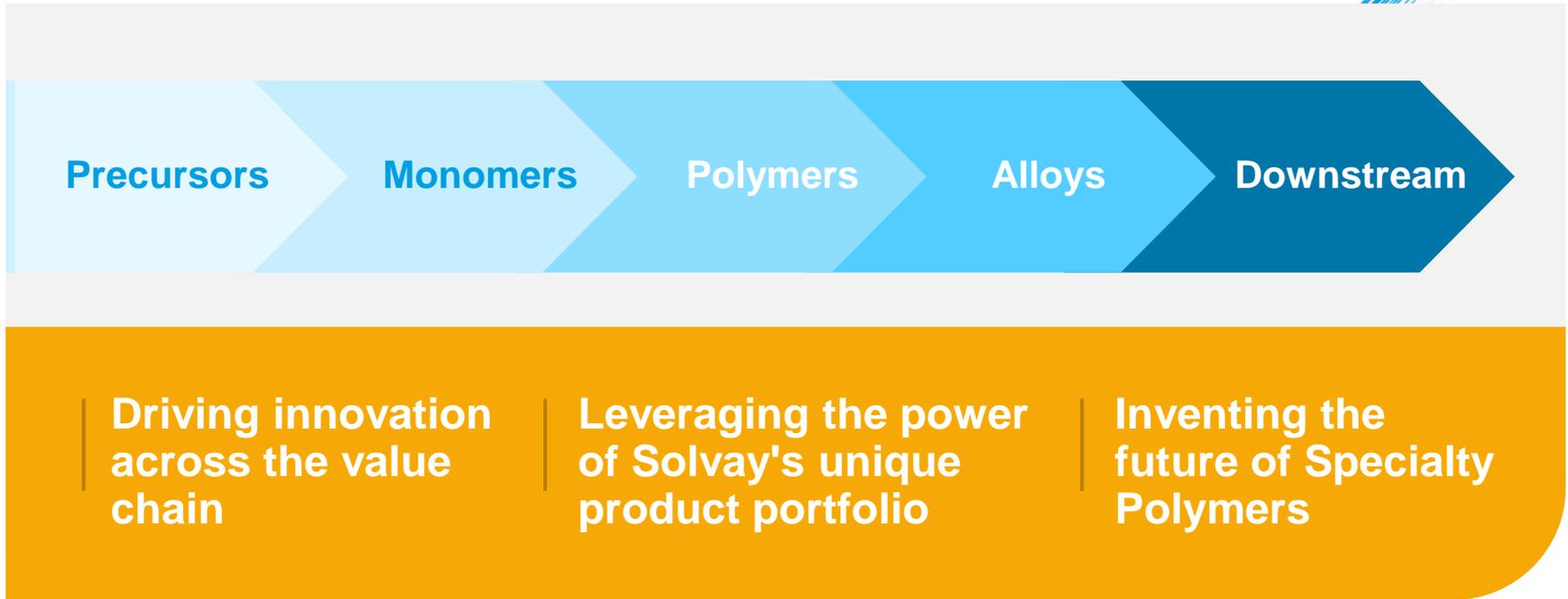
Accelerating growth

Tripling capacity currently underway

Developing products for
next-generation technology



Engineering breakthrough solutions



Keeping Specialty Polymers special for the long-term

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SPECIALTY POLYMERS,

**ADAPTIVE, AGILE,
CUSTOMER
FOCUSED**

**Laird
McBeth**

*Director of Business and Sales,
Specialty Polymers*

Long-term customer relationships



Proximity
Talking their language



Fast response times



Strategic solution partner

Creating value for our customers

Being in the right place...

Tier 2

Tier 1

OEM

...at the right time



6-12 months



2-3 years



2- 5 years



5-10 years



Timeline depends upon Industry dynamics, scale of challenges and opportunities

Automotive powertrain efficiency

Understanding the value chain



Unmet customer need

increasingly lower
CO2 emissions standards



OEM contributions

Design specifications, material
specifications, system validation

Tier 1 contributions

Design requirements, material
selection/specifications, part
production, part testing, part validation



The Results

1- Engine - Solutions for multiple engine technologies

- Tecnoflon® FKM based fuel injector O-rings
- Amodel® PPA charge air cooler
- Ryton® PPS thermal management module



2- Transmission - Complete product solutions for total transmission design

- Torlon® PAI seal rings
- KetaSpire® PEEK thrust bearings
- Amodel® PPA solenoids



**Products designed and
launched in 2-3 years**

Smart Devices Racing against the clock



Unmet customer need

Incumbent material
failing new design



OEM contributions

Design specifications, color needs,
end use testing & feedback

TIER 1 contributions

Production & Design, molding &
feedback, design support, testing



The Result

New Unique Product with
best combination of:

- Chemical resistance
- Aesthetic look
- Dimensional precision
- Processing and impact resistance
- developed and scaled < 6 months

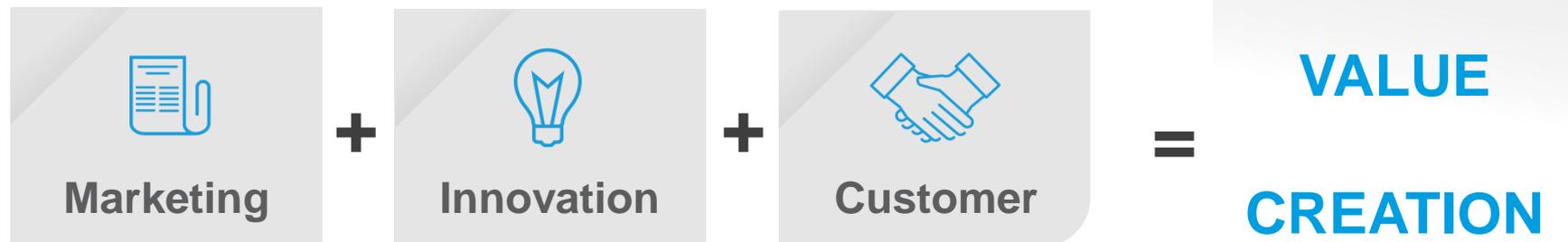
**Products designed and
launched in 6-12 months**



*Computer Aided Engineering

The Winning formula

Bringing it all together



Would our customers recommend Solvay to another company?

SOLVAY Resounding **YES*** Building market share

*Best-in-class according to latest NPS (Net Promoter Score)



SPEAKER'S RESUME





Augusto Di Donfrancesco

President, Specialty Polymers

Augusto Di Donfrancesco

began his Solvay Career in 1987 as a process engineer in Rosignano, Italy. He has held multiple roles withing the Solvay Group in Production, Technology and Commercial Operations in the Chemicals and Plastics divisions. In 2005 he moved to Buenos Aires, Argentina, to become the General Manager of Solvay Indupa, a public company listed in the Buenos Aires Stock Exchange with PVC and caustic soda production plant in Argentina and Brazil.

In 2009 he came back to Brussels as General Manager of Specialty Polymers, and finally returned to Italy in 2011 to assume his current role as President of the newly created Global Business Unit Solvay Specialty Polymers.

Augusto Di Donfrancesco, an Italian national, graduated from Pisa University in 1985 with a Bachelor's degree in Chemicals Engineering.



Jens Hoeltje

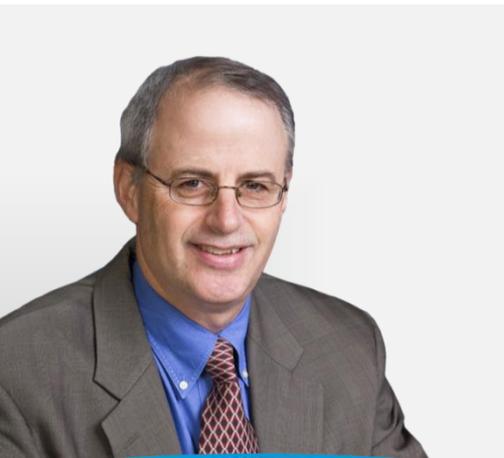
*Head of Strategy and Marketing,
Specialty Polymers*

Jens Hoeltje

started with Solvay in 1991 in the Engineering department in Germany, developing basic engineering for Fluorochemical processes. After assuming marketing for a flue gas cleaning process Jens moved in 1997 to Specialty Polymers. Over a period of 14 years he assumed various responsibilities in Business Management and Marketing & Sales for the Aromatic and Fluoropolymers of the group. During this period Jens was based in Brussels, Belgium and Bollate, Italy.

In 2011 he became responsible for the Strategy Development of Specialty Polymers at the Corporate Center in Brussels. Since 2013 Jens is the Director of Strategy and Marketing for Specialty Polymers.

A German national, Jens holds a Master in Chemical Engineering from Clausthal University and a PhD in Engineering from RWTH Aachen; furthermore, he completed postgraduate studies in Economics.



George Corbin

*Head of Research and Innovation,
Specialty Polymers*

George Corbin

started his career with Amoco in 1983 in Research & Development for Specialty Polymers, developing what is currently Solvay's Amodel polymer family. In 1990 he assumed the leadership role for the Process Engineering, Catalysis, & Technology Licensing function in Polypropylene Business. In 1994 he transferred back into Specialty Polymers to lead the Sulfone Polymers R&D Team. From 1999-2004 he was the Business Manager for Sulfone Polymers through the ownership transitions to BP and Solvay. In 2004 he returned to the R&D Function as Head of the Advanced Polymers Business to consolidate this new organization.

In 2008 he was appointed to be President of the Solvay Advanced Polymers Global Business which was merged into GBU Specialty Polymers in 2011. At that time, he assumed his current role as Director of Research and Innovation for this new GBU.

A US national, George holds Chemical Engineering Degrees from Columbia University and MIT and serves on external advisory Boards at Georgia Tech and MIT.



Laird McBeth

*Director of Business and Sales,
Specialty Polymers*

Laird McBeth

joined Solvay in 1986 as a Polypropylene Account Executive located in Columbus, Ohio. In 1989, he transferred to Solvay Polymers' headquarters in Houston, Texas and during the next 9 years held various sales, marketing and business management positions. Laird joined the Specialty Polymers Strategic Business Unit in 1998 as President of Solvay Fluoropolymers Inc. based in Houston and in 2002 relocated to West Deptford, New Jersey as Vice President of Commercial Operations for Solvay Solexis, Inc.

He became President of Solvay Solexis, Inc in 2007 and in 2011 relocated to Alpharetta, Georgia to assume his current position as Director of Business and Sales for Solvay Specialty Polymers.

Laird McBeth, a US national, graduated from Duke University in 1980 with a Bachelor's degree in Chemistry.



Maria Alcón-Hidaglo

Head of Investor Relations

+32 2 264 1984

E-mail : maria.alconhidalgo@solvay.com

Geoffroy Raskin

Investor Relations, Senior Manager

+32 2 264 1540

E-mail : geoffroy.raskin@solvay.com

Catherine Jouvét

Retail shareholder relations Manager

+32 2 264 2732

E-mail : catherine.jouvet@solvay.com

Bisser Alexandrov

Investor Relations, Manager

+32 2 264 2142

E-mail : bisser.alexandrov@solvay.com

Laetitia Van Minnenbruggen

Events Coordinator

+32 2 264 3025

E-mail : Laetitia.vanminnenbruggen@solvay.com



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SOLVAY

asking more from chemistry®