PPG Innovation Deep Dive

Global Research & Development Center
Allison Park, PA
June 14, 2016



Safety and Security Procedures

In case of an alarm, please follow your host to the nearest EXIT and outside to a gathering area.

For emergency

- **Pick up phone Dial x5222**
  - **Indicate type of emergency & Your Name, Location, Phone Number**

For safety and security

1. **Please wear safety glasses in all lab areas.**
2. **Cell phone usage or picture taking is not allowed in the lab areas.**
3. **Please wear your visitor's badge at all times.**

PPG Allison Park is a tobacco free facility

Forward Looking Statements

The Private Securities Litigation Reform Act of 1995 provides a safe harbor for forward-looking statements made by or on behalf of the Company. This presentation contains forward-looking statements that reflect the Company's current views with respect to future events and financial performance. You can identify forward-looking statements by the fact that they do not relate strictly to current or historic facts. Forward-looking statements are identified by the use of the words "aim," "believe," "expect," "anticipate," "intend," "estimate," "project," "outlook," "forecast" and other expressions that indicate future events and trends. Any forward-looking statement speaks only asof the date on which such statement is made, and the Company undertakes no obligation to update any forward looking statement, whether asa result of new information, future events or otherwise. You are advised, however, to consult any further disclosures we make on related subjects in our reports to the Securities and Exchange Commission. Also, note the following cautionary statements.

Many factors could cause actual results to differ materially from the Company's forward-looking statements. Such factors includefailure to achieve technical advances or to commercialize new products, global economic conditions, increasing price and product competition by foreign and domestic competitors, fluctuations in cost and availability of raw materials, the ability to maintain favorable supplier relationships and arrangements, the timing of and the realization of anticipated cost savings from restructuring initiatives, difficulties in integrating acquired businesses and achieving expected synergies therefrom, economic and political conditions in international markets, the ability to penetrate existing, developing and emerging foreign and domestic markets, foreign exchange rates and fluctuations in such rates, fluctuations in tax rates, the impact of future legislation, the impact of environmental regulations, unexpected business disruptions and the unpredictability of existing and possible future litigation. However, it is not possible to predict or identify all such factors. Consequently, while the list of factors presented here and under Item 1A of PPG's 2015 Form 10-K is considered representative, no such list should be considered to be a complete statement of all potential risks and uncertainties. Unlisted factors may present significant additional obstacles tothe realization of forward-looking statements. Consequences of material differences in the results compared with those anticipated in the forward-looking statements could include, among other things, lower sales or earnings, business disruption, operational problems, financial loss, legal liability to third parties, other factors set forth in Item1A of PPG's 2015 Form 10-K and similar risks, any of which could have a material adverse effect on the Company's consolidated financial condition, results of operations or liquidity. All of this information speaks only as of June 14, 2016, and any distribution of this release after that date is not intended and will not be construed as updating or confirming such information. PPG undertakes no obligation to update any forward-looking statement, except as otherwise required by applicable law.

Definitions

Additive manufacturing – The application of the 3D printing process to manufacture three dimensional parts and products.

Additives – Materials added to coatings that impart desired properties such as flow, light stability, and sag control to the coating formulation.

Bake oven – Oven used to thermally "cure" or "dry" a coating system.

Basecoat – The "color layer" of multilayer coatings stacks. Often a primer is beneath the basecoat, and a clearcoat over it.

BPA Non-intent (NI) – Coatings or other products that do not intentionally contain "bisphenol A"; a chemical that has come under increasing global regulatory scrutiny.

Compact process – Any process that reduces the complexity of an existing painting process. An example is the removal of 1 of 3 ovens from the automotive coating process.

Cure – The process of "setting" a coatings formulation on a surface.

Electrocoat (E-coat) – Process for applying coatings to electrically conductive substrates. An electrical charge is applied to the substrate causing deposition of the coating.

Intelligent surfaces – Any surface that is capable of responding to a stimulus in its environment (pressure, light, heat, etc.).

Low energy cure – Enabling curing of coatings at temperatures lower than 100 degrees Celsius.

NOx – Nitrogen oxides. Common air pollutants that result from high temperature burning of fossil fuels.

Pigment – Particles used to impart color to coatings

Polymer – A large molecule that is built from smaller "monomer" units. Often synonymous with "resin".

Polyurea – A type of coating chemistry that cures rapidly at room temperature and results in a coating with extreme toughness and strength.

Pretreatment – The first layer often applied to metallic substrates during coating operations to provide corrosion protection and adhesion of other coatings.

Primer – Coating layer that is on top of the pretreatment or E-coat to "even-out" substrate roughness, provide added corrosion protection and damage resistance.

Resin – Polymeric "binder" that holds all coatings components together in the final film. Properties such as flexibility, adhesion and corrosion depend on this component.

Rheology – The viscosity of a coating under a given set of conditions.

Sealant - Substance used to block the passage of gas or fluids.

Solid content – The portion of a coatings formulation that becomes the final coatings product after cure.

Solventborne – Coatings that use organic solvents as the primary liquid medium.

Substrate – The part or material that is being coated.

Synthesis – Making new molecules that are useful either as binders or additives in coatings formulations.

Waterborne – Coatings that use water as the primary liquid medium.

VOC – "volatile organic content" – the amount of "solvent" released during application and cure of a coating.

Today's Timeline

Time	Topic / Presenter
8:00 – 8:05	Welcome / Presentation Overview **Scott Minder**
8:05 – 8:15	Innovation at PPG: A CEO's Perspective **Michael McGarry**
8:15 – 8:45	Innovation at PPG: A CTO's Perspective **David Bem**
8:45 – 9:45	Coatings Innovation **Kurt Olson**
9:45 – 10:00	Innovation Driving Future Growth **David Bem**
10:00 – 10:05	Rest of Day Overview **Scott Minder**
10:05 – 10:15	Break
10:15 – 12:00	Facility Tour R&D Staff
12:00	Break
12:15	Buses depart for PIT Airport and Oakmont
4:00	Bus departs Oakmont for PIT Airport

PPG Speakers



Michael McGarry

President & Chief Executive Officer



David Bem

Chief Technology Officer & Vice President, Science & Technology



Kurt Olson

Research Fellow

PPG Deep Dive Program (partial listing)

Year	PPG Topic(s)	Location	Details
2007	Aerospace	PPG facility Huntsville, AL	PPG's participation in the Aerospace coatings, sealants and transparency industry
2008	SigmaKalon Acquisition Overview	Offsite	Reviewed details (markets, customers, regional coverage, etc.) of PPG's largest acquisition (closed Jan. 2008)
2010	Asia and Automotive OEM	BMW facility Spartanburg, SC	Provided details of PPG's Asian operations and rapid growth history/prospects. Overview of PPG's automotive OEM coatings business and end-market dynamics
2011	Automotive Refinish	Penske Racing Charlotte, NC	Review of global auto collision repair coatings industry including distribution processes and key customer requirements. Review of PPG's new technologies addressing market needs
2012	Industrial	Harley Davidson York, PA	Overview of the broad, consolidating general industrial coatings industry; various product segmentation around end-use, application methodology and substrate
2013	Packaging	Ball Container Williamsburg, VA	Discuss packaging coatings industry, current marketplace dynamics and product trends and growth opportunities
2014	Architectural	PPG Architectural sales outlets Dallas, TX	Discuss global architectural coatings regional demand and trends, and update of PPG's North American architectural coatings acquisition
2015	Comex Acquisition Overview	Comex concessionaires Cabo San Lucas, MX	Detailed overview of the Mexican architectural coatings market and the details of the Comex acquisition (distribution model, approach to market, growth opportunities) Acquisition closed Nov. 2014
2016	Innovation	PPG R&D facility Pittsburgh, PA	Discussion on the significant role that innovation has and will play within the global coatings industry. New products, new markets, new ideas coming together to increase the use of coatings to solve customer challenges

A legacy of educating investors on the coatings industry

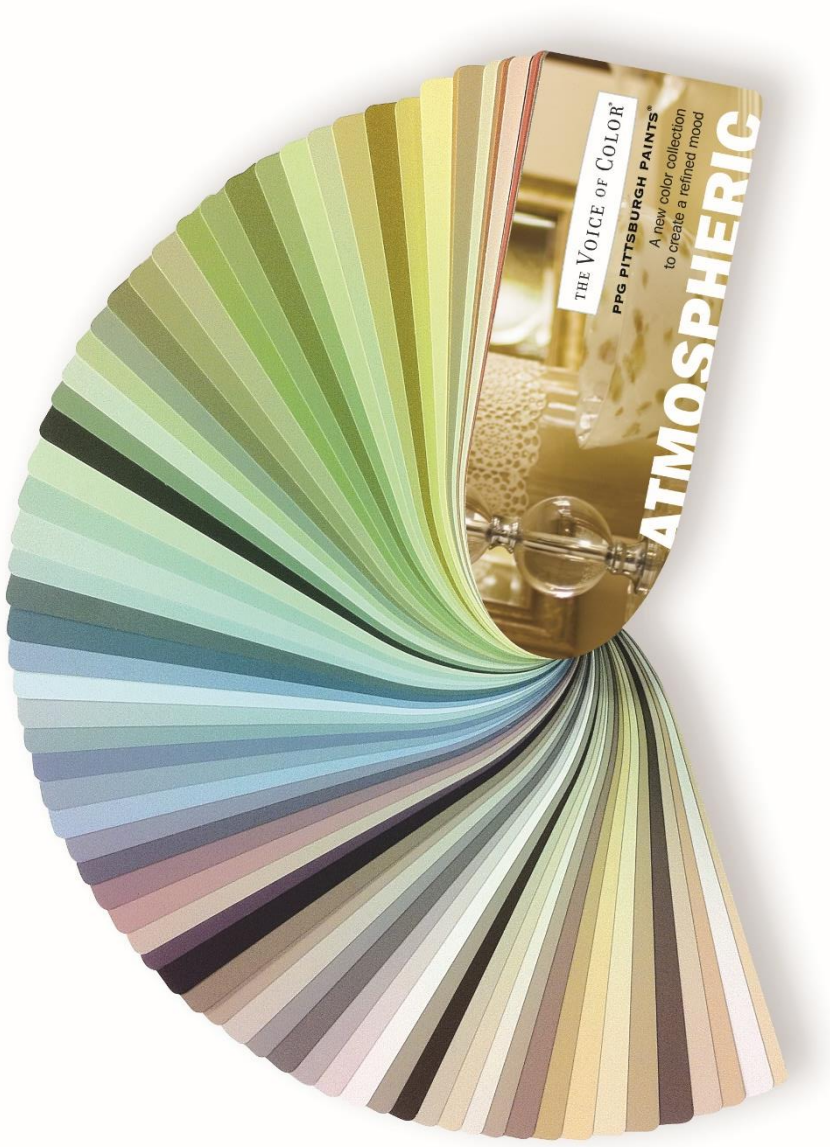
PPG Deep Dive Program



A PPG Deep Dive is NOT:

- A PPG investor day
- An update on the quarter or current business conditions
- A discussion on PPG businesses
- A strategic update

PPG Deep Dive Program



Objectives

- Provide a deeper understanding of how innovation continues to shape the coatings industry
- Describe how innovation will continue to drive future PPG and coatings industry growth

Takeaways

- Anatomy of a coating
- How we develop new products and bring them to market
- Increasing demand for more complex coatings and enhanced color
- Importance of PPG's Research & Development efforts for our customers
- Past, present, and future coatings industry growth drivers
- Innovation as a catalyst for accelerated organic growth

PPG and Innovation: A CEO's perspective

Michael McGarry
President and Chief Executive Officer

June 14, 2016
Allison Park, PA

We are a Global Leader in Paints and Coatings



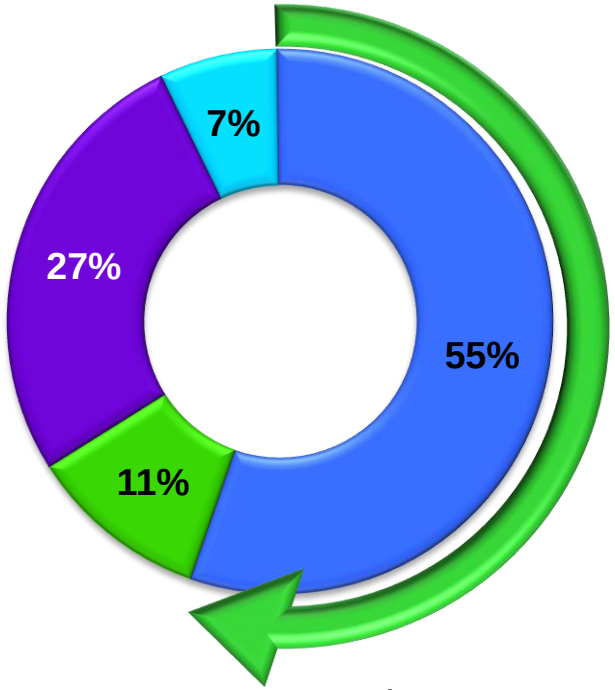
PPG provides a broad array of leading products to various global industries and consumers

Significant Portfolio Transformation

Shift to higher growth coatings markets that demand innovative technologies

Sales

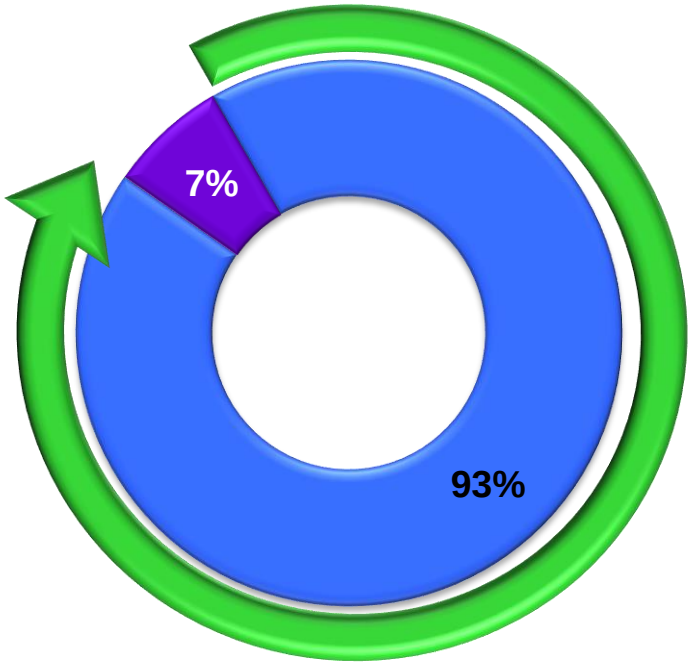
2002 - $8.1B



Coatings = $4.5B

Optical
Coatings
Chemicals
Glass

2015 - $15.3B

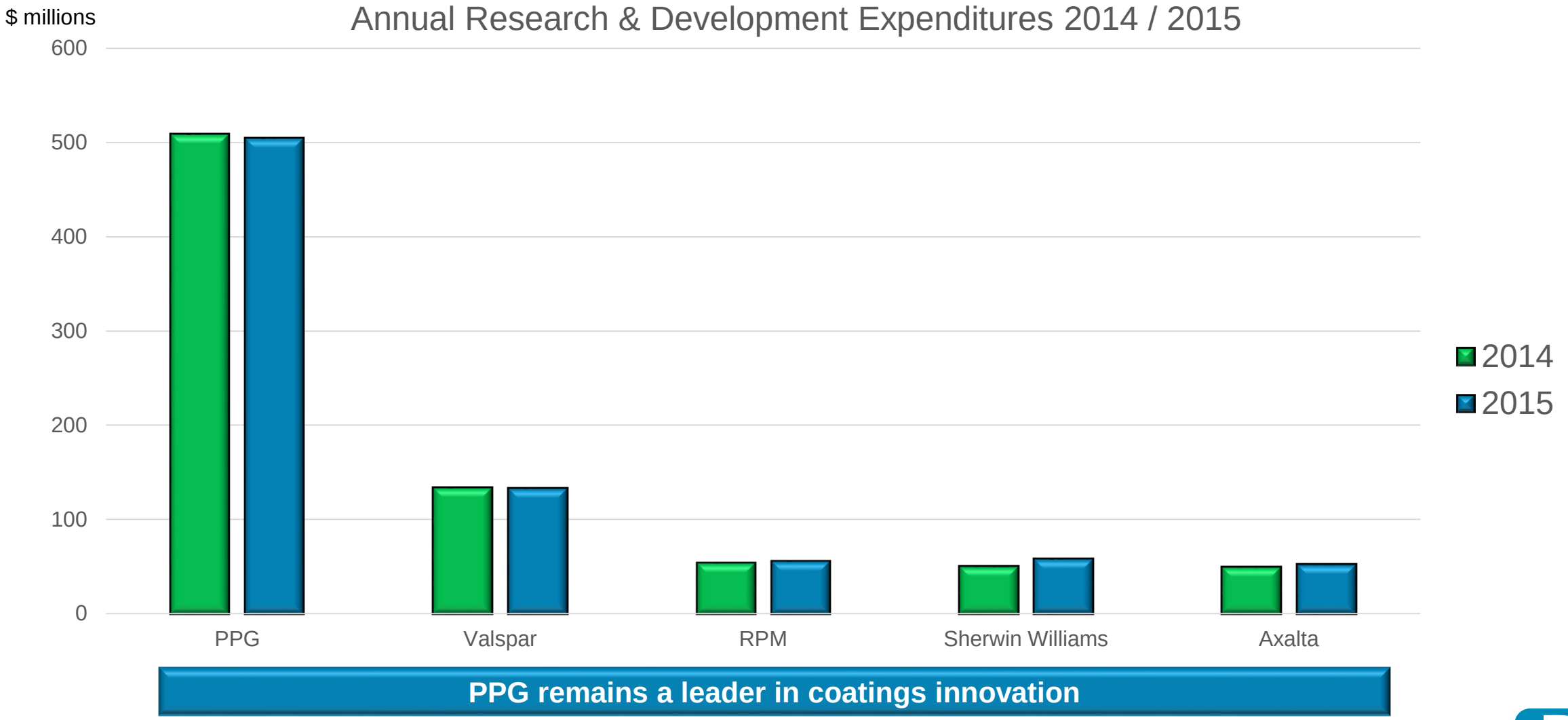


Coatings = $14.2B

Coatings portfolio growth driven by organic & acquired technology deployment

Innovation Investment

Continuous investment in research & development is a customer requirement



Sources: company financial reports, data represents fiscal years
Note: Coatings-only R&D expenditures for AkzoNobel and BASF are not publically available.

Global Coatings Market Positions by Vertical

PPG able to leverage research and innovation across all coatings end-use markets

	Global Position	Arch ~$56B	General Industrial ~$36B	Protective & Marine ~$16B	Refinish / Collision ~$8B	Auto OEM ~$10B	Packaging ~$3B	Aerospace ~$1B
PPG	#1	---------- Acquisitions in every vertical in the past 10 years ----------						
AkzoNobel	#2							
Sherwin-Williams	#3							
Valspar	#5							
Axalta	#7							
BASF	#8							

#1 Market Position #2 Market Position #3 Market Position #4+ Market Position No Meaningful Presence

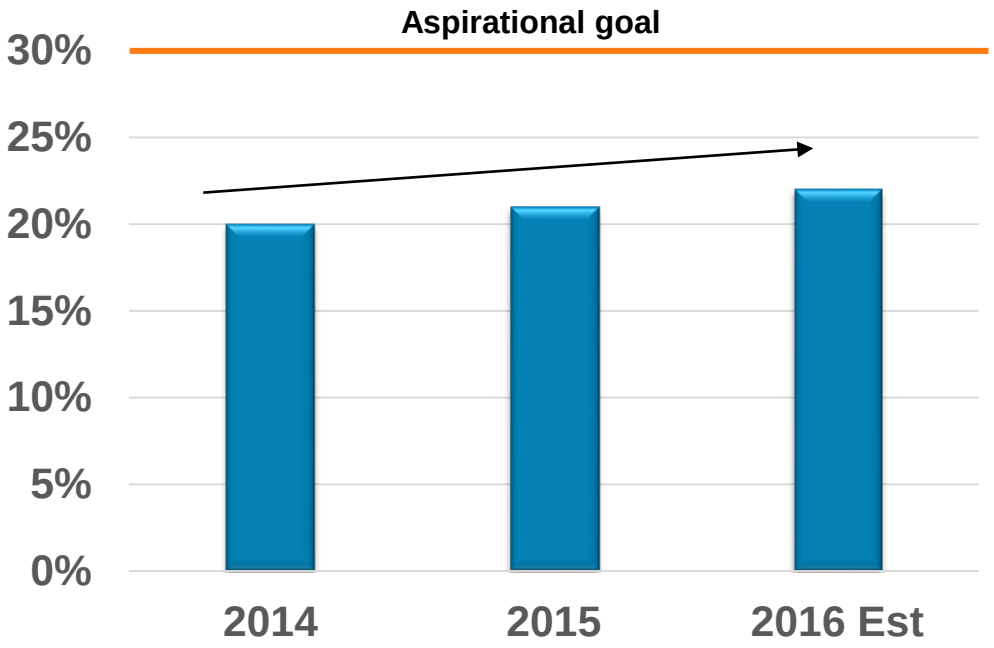
PPG has broad access to changing technology requirements due to global reach and customer diversity

Sources: Orr and Boss; company annual reports, PPG estimates
Note: Other competitors not shown above: RPM #4, Nippon #6

Innovation Provides Growth Through Customer Value Creation

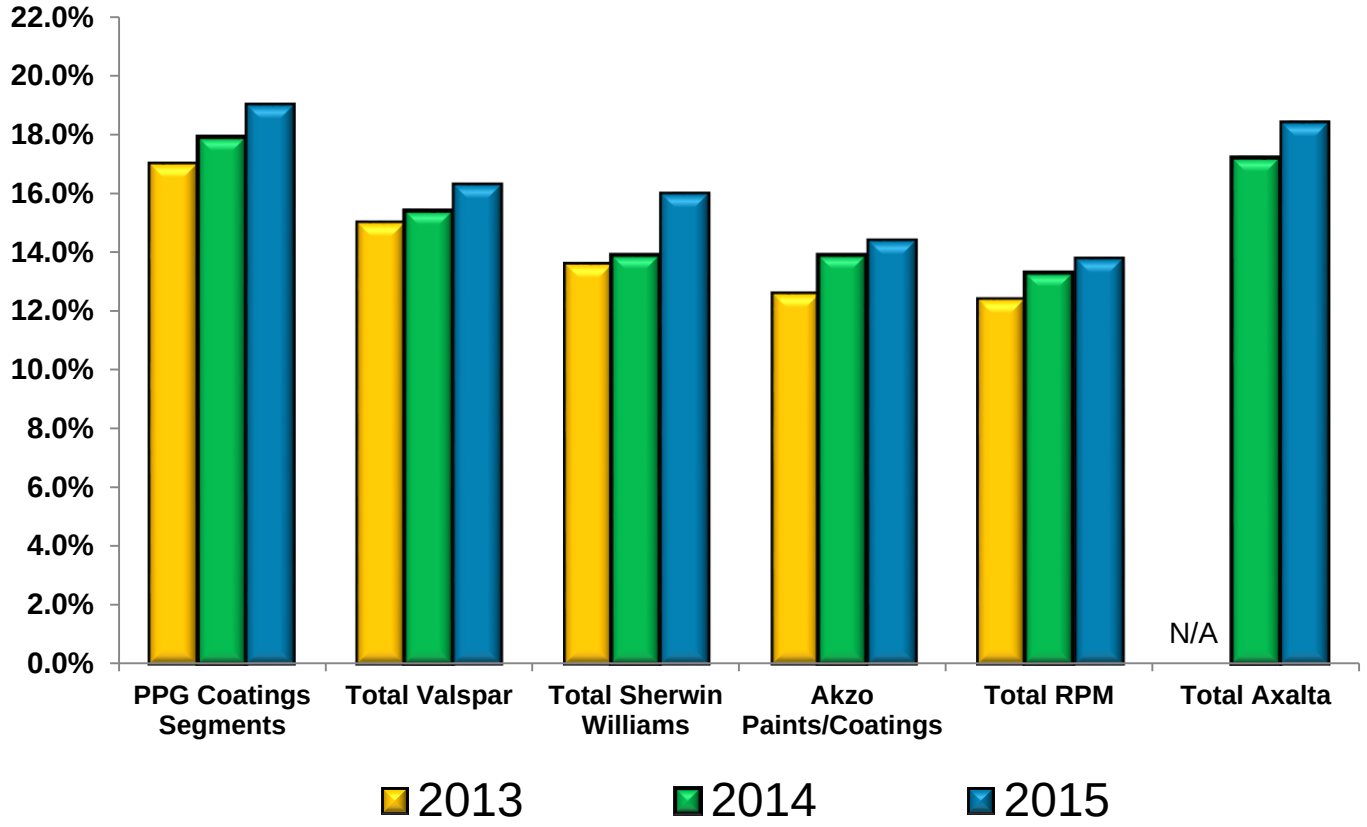
PPG's commercialization of new products accelerating

New product sales as % of Net Sales*



* Products commercialized in the past 4 years

Full Year EBITDA as % of Net Sales **

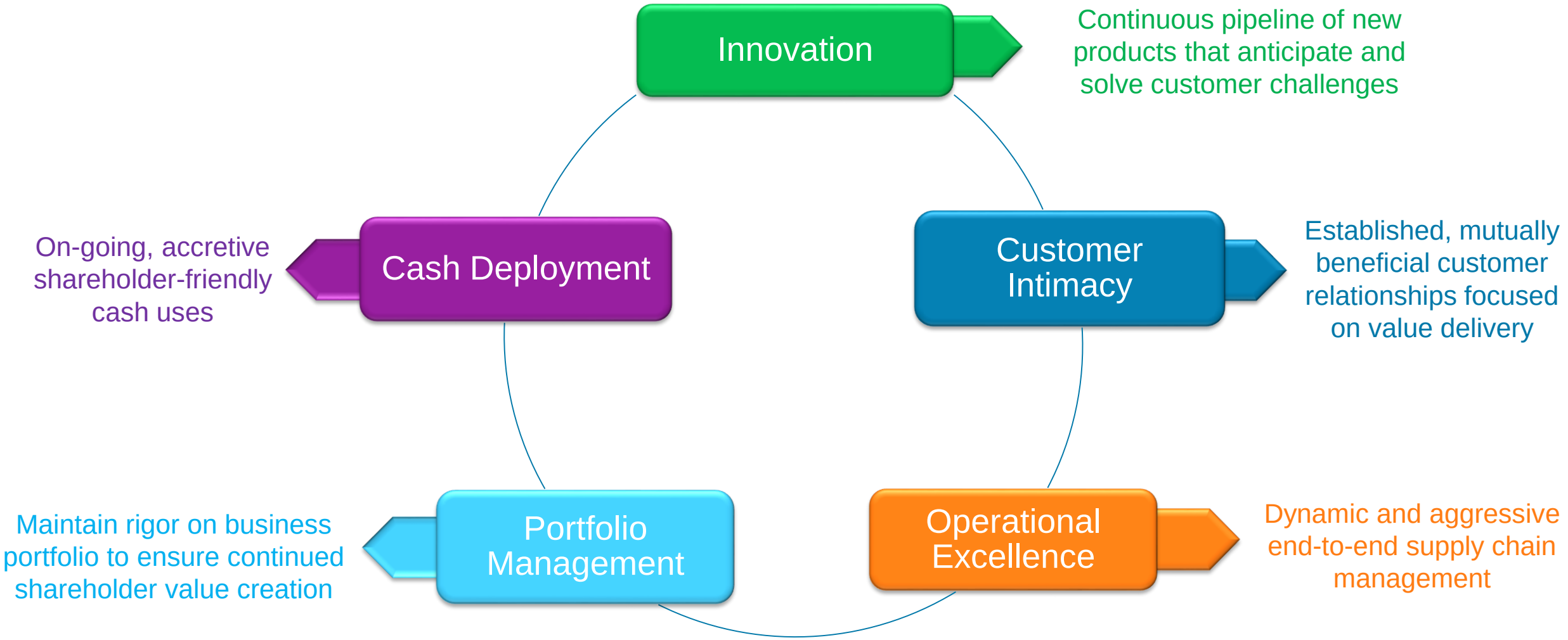


New products create value for customers and the coatings industry

Sources: company financial reports, excluding unusual items. ** See appendix for reconciliation.

PPG's Pillars of Growth

Innovation a key to driving higher organic results for PPG



PPG utilizes all levers to create shareholder value; Innovation is the starting point

PPG and Innovation: A CTO's perspective

David Bem
Chief Technology Officer

June 14, 2016
Allison Park, PA

David Bem, Ph.D.

Chief Technology Officer and Vice President, Science and Technology



Career

- Joined PPG in November 2015 as Chief Technology Officer
- 8 years at Dow; Vice President R&D Consumer Solutions and Infrastructure Solution
- 6 years at Celanese; R&D director for engineering polymers/Ticona
- 7 years at UOP (now Honeywell); R&D director

Education

- Ph.D. in inorganic chemistry (Massachusetts Institute of Technology)
- Bachelor of science degree in chemistry (West Virginia University)
- Nine U.S. patents; author of more than 20 publications
- Co-chair of the Board on Chemical Sciences and Technology (BCST) of the National Academy of Sciences.
- Served on Industrial Advisory Boards at Oakridge National Labs, University of Wisconsin (Chemistry), and Penn State (MRI)

PPG Coatings Innovation Center



Core Activities

- Resin Synthesis
- Formulation
- Application
- Analytical Capability
- Physical and Computational Chemistry
- High Throughput Methodologies
- Process Engineering
- Development Center (Pilot Plant)

- 250+ researchers (synthesis chemists, formulators, analytical chemists, engineers)
- 600+ patents in past 10 years

A single, primary global coatings research & development facility ensures technology spread across company

Types of Coatings



Solvent Borne

Lacquers

No “linking” of chains after application

Enamels

Molecular “network” formed during “curing” reaction

1K

“One Component”

All components in 1 can

Architectural, Refinish, Industrial, Automotive





2K

Two components separated until use

Refinish, PMC, Automotive, Architectural, Aerospace





Water Borne

Aqueous Dispersions “Latex”, Polyurethane, Electrocoat

Architectural
Automotive
Industrial
Packaging
Refinish
Protective & Marine (PMC)

Powder

>90% SolidContent

Automotive
Industrial
Packaging



Specific needs and application environments drive customer’s coatings choice

Anatomy of a Coating

PPG is a “formulated product” company



Pigments
Color
Hiding
Visual “Effects” (sparkle, travel)

Resins
Hardness, Durability, Chip Resistance, Flexibility, Corrosion Resistance

Solvent / Water
Ease of Application
Flow, Leveling, Appearance

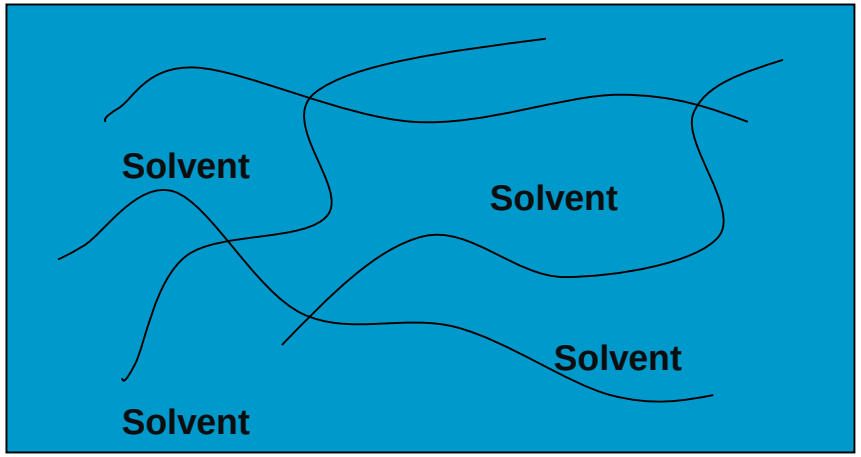
Additives
Defect Control, UV Protection, Catalysts Anti-settling, Appearance, Pop / Sag Resistance, Adhesion, Rheology

A ***specific combination*** of ingredients leads to the desired ***unique*** set of customer value-added attributes

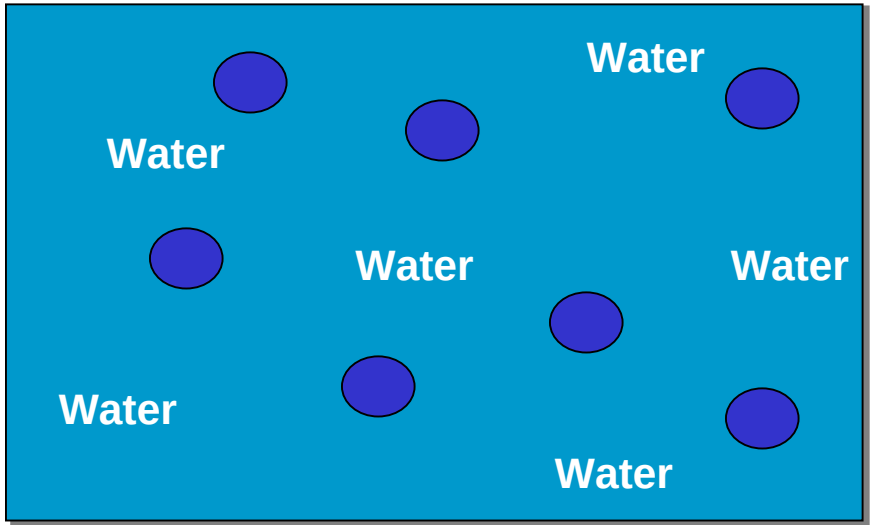
Molecular structure is key for performance characteristics

Solventborne vs. Waterborne Coatings

- **Solventborne:**
  - **Polymers/Resins dissolved/diluted in solvents**
  - **Viscosity determined by molecular length and concentration**

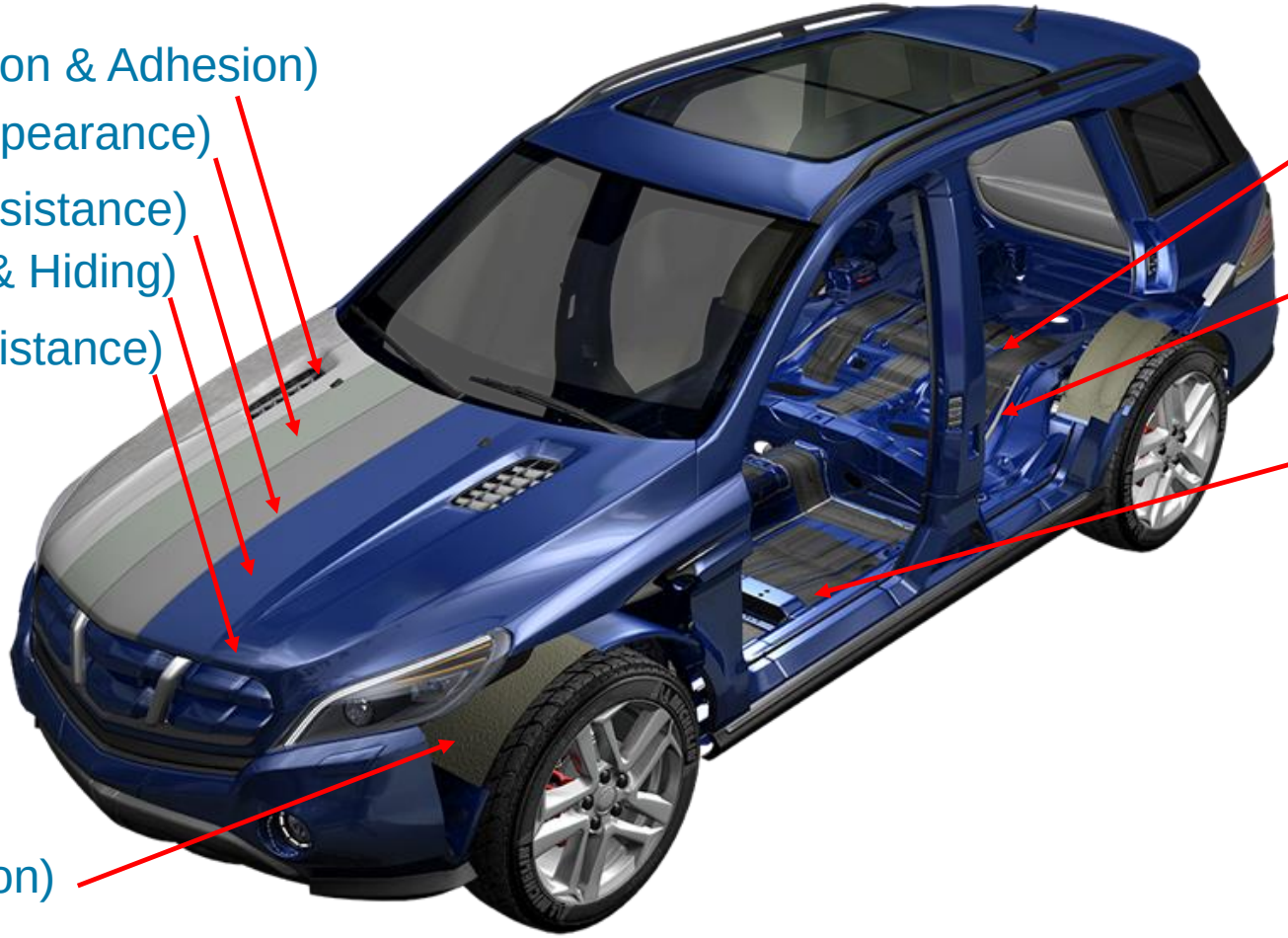


- **Waterborne:**
  - **Water is the “continuous” phase**
  - **Latex resins in separate “dispersed” phase**
  - **Viscosity influenced by solids, pH - not by molecular length**



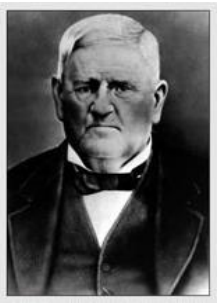
Global/Customer sustainability efforts increasing importance and usage of waterborne coatings

Coatings Layers and Product Attributes



Innovation across different chemistries improve customer experience and their product value

PPG History of Organic Innovation



1883 - Pittsburgh Plate Glass (PPG) Founded by Ford & Pitcairn.

1900 - Acquires Patton Paint Co. and Columbia Chemical Co.



1910 - Opens the company's first R&D facility.



1938 - Patents **CR-39®** monomer pioneering plastics ophthalmic lenses.



1940 - Develops laminated aircraft glass.



1963 - Revolutionizes auto industry with electrodeposition coating process.



1967 - Introduces **Duranar®** fluoropolymer coatings to China.



1968 - Reflecting diversification - becomes **PPG Industries**.



1975 - Introduces **DesignaColor** consumer paints.



1987 - Develops **Teslin®** synthetic printing material



1990 - Develops **Transitions®** lenses that darken in sunlight.



1998 - Introduces **G1** coatings for easy opening can ends .



2000 - Silicas add to performance of athletic footwear. **Enviroprime®** global lead free Ecoat launched.



2002 - Produces fiber glass for wind. Introduces lead free **FrameCoat®**, and **Ceramiclear®** mar resistant coating.



2004 - Introduces **B1:B2** compact paint process



2008 - Introduces **Zircobond®** pretreatment



2009 - Introduces **Duranar®** Powder



2014 – BPA-NI needs met with **Innovel HPS®**



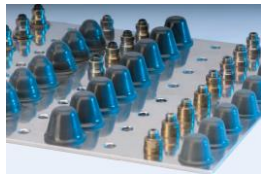
2015 - Metal Free E-coat



PPG history of growth through innovation

PPG History of Acquired Innovation

1997 Max Meyer – Refinish basecoat



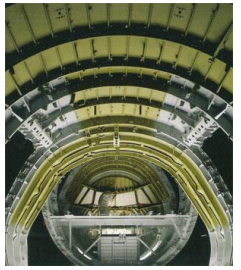
1999 PRC Desoto - Aerospace sealants



2006 Sierracin - Aerospace military transparencies

2008 SigmaKalon – PFP, Marine, Architectural

2011 Dyrup – Wood stains



2013 Deft – chrome-free

2013 Spraylat – Conductive inks, powder



2014 Comex – Latex, Passive Fire Protection (PFP)



2015 Cuming – Microwave absorption

2015 IVC – Powder, Quick Color Match

2015 LJF – Aerospace /Auto sealants / adhesives



2015 Revocoat – LASD, Auto adhesives



2014 Homax – Sprayable texture



2014 HiTemp – Corrosion Under Insulation (CUI)



2012 Akzo NA – Adhesives and sealants



2008 BASF Coil – "Cool" Roof



2006 Ameron – Protective coatings



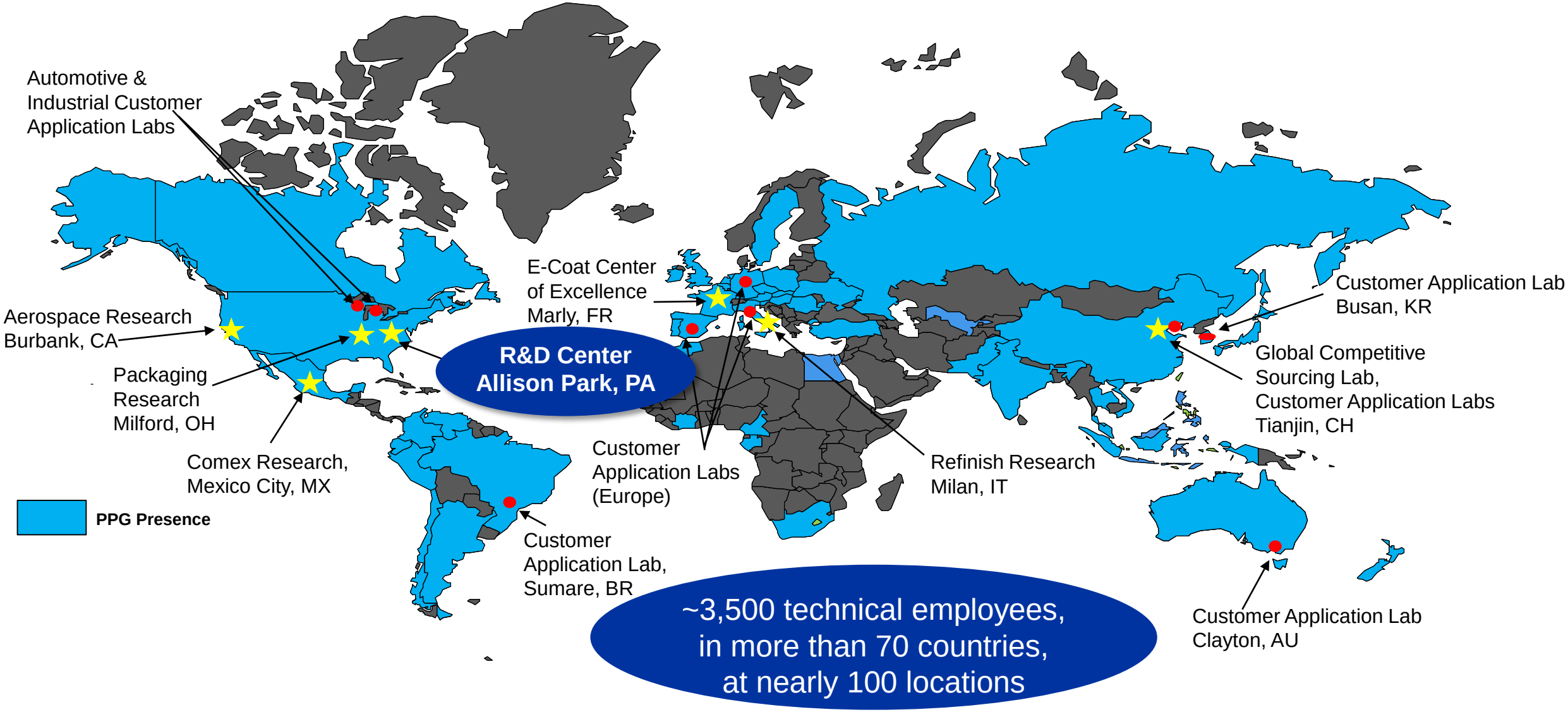
2000 ICI – Water borne basecoats, Refinish

1998 Courtaulds - Packaging



Leverage acquired technologies across PPG's global scale

PPG's Global Technical Footprint



Global research & development efforts to service customers locally

Innovation Benefits from Scale

Sources

- Global customer input
- Industry macro trends
- Open innovation
- Government funding
- Technology scouting
- Acquisitions



Global networks & capabilities

Intimate market knowledge & experience

Constant customer presence

Broad & deep scientific "know-how"

Outputs

- Technology roadmaps
- New products & processes
- Adjacent market development
- Technology sharing across platforms
- Acquired technology growth strategies

Customer Value

Innovation is derived from multiple sources and translates into value-driven product development

Innovation Process

Innovation Portfolio Management

Managed ideation process

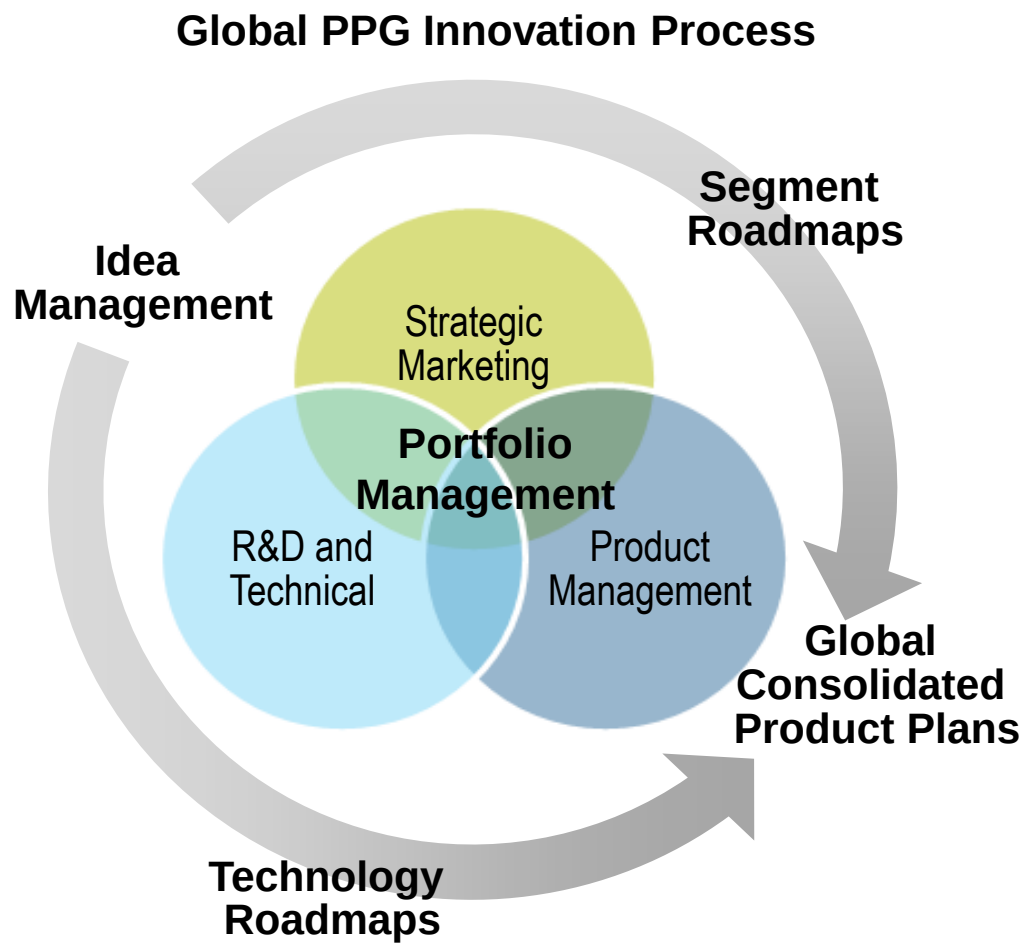
- Roadmapping
- Idea generation & capture
- Idea qualification & prioritization

Formal toll gate process

- Project management
- Optimization of portfolio
- Global alignment of science & technology activities

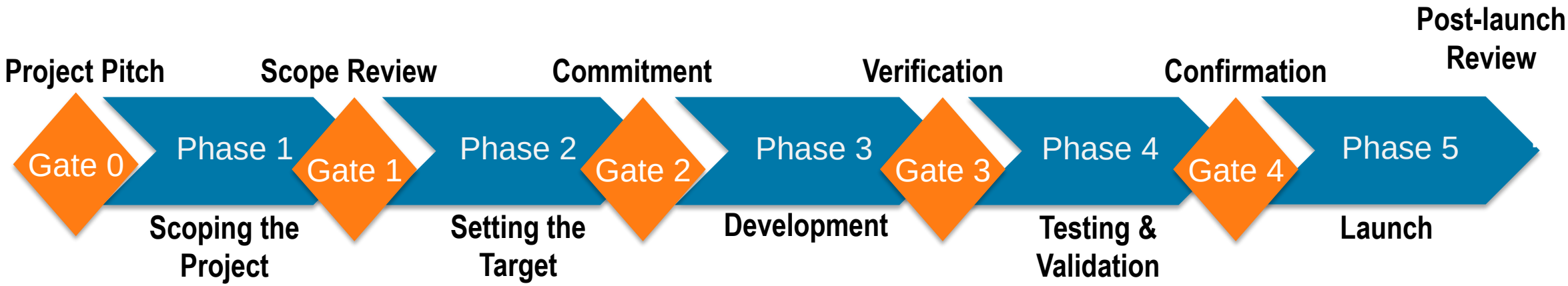
Project portfolio alignment against growth goals

- Sales from new products



Innovation is a well-defined, scalable global PPG process

Innovation Portfolio Management – Gate Process



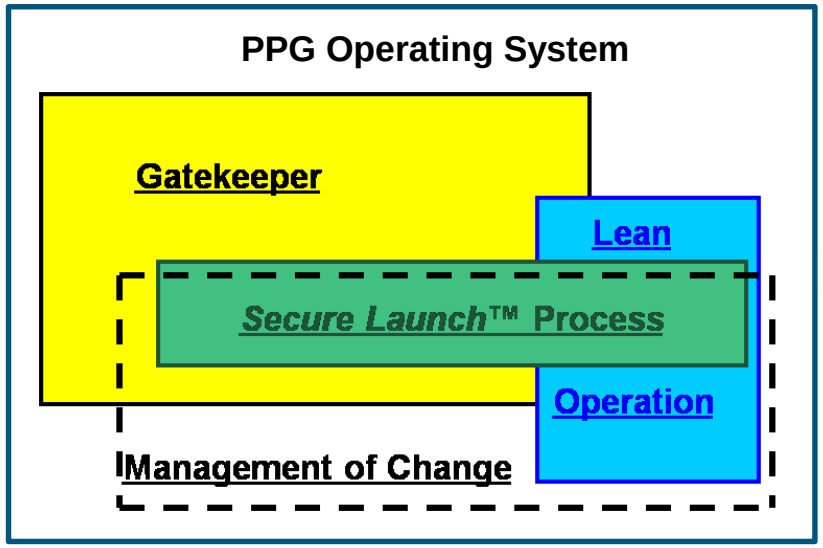
Gate Reviews:

- Business and technical representation
- "Go or no-go" decisions based on:
  - Technical & market feasibility
  - Growth potential

Projects must pass multi-function gate reviews to continue toward commercialization

Secure Launch Process Example

Secure Launch excellence™



SECURE LAUNCH PHASES

Phase 1	PRODUCT SELECTION
Phase 2	ASSIGN LAUNCH CHAMPION (S)
Phase 3	CUSTOMER PRODUCT APPROVAL
Phase 4	1st ENGINEERING REVIEW & SUPPLY CHAIN
Phase 5	EH&S AND PRODUCT STEWARDSHIP
Phase 6	PEOPLE & RESOURCE ALIGNMENT
Phase 7	2ND ENGINEERING REVIEW & PROCESS VALIDATION
Phase 8	COATINGS TO PROCESS OPTIMIZATION
Phase 9	PRE-LAUNCH PLANNING & RISK REVIEW
Phase 10	LAUNCH TO JOB 1

Manage Post Launch Development

Disciplined customer-facing product introduction process to ensure first-run and post-launch success

PPG: We protect and beautify the world™



Each coating is a unique blend of attributes built to solve customer challenges

PPG and Innovation

Kurt Olson
Research Fellow

June 14, 2016
Allison Park, PA

Paint History – From Ancient Civilizations to Electrocoat



30,000 BC – Cave painting (animal fat and colored earth)



0 BC – Mayan pigments developed in SA (clay and indigo)



1900 – PPG buys Patton Paint Co., enters coatings



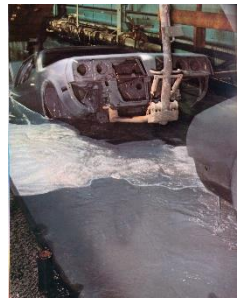
1937 – Entered Railway Paint Business – Thresher Acquisition

1947 - Forbes Varnish acquired – Industrial coatings

1961 – Duracron thermosetting coatings

1974 – Allison Park R&D opens

1963 – First Electrocoat



1954 – Springdale R&D opened

Late 1940's – Latex paint becomes popular



1928 – PPG buys Ditzler – enters automotive paints – Quick drying "nitrocellulose" lacquers



1869 – Patton Paint Co. Formed – Sold Paint and Glazier Supplies



5000 BC – Chinese use Lac Beetle extract as binder (shellac)



PPG Coatings Innovation Leadership

Sustainability

Functionality

Energy

Light-Weighting

Asset Protection

Customer Experience

Historical	Current		Future
Refinish Waterborne Color Coat	Next Generation Electrocoat Performance Silica	BPA-NI Coatings Anti-pollution Coatings	Water Filtration
Duranar Building Coatings	Durable Rubber		Graphene
	Solar Heat Management	Automotive Compact Process	3D Printing-Additive Manufacturing
	Light-Weight Sealants		Energy Storage
Electrocoat	Hi-Temp Coatings	Advanced Material Corrosion	Intelligent Surfaces
Aerospace Sealants	Extreme Color Architectural Products	Cure Control	Color-shifting Pigments

PPG Pioneered Electrocoat Over 50 Years Ago

Asset Protection

Continued innovation across end-use markets

Anti-corrosion technology used for metal protection

What makes it better?

- Premium corrosion protection
- Improved customer productivity & paint quality
- Enhanced surface coverage

What are the results?

- Industry standard for Automotive OEM corrosion protection
- Emerging technology adoption in other end-use markets
- Continuing challenges require new innovations
  - Regulation
  - Substrate changes and combinations
  - Energy efficient application processes



PPG is the leader in the $4B+ global electrocoat marketplace

Refinish Waterborne Basecoat: Envirobase™

First commercially successful waterborne refinish product

Sustainability Energy

What makes it better?

- Color match efficiency
  - ✓Tints that won't "separate" on the shelf
- Less required capital for our customers
  - ✓No "mixing banks" required for ongoing agitation

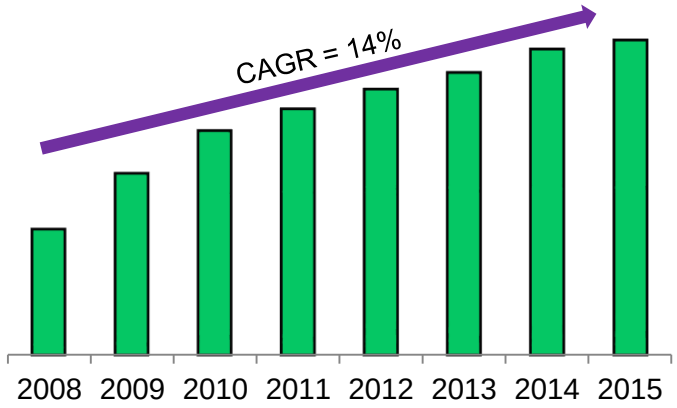




What are the results?

- PPG market leadership globally
  - ✓More waterborne customer shops converted worldwide than all competitors combined
- Significant environmental benefit
  - ✓Eliminates ~300 lbs. of VOC emissions per 50 gallons of basecoat

PPG Global Waterborne Paint Shops



PPG is the waterborne leader in the $7B global automotive refinish market

Duranar® Coatings

Leading global coatings brand for building exteriors

Asset Protection
Energy

What makes it better?

- Superior durability (>25 years)
- Lower building energy needs
  - ✓ Solar & heat reflective versions
- New near zero-VOC powder product

What are the results?

- Leading market position
- Strong reputation among decision makers



PNC Tower, Pittsburgh, PA



Dubai Emirates Towers



Hudson Yards, New York, NY



Ministry of Education, Kuwait



Golden Financial Tower
Tianjin, China



Cornell University
Roosevelt Island, NY

Duranar® is the global industry standard for commercial construction applications

Aerospace Adhesives and Sealants

Highly-specified, mission-critical aircraft products

Energy
Light-Weighting

What makes them better?

- Operate within extreme temperature variations
- Customized packaging options to assist in customer application and minimize waste
- Essential for aircraft performance



What are the results?

- Strong PPG customer relationships at large aircraft OEMs
  - ✓ Just-in-time delivery
  - ✓ Less waste
- Enhanced aircraft longevity
- Industry technology leadership in $500 million end-use segment

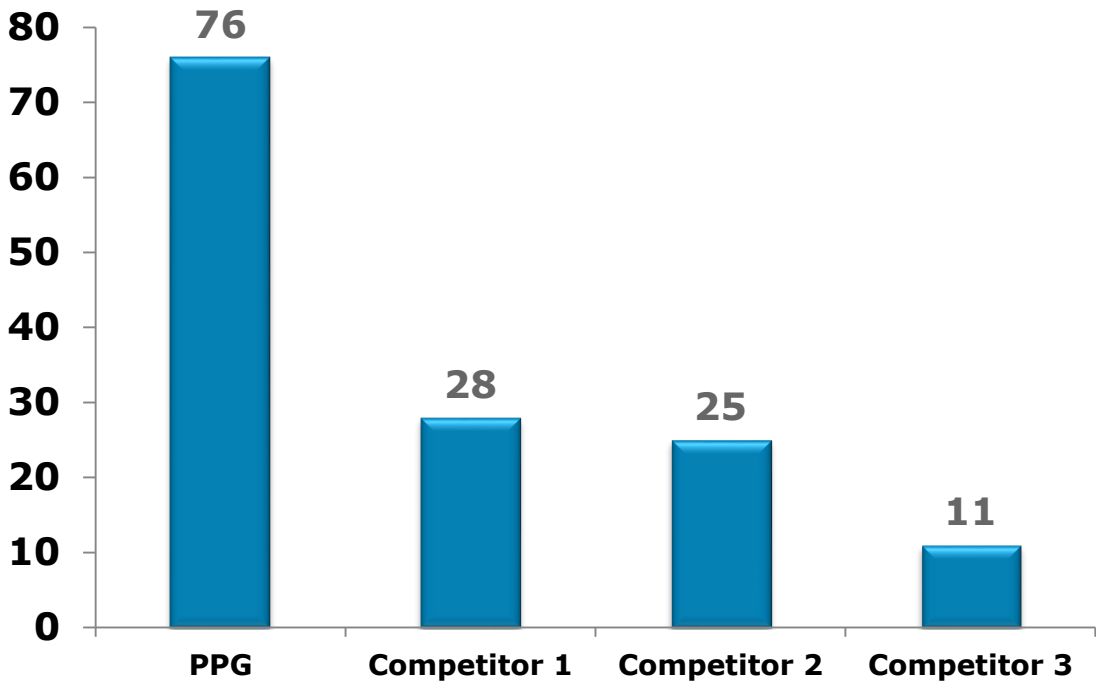


PPG is the established leader in the growing aircraft adhesives & sealants market

PPG – Demonstrated History of Innovation

Leads to customer and industry recognition of success

U.S. Coatings Patents – 5 year avg.





Ford 2016 Excellence Award



Fiat Sustainability Award

R&D 100 54 Years of Invention

GREEN CHEMISTRY A U.S. EPA Program

Automotive News PACE AWARD



EY Building a better working world

TRC Transportation Research Center Inc.

We have developed a foundation of scalable, innovative market-aligned products to build upon for growth

PPG is a coatings industry benchmark for innovation

PPG Coatings Innovation Leadership

Sustainability

Functionality

Energy

Light-Weighting

Asset Protection

Customer Experience

Historical	Current		Future
Refinish Waterborne Color Coat	Next Generation Electrocoat Performance Silica	BPA-NI Coatings Anti-pollution Coatings	Water Filtration
Duranar Building Coatings	Durable Rubber		Graphene
	Solar Heat Management	Automotive Compact Process	3D Printing-Additive Manufacturing
	Light-Weight Sealants		Energy Storage
Electrocoat	Hi-Temp Coatings	Advanced Material Corrosion	Intelligent Surfaces
Aerospace Sealants	Extreme Color Architectural Products	Cure Control	Color-shifting Pigments

Coatings innovation to solve increasingly complex customer challenges

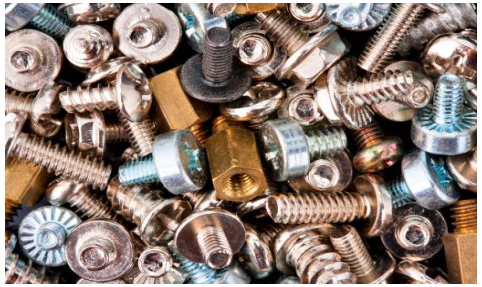
Increasing and Adapting Corrosion Protection Requirements

Corrosion is a significant challenge for coatings customers

Asset Protection
Sustainability



- Next generation electrocoat
- Corrosion-resistant primer



- Zinc-rich coatings

Market Challenges

- Coat mixed material substrates
- Increase infrastructure longevity
- Regulation eliminating traditional corrosion inhibitors
- Coating in extreme environments



- Corrosion under insulation pipe coatings
- Underwater coatings



- Next generation electrocoat
- Thin film pretreatment



- Corrosion inhibiting sealants & coatings

PPG provides a variety of leading corrosion-resistant coatings technologies

Next Generation Electrocoat

Leading environmental E-coat solution

Sustainability

Attributes:

- Improved smoothness (appearance)
- Lower energy use
- Reduced waste
- Environmentally friendly catalyst
- Lower VOC emissions







Achievements:

- Industrial product launched in 2014
  - ✓ Powercron ADVANTEDGE™
- Automotive product launched in 2015
  - ✓ Enviro-Prime EPIC ®

Continued PPG E-coat innovation required to meet increasing market demands

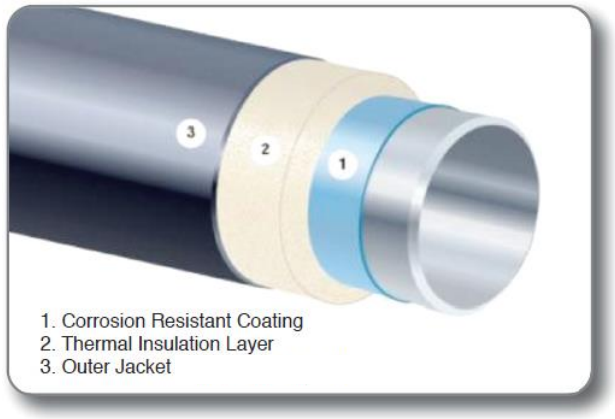
Hi-Temp Coatings

Acquired technology in 2014

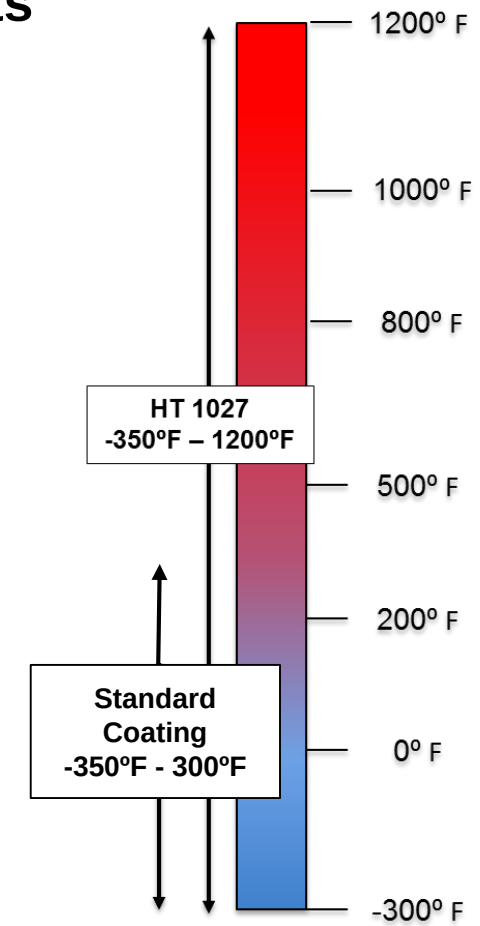
Coatings to prevent corrosion under insulation in high heat environments

Attributes:

- Applied directly to hot substrates (up to 600˚F)
- Corrosion resistance over extreme temperature range
- Reduces maintenance-related facility downtime







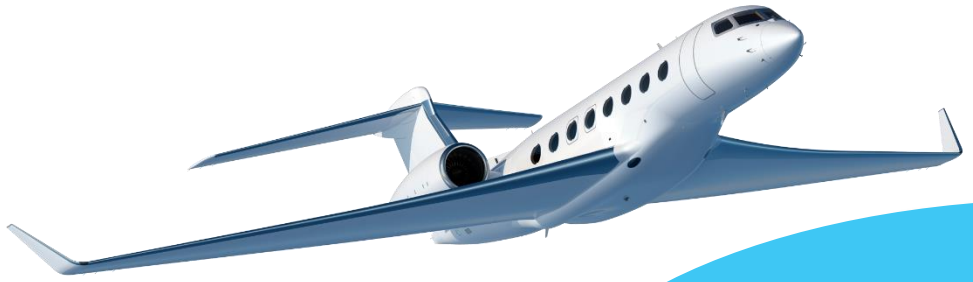
Many pipes / tanks used in chemical processes are insulated and susceptible to corrosion – special coatings are needed for protection

Leveraging acquired technologies across PPG's global distribution network

Product Light-weighting to Reduce Energy Consumption

Responding to a variety of customer-driven initiatives to reduce overall product weight

Light-Weighting



Super light-weight sealants



- Structural adhesives
- Light-weight sealants
- Thin film pretreatment

Market Challenges

- Fuel economy regulations
- Reduce carbon footprint
- Reduce product weight
- Lower operational costs
- Coat mixed material substrates



- Thin film pretreatment
- Mixed metal substrate coatings



Composites to replace metal

PPG innovations address unique and complex customer challenges

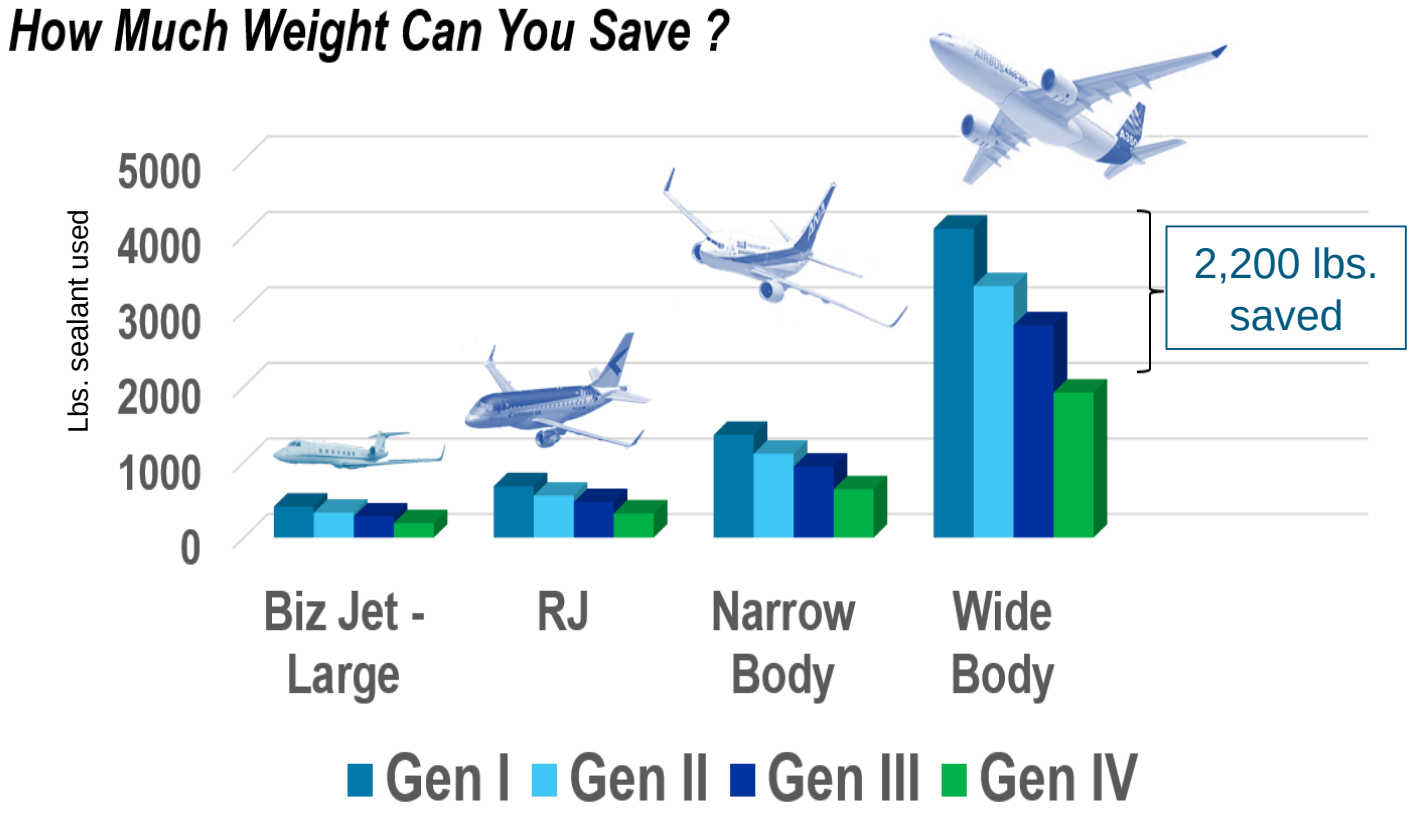
PPG Aerospace Super Light-Weight Sealants

Keeping aircraft cabins and fuel tanks sealed while reducing weight

Asset Protection
Energy

Attributes (PPG Gen IV):

- Reduces aircraft weight by up to 2,200 lbs.
- 45% less dense than prior generation (light enough to float on water)
- Improved product curing enables faster customer production



PPG light-weight sealants generate over $65,000 in annual fuel savings per wide body jet

Note: Fuel savings are based on PPG estimates using current fuel prices

Managing Solar Impact on Energy Costs

Improving consumer comfort and reducing environmental footprint

Energy



- Eggplant coatings
- Alteos® aircraft windows



Cool roof coatings (Comex)

Market Challenge

- **Reduce solar-driven energy costs**
- **Improve customer comfort levels**



Solarban® Glass Coatings



ULTRA COOL® building coatings

PPG environmentally-friendly technologies adapted to specific customer or regional needs

Aerospace Solar Heat Management Coatings

Leveraging nature's "technology" to keep aircraft cool

Functionality Energy

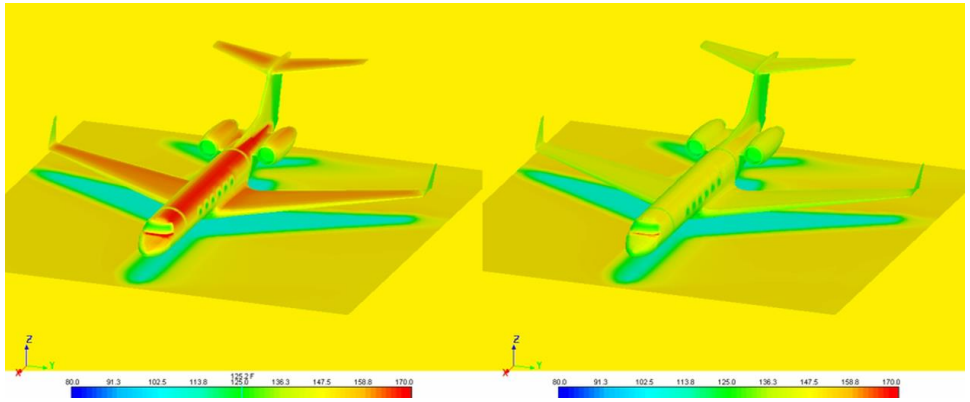
Coatings that keep aircraft substrates cooler

Attributes:

- Key enabler for composite planes
- Enable darker airline livery palette
- Reduced airplane cost and weight
  - ✓ Smaller air-conditioner for on-ground cooling
- On-going energy savings
- Increased passenger comfort



PPG Solar Heat Management reduces external aircraft skin temperatures



***Conventional* Black** ***Solar Reflective* Black**

PPG's proprietary "eggplant" coatings can reduce aircraft fuselage temperatures by up 25°F

Infrared Reflective Exterior Architectural Paint

Coatings that keep building interiors cooler

Energy
Asset Protection

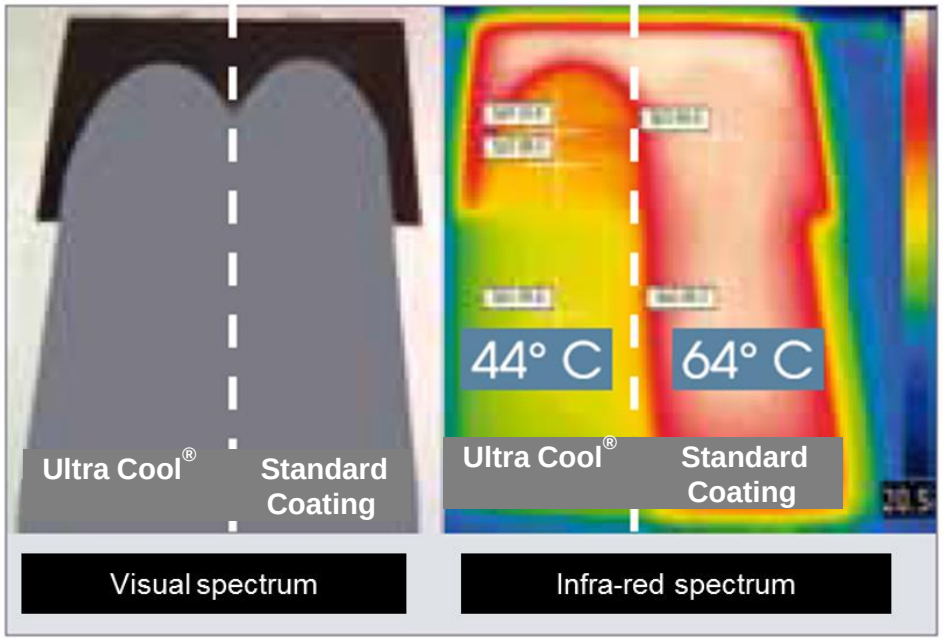
ULTRA Cool® coatings

Attributes:

- Improved asset life
- Energy savings; less air conditioning required
- Enhanced beautification; wider range of possible colors

Side-by-side coating comparison

Thermal “map” shows Ultra Cool ® is cooler



PPG’s coatings enable up to 40% reduction in solar heat gain in coated buildings

Improved Product Curing to Drive Better Customer Performance

Productivity and sustainability demands increasing the importance of curing technologies



Fast cure coatings



Weather Ready™ exterior paint

Durable rubber



Market Challenges

- Lower energy usage in curing process
- Reduce asset out-of-service time during repairs
- Improve manufacturing throughput
- Reduce product waste
- Consistent quality in all application conditions



Fast drying coatings



UV light cured sealant



Compact process



Fast drying color coats

PPG products contributing to enhanced customer productivity and sustainability

Compact Process Technology Leadership

"Wet-on-Wet" Coatings Application Process

Customer Experience
Energy

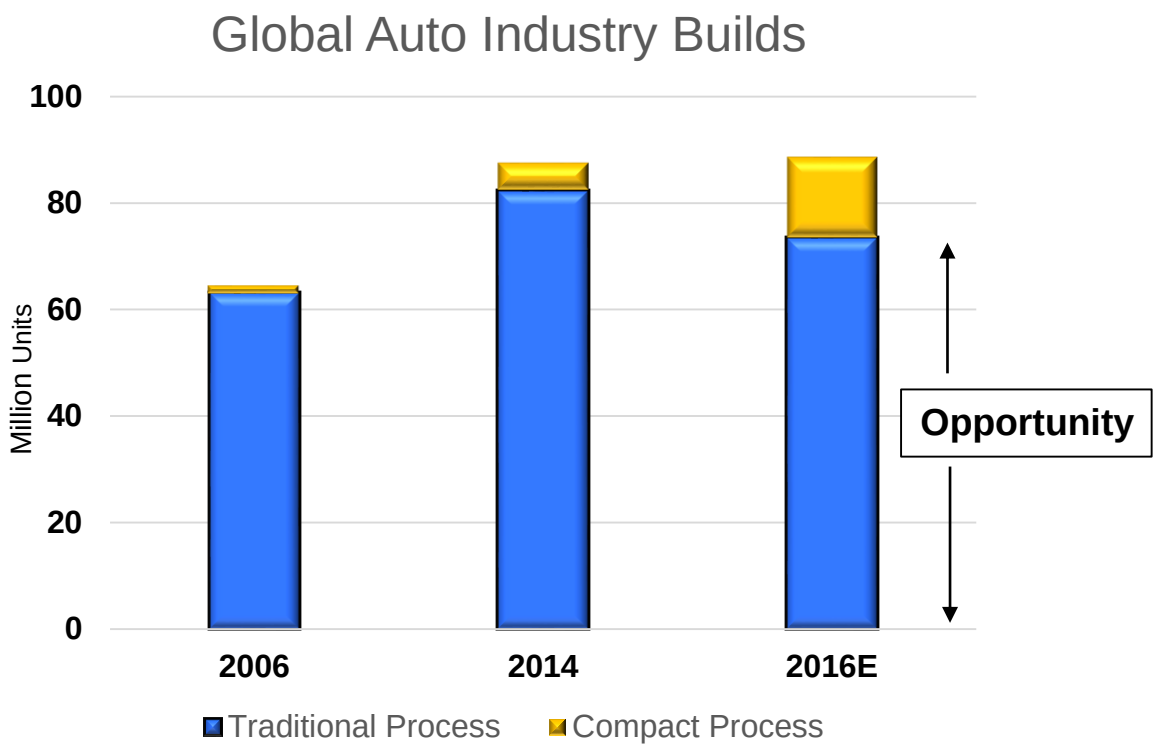
Eliminates process steps and bake ovens, improving OEM facility paint shop cycle time

Attributes:

- Reduces customer capital intensity for new plant construction
- Reduces ongoing energy consumption
- Improves existing vehicle plant capacity
- Lowers plant emissions
- Smaller CO_2 footprint



Automotive News PACE AWARD



PPG is the global leader in commercialized compact process adoption

Source: IHS, company estimates

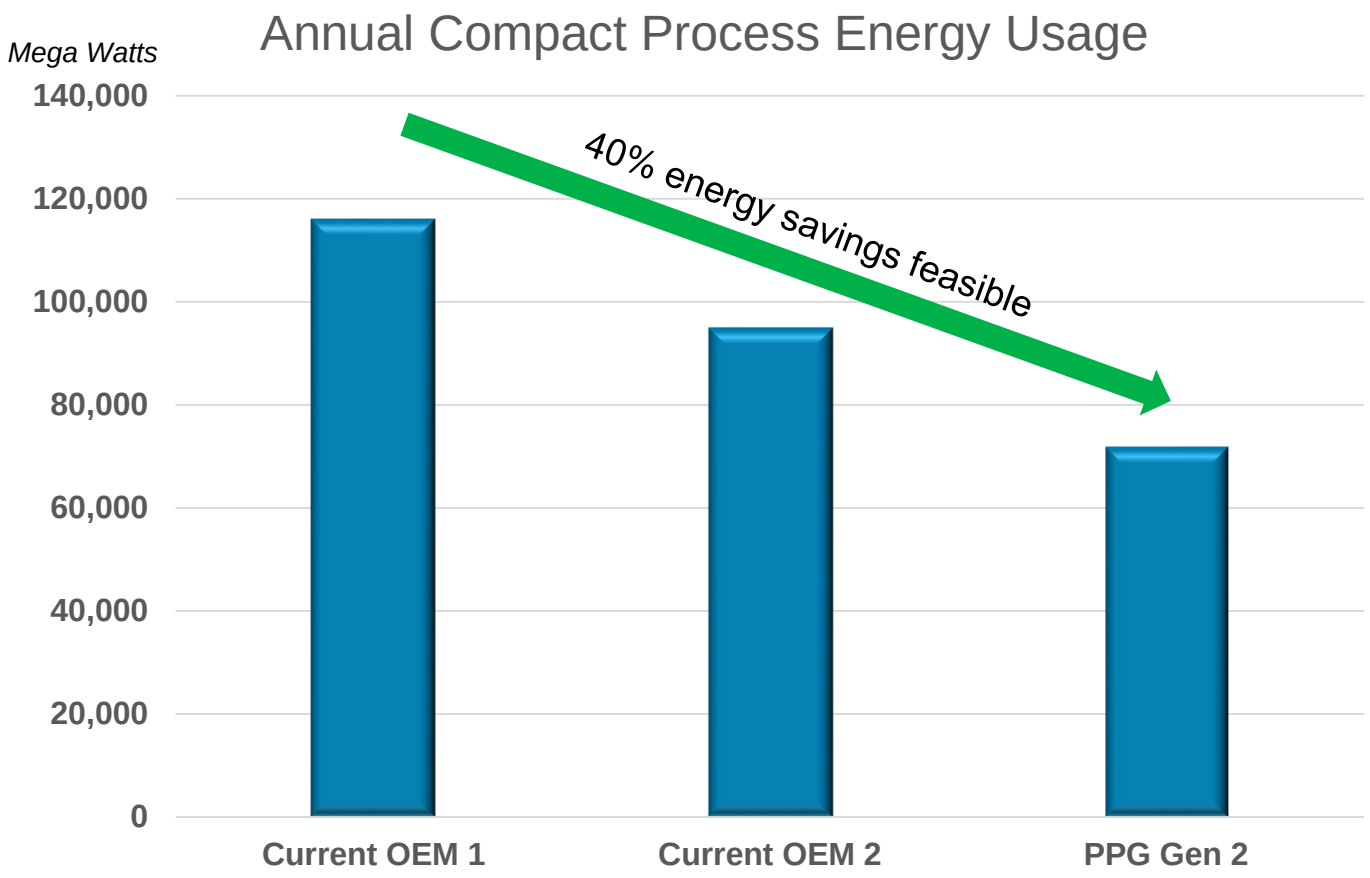
Next Generation Compact Process

Addition of low temperature cure capability to compact process

Energy Sustainability

Attributes:

- Energy savings; lower oven temperatures
- Enables use of more composites & alloys
- Developed for Automotive OEMs
- Potential applications in Industrial & Packaging



PPG innovation combines two recent technology advancements to enable additional customer benefits

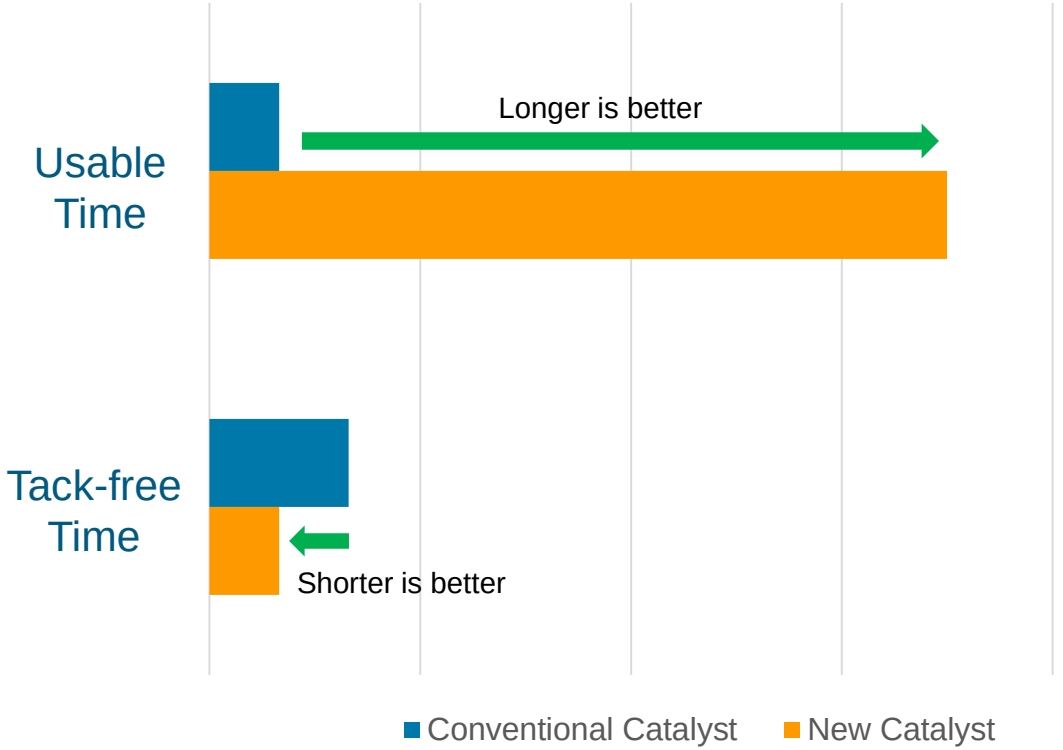
Cure Speed Control

New coating catalysts enable faster ambient cure

Customer Experience
Energy

Attributes:

- Improves shop productivity
  - ✓ Quicker substrate availability post-painting
- Extends the life over which a product is usable post mixing stage
- Reduces waste
- Corrosion resistance maintained
- Applicable across many end-use markets



PPG products improve productivity and application costs at customer sites

Sprayable “Rubber”

Versatile polyurea chemistry applications

Customer Experience
Energy

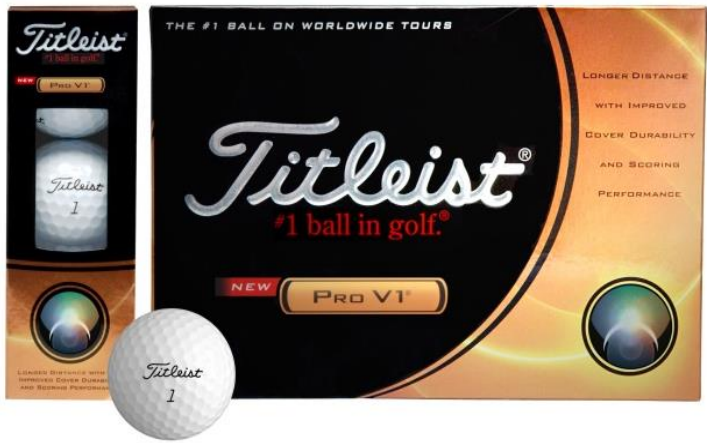
Attributes:

- Zero VOC
- Low energy usage, ambient cure
- Fast curing improves throughput
- Toughness and flexibility
- Use across various applications

Automotive Bedliner (current)



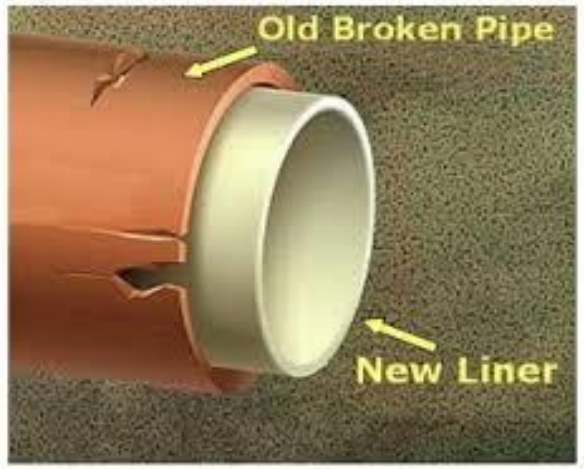
Golf Ball Coating (current)



Heavy Duty Truck (current)



Aging pipe infrastructure repair (future)



Current PPG technologies being leveraged across multiple end-use markets and applications

Increasing Customer Reliance on Adhesives & Sealants

Migration of light-weight materials across end-use markets driving growth

- Jet fuel resistant sealants
- Light-weight fuselage sealants
- Easy-to-use seal cap application





- Structural adhesives
- Low temperature cure sealants
- Sound dampening

Market Challenges

- **Need to join mixed materials**
- **Complex new corrosion challenges**
- **Enable low-temperature curing**
- **Increase structural integrity**



Liquid Nails

PPG's focus is on specialty adhesives & sealants; leveraging recent acquisitions

Packaging BPA Non-Intent (NI) Interior Can Coatings

Sustainability

Sustainable rigid packaging coatings

Attributes:

- Supports broad diversity of food and beverage contents
- Maintains consistency of content flavor
- Meets various regional regulations
- Reduced customer emissions

Market-driven Innovation:

- Dynamic global regulations accelerating product adoptions
  - ✓ France regulations (2015)
  - ✓ California Proposition 65 (2016)



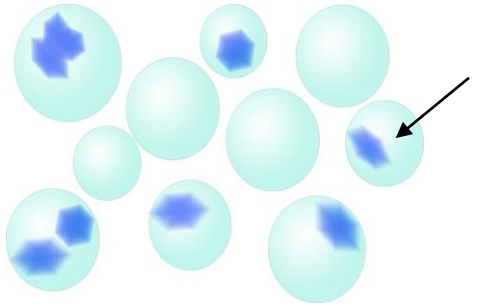
PPG's evolving BPA-NI technology offerings address market needs

“Extreme” Color

Beautifying products with Andaro® technology

What is Andaro®?

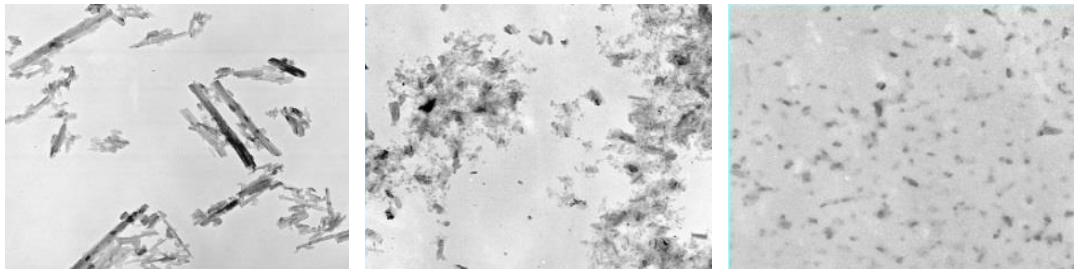
- Differentiated premium color offering with “Nano” sized pigments
- Unique dispersion technology enables uniform pigment distribution



Attributes:

- Vivid colors
- No “haze”
- Extremely durable





Conventional pigment ***hazy***

Agglomerated nanopigment ***hazy***

Stabilized nanopigment ***clear***

Customers use PPG’s Andaro® to showcase products in a crowded marketplace

Agilon® Performance Silica

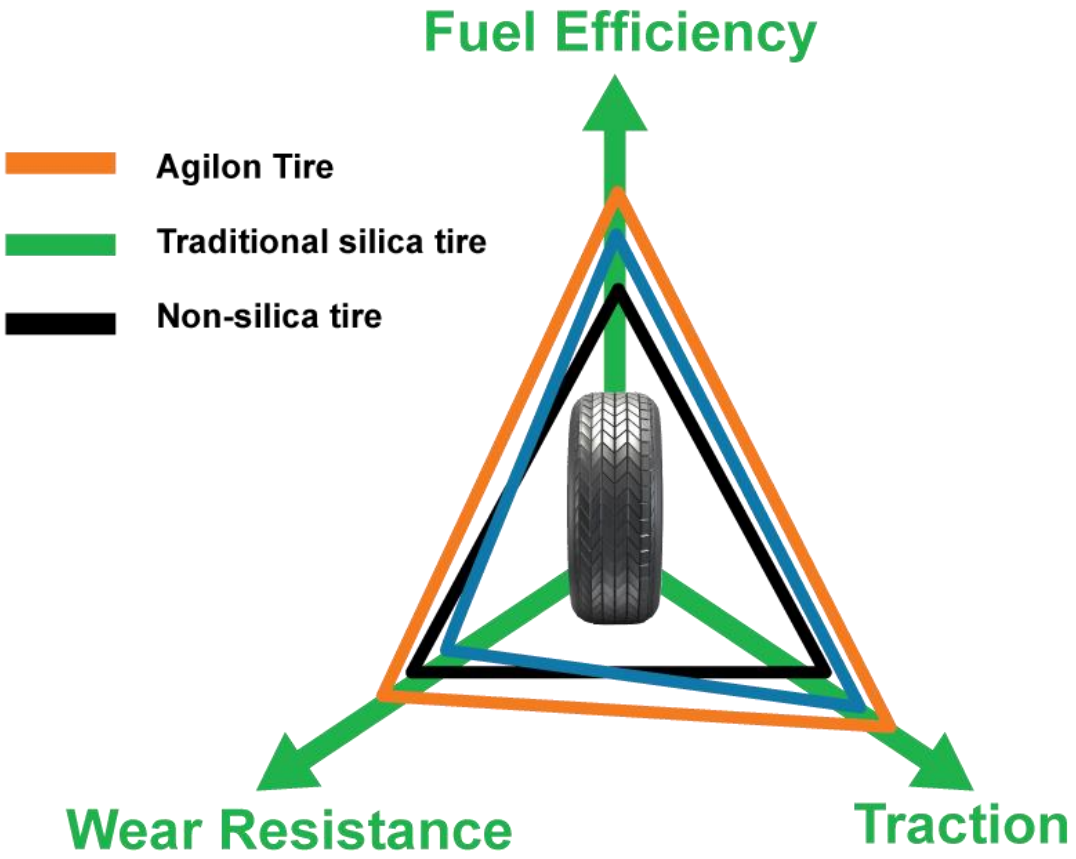
Proprietary pre-treated silica for vehicle tires

Energy
Sustainability

Attributes:

- Lowers vehicle fuel consumption
- Longer tire tread life
- Improves traction
- Increases tire plant productivity
- Reduces tire plant energy consumption
- Eliminates nearly all VOC emissions





PPG product enables improvement in the 3 most important tire performance metrics

“Depolluting” Exterior Masonry Paint

Coatings interacting with the environment to improve the quality of life

Functionality
Sustainability

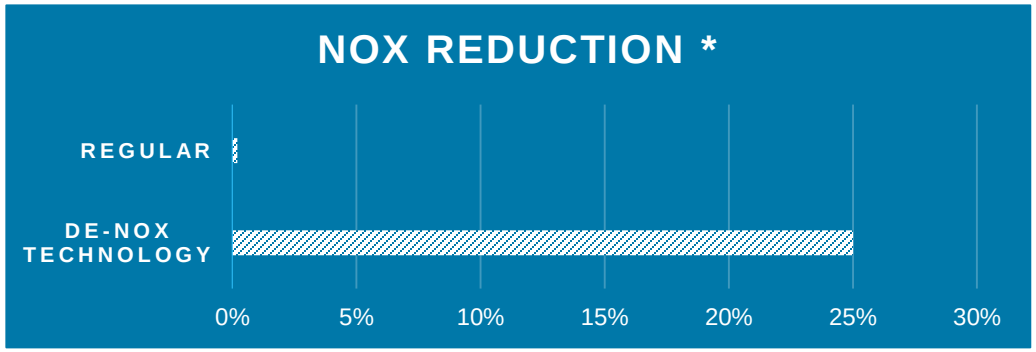
Attributes:

- Transforms many common pollutants into harmless materials
- Destroys “organic” dirt sticking onto surfaces
  - ✓ Keep buildings cleaner - reduces need for renovation
- Contributes to end-customer NOx limits compliance



Nitrogen oxides (NOx) / particulates contribute to “smog”:

- Transportation
- Heating
- Electricity generation



* Fraunhofer test report

PPG aiding in transforming pollutants into harmless materials

Architectural Products

Customer-focused technology by the gallon

Asset Protection
Customer Experience

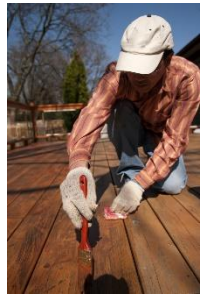
Weather Ready™ wood stain technology

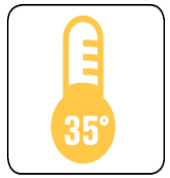
- Minimize weather-dependent purchase decisions
- Extends customer staining season





RAIN-READY IN 8-12 HOURS





APPLY DOWN TO 35° F

Homax

- "Textured" coatings simplify ceiling repair
- A leading after-market product
- Acquired technology in 2014



Light Weight Paints

- Improved ergonomics for painters
  - Over 30% lighter than traditional paint
- Reduces point-to-point freight costs for PPG and customers



TiO_2 Raw Material Strategy

- **Reduce**
  - Optimize Formulations
- **Replace**
  - New inputs to address same functionality
- **Expand Supply**
  - Technology license to Henan Billions

PPG's new products add functionality and improve the user experience

Coatings Technology Evolution Expands Addressable Market







Color

Protect

"Pizazz"

Enabling

Asset Monitoring

Extreme Color

Functionality

Asset Protection

Beautification

Past

Present

Future

PPG Coatings Innovation Leadership

Sustainability

Functionality

Energy

Light-Weighting

Asset Protection

Customer Experience

Historical	Current		Future
Refinish Waterborne Color Coat	Next Generation Electrocoat Performance Silica	BPA-NI Coatings Anti-pollution Coatings	Water Filtration
Duranar Building Coatings	Durable Rubber		**Graphene**
	Solar Heat Management	Automotive Compact Process	**3D Printing-Additive Manufacturing**
	Light-Weight Sealants		**Energy Storage**
Electrocoat	Hi-Temp Coatings	Advanced Material Corrosion	**Intelligent Surfaces**
Aerospace Sealants	Extreme Color Architectural Products	Cure Control	Color-shifting Pigments

Intelligent Surfaces

Coatings is a common link across many substrates

Functionality
Customer Experience

Opportunities:

- Utilize structural health monitoring to extend asset life and reduce maintenance costs
- Provide real-time asset assessment utilizing “Internet of Things”





Corrosion Sensing:

- Coatings / adhesives that sense the onset of hidden corrosion
  - Repair assets only when needed
  - Lower maintenance costs
  - Improved safety



Asset Monitoring:

- Aerospace “intelligent” window detects potential failures
- Real-time asset health monitored remotely



Expanding the functionality of coated surfaces

Coating Technology for Energy Storage

Improvement of embedded coatings to increase performance

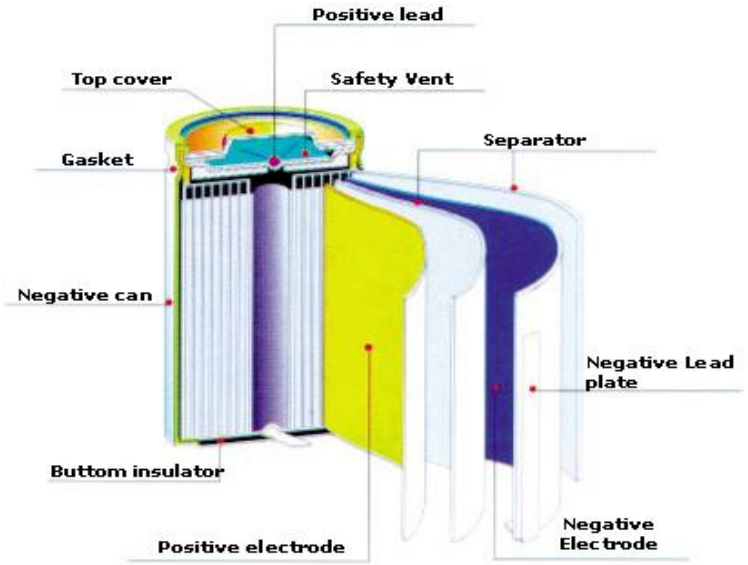
Energy

Opportunities:

- Lower battery manufacturing cost
- Improved battery performance
- Longer battery life
- Compliance with future solvent regulations

Attributes:

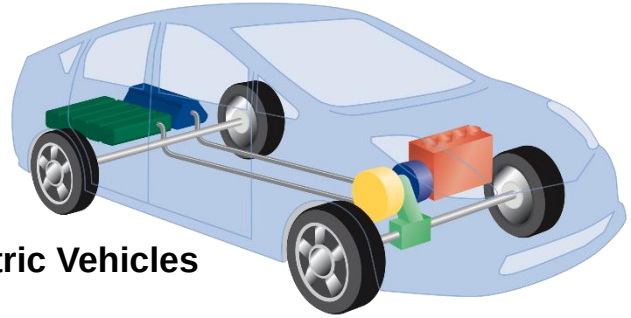
- Coating flexibility
- Ease of application
- Metal foil adhesion
- Improved manufacturing process
- Defect control



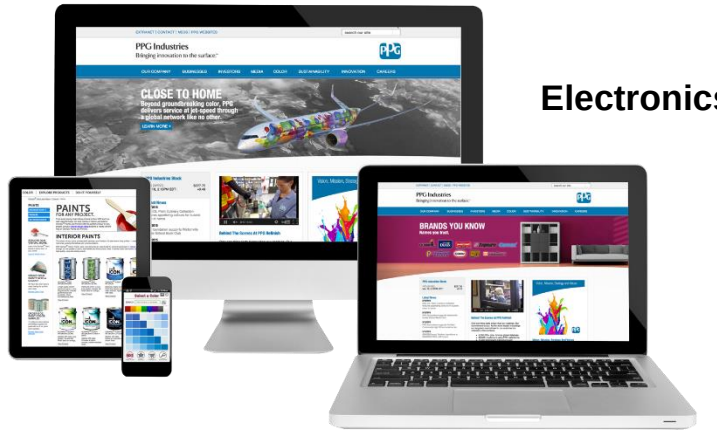
Batteries are made of "coatings" rolled into a cylinder



Tools



Electric Vehicles



Electronics

Leverage coatings knowledge to benefit rapid growth market

Advantaged Graphene Production Process

Functionality
Energy

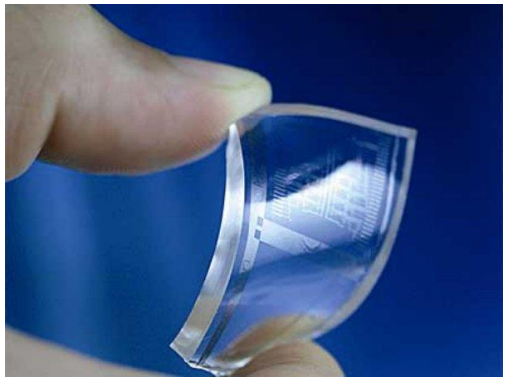
Improved performance of existing application; opportunities to create new products

What is graphene?

- Atomically thin sheets of carbon

Attributes:

- Conducts heat and electricity
- High strength
- Potential silver replacement in conductive inks



Enables flexible electronics

Graphene-enabled opportunities:

- Enables miniaturization of electronics
- Printed electronics
- De-icing, seat heating
- Battery/Capacitors
- Simplifies customer manufacturing process

Past



Parts assembled from
13 separate modules

Future



Similar part with printed
electronics

PPG's proprietary manufacturing process allows for reduced product cost

Additive Manufacturing

3D printed parts are created from "stacks" of thin coatings

Sustainability
Energy

Opportunities:

- Develop lightweight parts
- Fabricate parts on site where needed
  - ✓ Simplify & expedite repairs
  - ✓ Reduce transportation costs

PPG involvement:

- PPG core technology addresses additive manufacturing barriers
  - ✓ Weak adhesion, flexibility, & stiffness
  - ✓ High material cost
  - ✓ Slow "cure" rate reduces efficiency
  - ✓ PPG would be a materials supplier

The University of Nottingham

UNITED KINGDOM · CHINA · MALAYSIA

Reactive Jetting – Ink jet printing (high resolution)

OAK RIDGE National Laboratory

"Big Area Additive Manufacturing" (BAAM)



"3D printed" car (Local Motors / ORNL)

Existing PPG technology for use in next generation manufacturing processes

Summary – PPG Coatings Innovation

Coatings industry entering next phase of innovation

Increasing reliance on coatings is driven by macro trends and progressively more complex customer requirements. New coatings technologies are in development that address one, or some combination of, the following challenges:

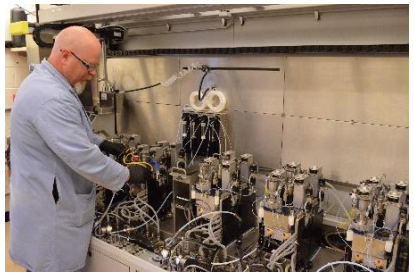
- Mixed materials
- Increased asset protection
- Light-weighting
- Energy efficiency / conservation
- Functionality / data gathering
- Application process and costs
- Regulatory changes
- Extreme, differentiated colors
- Customer productivity

- Global and scalable innovation / research and development is needed to ensure full understanding of new requirements and to quickly develop leading-edge, robust coatings solutions.

PPG has an established track record and remains a global industry leader in developing innovative coatings solutions

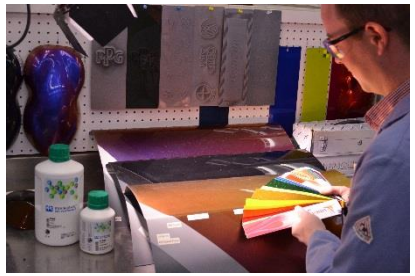
Tour – Coatings Innovation Center Capabilities

Exhibit 1: Polymer Synthesis

Generate competitive advantage

Exhibit 2: Product Formulation




Formulating to customer needs

Exhibit 3 & 4: Coatings Applications




Improve product robustness, reduce service cost

Exhibit 5: Analytical & Physical Testing




Shared service globally

Coatings Innovation Center Tour

Product Display – Kurt Olson, David Bem

Diverse Global Product Offerings

Synthesis – Susan Donaldson

Designing new molecules

Application Center – John Furar

Mimicking Customer Line Conditions

Refinish Training Center – Greg DeCamp

Educating Our Customers

Analytical Labs – Sue Campbell

Solving Problems / Understanding Chemistry

Formulation – Joanne Bice

Developing / Testing Formulated Products



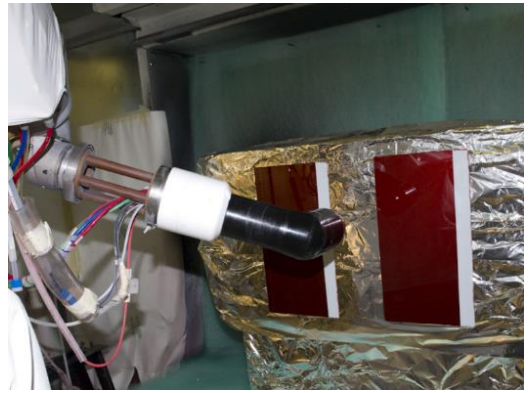
Synthesis Laboratory



Analytical Laboratory



Laboratory Paint Spraying



"Bell" Applicator



Accelerated Weathering Testing



We protect and beautify the world™

Today’s Remaining Timeline

10:15 – 12:00	Facility Tour: **R&D Staff**
12:00	Break – lunch details below
12:15	Buses depart for Airport & U.S. Open
4:00	Bus departs U.S. Open for Airport



Afternoon Details

- Your luggage was placed on the proper afternoon bus based on the color of the luggage tag that was provided to you @ hotel check-in.
- If going on the airport bus, please take a box lunch to eat on the bus.
- If riding golf bus, lunch will be served @ the PPG hospitality tent upon arrival to the course.
- You are free to watch the practice round at your own pace.
- Meet at the PPG hospitality tent at 3:30.
- The bus **must** leave at 4:00 per the USGA and can’t be held.
- If you miss the bus, you will need to find alternate transportation.
- Please contact Scott (412-849-8395) if you have any questions while at Oakmont.

Appendix

PPG Attendee Biography



Michael H. McGarry

President and Chief Executive Officer

Michael H. McGarry is president and chief executive officer of PPG Industries. He transitioned to this role in September 2015 and joined the company's board of directors in July 2015 after serving as president and chief operating officer beginning in March 2015.

McGarry joined PPG in 1981 as an engineer at the company's Lake Charles, Louisiana, chemicals complex. He then progressed through management assignments such as market development manager, silica products; operations manager, silicas, Thailand; business manager, TESLIN® sheet; and product manager in the derivatives, chlorine, liquid and dry caustic soda businesses.

In 2000, McGarry became general manager, fine chemicals, and in 2004 he was named vice president, chlor-alkali and derivatives. He relocated to PPG's European headquarters in Rolle, Switzerland, as vice president, coatings, Europe, and managing director, PPG Europe, in 2006. McGarry returned to the U.S. as senior vice president, Commodity Chemicals, in 2008, and he was elected executive vice president in 2012 and chief operating officer in August 2014.

McGarry also serves as a director and finance committee member on the board of Axiall Corporation.
A native of New Orleans, McGarry is a mechanical engineering graduate of the University of Texas and completed the Advanced Management Program at Harvard Business School.

Teslin is a registered trademark of PPG Industries Ohio, Inc.

PPG Attendee Biography



David Bem, Ph.D.

Chief Technology Officer and Vice President, Science and Technology

David started his career with UOP (currently Honeywell) in 1995 where his work centered on the synthesis and applications of zeolites and microporous materials. In 2000, he became R&D director of Torial, a subsidiary of UOP, and developed and commercialized high-throughput tools for heterogeneous catalysis. He then joined Celanese Corporation in 2002 as the R&D director for acetyls, oxygenates and acetone derivatives. He eventually became a member of the Celanese corporate executive committee and R&D director for Engineering Polymers/Ticona. In 2007, David joined Dow as global R&D director, core R&D, Dow and eventually became vice president, R&D consumer solutions and infrastructure solution. David most recently joined PPG Industries in November 2015.

His external recognition includes two Edison Awards, an ACS (American Chemical Society) Green Chemistry Award and an R&D 100 Award. David is a member and co-chair of the Board on Chemical Sciences and Technology (BCST) of the National Academy of Sciences. He has nine U.S. patents and has authored more than 20 publications.

David earned a bachelor of science degree in chemistry from the West Virginia University, and a Ph.D. in inorganic chemistry from the Massachusetts Institute of Technology.

PPG Attendee Biography



Kurt G. Olson, Ph.D.

R&D Fellow

Kurt Olson is R&D Fellow for PPG Industries.

He began his career with PPG in 1981 as a Research Chemist. After promoting through the technical hierarchy, he promoted to Manager, Automotive Resin Research in 1991; Manager, Automotive Spray Technology in 1998; Associate Director, Automotive Coatings in 1999 and Associate Director, OEM Polymer Synthesis in 2010. Kurt was promoted to his current position of R&D Fellow effective September 1, 2011.

His accomplishments include numerous contributions to the advancement of coatings science. His 66 patents cover a wide area of coating technology including polymer synthesis and coatings formulations for electrodeposition, powder coatings, and waterborne systems. Kurt has participated in the successful commercial development of CeramiClear clearcoat which received a PACE Award in 2003; the development of automotive waterborne basecoats and compact processes, and a powder clearcoat for automotive applications which received an IR 100 Award in 2002. Additionally, Kurt was elected to the PPG Collegium in 2004, elected president of the PPG Collegium in 2010, and the Pittsburgh Award in 2011.

A native of Pennsylvania, Olson earned a bachelor's degree in chemistry from Ursinus College in Collegeville, PA and a doctorate in organic chemistry from the University of Florida in Gainesville, FL.

PPG Attendee Biography



Frank S. Sklarsky

Executive Vice President and Chief Financial Officer

Frank S. Sklarsky is executive vice president and chief financial officer of PPG. He serves on the company's executive and operating committees.

Sklarsky joined PPG in April 2013 as executive vice president, finance, and was named to his current role in August 2013. Previously, he was executive vice president and chief financial officer of Tyco International Ltd., a global provider of security, fire protection and flow control solutions.

After starting his career with Ernst & Young, Sklarsky spent 20 years with Chrysler and DaimlerChrysler progressing to a series of senior financial leadership roles. He also served in leadership roles at Dell. He then served as executive vice president and chief financial officer at both ConAgra Foods Inc. and Eastman Kodak Co. before joining Tyco.

Sklarsky earned a bachelor's degree in accounting from Rochester Institute of Technology and an MBA from Harvard Business School, and he is a certified public accountant.

He is a member of the board of directors of Harman International Industries Inc. and of the boards of trustees of both Rochester Institute of Technology and the Senator John Heinz History Center.

PPG Attendee Biography



Alex Etherson

Global Director, Strategic Planning and Finance Science and Technology

Etherson joined PPG in 1993. Over the past 23 years, Alex has held a variety of leadership positions in finance and strategy with the company. In his current role, Etherson provides the research and business unit technical organizations with strategic planning and financial analysis to support key strategic initiatives. He also has responsibility for the research financial shared service group, the facility services group, the environmental, health and safety group and the information technology organization.

Prior to his current role, Alex served as chief financial officer for Latin America coatings and was based in Sumare, Brazil.

Alex earned an MBA from Carnegie Mellon. He holds an master's degree in mechanical engineering from Rensselaer Polytechnic Institute and a bachelor of science degree in mechanical engineering from the University of Pittsburgh.

PPG Attendee Biography



Vincent J. Morales

Vice President, Finance Science

Morales joined PPG in the corporate controller's office, Pittsburgh headquarters, in 1985. He then advanced through finance and accounting assignments at PPG facilities such as supervisor, shared accounting services, at the Chillicothe, Ohio, shared services center and director, information and financial services, at the former PPG glass plant in Mount Zion, Illinois.

Morales returned to Pittsburgh in 2000 as manager, chemical revenue recognition, and then became director, internal financial reporting, in 2001. He was named director, investor relations, in 2004 and then promoted to vice president in 2007. Morales added responsibility as corporate treasurer in 2015. He was appointed to his current position in June 2016.

A native of Pittsburgh, Morales earned a bachelor's degree in accounting from Robert Morris University and a master of business administration from the Ohio State University.

PPG Attendee Biography



Scott Minder

Director, Investor Relations

Minder joined PPG in 2009 as automotive original equipment manufacturer (OEM) coatings global director, finance and planning. He was named finance director and business controller, industrial and packaging coatings, in April 2014, and to his current role in June 2015.

Prior to joining PPG, Minder worked for General Motors in the areas of dealership acquisition, brand finance, process-risk management and investor relations, and for Penske Logistics as director of finance and director of global quality.

Minder earned a bachelor of science degree in management (finance/accounting) from Kettering University and a master of business administration from Duke University.

Biographies of Tour Presenters



Jo-Ann Bice, Ph.D.
Scientist
Substrate Protection, Coatings R&D

Jo-Ann is currently group leader of the Substrate Protection Automotive OEM Formulation Team. She is responsible for research projects in the development of new electrocoat formulations to meet global customer requirements. Jo-Ann joined PPG in 1995 and became leader of the Tire Applications Team in the Silicas R&D group at the Monroeville Business and Technology Center. In 2007, she moved to the Substrate Protection R&D group at the Coatings Innovation Center in Allison Park, where she has held various leadership roles. Jo-Ann received her Ph.D. in Physical Chemistry from the University of Western Ontario in 1987.



Susan Campbell
Research Manager
Pittsburgh Analytical Services, Coatings R&D

Sue Campbell is currently the Research Manager for the Pittsburgh Analytical Services organization. Sue has 32 years industrial experience, 25 years with PPG. Throughout her career, Sue has worked in a variety of Analytical labs developing expertise in the analysis of coatings materials. Sue also serves as the Analytical Global Coordinator for the Americas Region, responsible for leading efforts to leverage the expertise and resources of all Analytical teams. Sue received her BS and MS degree in Chemistry from State College of Buffalo, New York.



Greg DeCamp
General Manager
Automotive Refinish Sales and Marketing USCA

Greg DeCamp is the General Manager, Automotive Refinish Sales and Marketing, USCA. In his role, Greg is responsible for sales and marketing initiatives for the automotive refinish, collision, and commercial coatings segments for the U.S. and Canada. Greg joined PPG in 1985, and has had numerous commercial roles in Industrial Coatings, OEM coatings, and Refinish coatings during his career. Greg studied business at Indiana University.



Susan Fundy-Donaldson, Ph.D.
Research Associate
OEM Polymer Synthesis, Coatings R&D

Susan Donaldson is a project leader and researcher within the polymer synthesis organization located at the Coatings Innovation Center in Allison Park, Pennsylvania. For the past 11 years, she has provided polymer innovation solutions for various businesses including Automotive OEM and Industrial. In this role, Susan is responsible for the design and development of new polymers, as well as the transfer of prototype formulas to manufacturing. In addition, Susan also manages the high throughput synthesis team, which provides support to all polymer synthesis research chemists in the organization. Susan received her Ph.D. in medicinal chemistry from The Ohio State University, Columbus Ohio.



John Furar
Research Manager
OEM Decorative Automotive, Coatings R&D

John Furar is currently Research Manager in the global application research lab at the Coatings Innovation Center in Allison Park. John has 36 years research experience, having held leadership positions in Analytical chemistry, Polyurea technologies, Automotive primer development, Exploratory and Color research. John is the recipient of the R&D 100 Award for development of Enviracryl® powder clearcoat for automotive application, and was project leader for development of Andaro® nano-pigment dispersions; which won the Automotive News PACE Award. John received his B.S. in chemistry from The University of Pittsburgh.

2015 EBITDA Reconciliation

EBITDA as % of Sales (excluding specials):

	Total PPG	PPG Coatings Segments	Total Sherwin Williams	Total Valspar	Total RPM	Total Akzo	Akzo Paints & Coatings	Axalta Coatings Systems
Currency	**USD**	**USD**	**USD**	**USD**	**USD**	**Euro**	**Euro**	**USD**
Sales	**15,330**	**14,241**	**11,339**	**4,392**	**4,595**	**14,859**	**9,962**	**4,087**
Segment Income/Net Income	**1,405**	**2,287**	**1,054**	**400**	**239**	**1,060**	**1,137**	**98**
Unusual Charges	**206**	**--**	**--**	**(22)**	**--**	**(111)**	**0**	**86***
Income Taxes	**456**	**--**	**495**	**164**	**225**	**416**	**--**	**63**
Interest	**86**	**--**	**62**	**81**	**69**	**114**	**--**	**197**
Depreciation & Amortization	**495**	**420**	**199**	**93**	**99**	**626**	**296**	**308**
EBITDA	**2,648**	**2,707**	**1,810**	**716**	**632**	**2,105**	**1,433**	**752**
% of Sales	**17.3%**	**19.0%**	**16.0%**	**16.3%**	**13.8%**	**14.2%**	**14.4%**	**18.4%**

Amounts in millions, except percentages, reflects most recent year-end

* Excludes foreign exchange remeasurement losses & recurring stock-based compensation

2014 EBITDA Reconciliation

EBITDA as % of Sales (excluding specials):

	Total PPG	PPG Coatings Segments	Total Sherwin Williams	Total Valspar	Total RPM	Total Akzo	Akzo Paints & Coatings	Total Axalta
Currency	**USD**	**USD**	**USD**	**USD**	**USD**	**Euro**	**Euro**	**USD**
Sales	**15,360**	**14,250**	**11,130**	**4,522**	**4,376**	**14,296**	**9,498**	**4,362**
Segment Income/Net Income	**1,133**	**2,156**	**866**	**345**	**292**	**600**	**793**	**35**
Unusual Charges	**408**	**--**	**26**	**41**	**--**	**338**	**228**	**188***
Income Taxes	**259**	**--**	**392**	**146**	**119**	**252**	**--**	**2**
Interest	**137**	**--**	**64**	**65**	**65**	**156**	**--**	**217**
Depreciation & Amortization	**476**	**401**	**199**	**101**	**90**	**618**	**299**	**309**
EBITDA	**2,413**	**2,557**	**1,547**	**698**	**566**	**1,964**	**1,320**	**751**
% of Sales	**15.7%**	**17.9%**	**13.9%**	**15.4%**	**12.9%**	**13.7%**	**13.9%**	**17.2%**

Amounts in millions, except percentages, reflects most recent year-end

* Excludes foreign exchange remeasurement losses & recurring stock-based compensation

2013 EBITDA Reconciliation

EBITDA as % of Sales (excluding specials):

	Total PPG	PPG Coatings Segments	Total Sherwin Williams	Total Valspar	Total RPM	Total Akzo *	Akzo Paints & Coatings
Currency	**USD**	**USD**	**USD**	**USD**	**USD**	**Euro**	**Euro**
Sales	**14,265**	**13,198**	**10,186**	**4,104**	**4,079**	**14,590**	**9,745**
Segment Income/Net Income	**950**	**1,867**	**753**	**289**	**256**	**661**	**725**
Unusual Charges	**253**	**--**	**54**	**40**	**--**	**273**	**207**
Income Taxes	**342**	**--**	**333**	**135**	**106**	**111**	**--**
Interest	**153**	**--**	**59**	**63**	**60**	**200**	**--**
Depreciation & Amortization	**452**	**377**	**188**	**88**	**84**	**616**	**300**
EBITDA	**2,150**	**2,244**	**1,388**	**615**	**505**	**1,861**	**1,232**
% of Sales	**15.1%**	**17.0%**	**13.6%**	**15.0%**	**12.4%**	**12.8%**	**12.6%**

Amounts in millions, except percentages, reflects most recent year-end

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