



Ashland's Strategy and Commitment to Create Shareholder Value 2018-2021

Investor Day

May 1, 2017, New York City



Forward-Looking Statements

This presentation contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended and Section 21E of the Securities Exchange Act of 1934, as amended. Ashland has identified some of these forward-looking statements with words such as “anticipates,” “believes,” “expects,” “estimates,” “is likely,” “predicts,” “projects,” “forecasts,” “objectives,” “may,” “will,” “should,” “plans” and “intends” and the negative of these words or other comparable terminology. These forward-looking statements include statements relating to our expectation that the proposed acquisition of Pharmachem Laboratories, Inc. (Pharmachem) will be completed before the end of the June quarter and that the proposed acquisition will be accretive to earnings per share, and the expected completion of the separation of Valvoline Inc. (“Valvoline”) through the distribution of Valvoline common stock. In addition, Ashland may from time to time make forward-looking statements in its annual reports, quarterly reports and other filings with the SEC, news releases and other written and oral communications. These forward-looking statements are based on Ashland’s expectations and assumptions, as of the date such statements are made, regarding Ashland’s future operating performance and financial condition, the expected completion of the final separation of Valvoline, the strategic and competitive advantages of each company, and future opportunities for each company, as well as the economy and other future events or circumstances. Ashland’s expectations and assumptions include, without limitation, internal forecasts and analyses of current and future market conditions and trends, management plans and strategies, operating efficiencies and economic conditions (such as prices, supply and demand, cost of raw materials, and the ability to recover raw-material cost increases through price increases), and risks and uncertainties associated with the following: Ashland’s substantial indebtedness (including the possibility that such indebtedness and related restrictive covenants may adversely affect Ashland’s future cash flows, results of operations, financial condition and its ability to repay debt); the impact of acquisitions and/or divestitures Ashland has made or may make, including the proposed acquisition of Pharmachem (including the possibility that Ashland may not complete the proposed acquisition of Pharmachem or Ashland may not realize the anticipated benefits from such transactions); and severe weather, natural disasters, and legal proceedings and claims (including environmental and asbestos matters). Various risks and uncertainties may cause actual results to differ materially from those stated, projected or implied by any forward-looking statements, including, without limitation, risks and uncertainties affecting Ashland that are described in Ashland’s most recent Form 10-K (including Item 1A Risk Factors) filed with the SEC, which is available on Ashland’s website at <http://investor.ashland.com> or on the SEC’s website at <http://www.sec.gov>. Ashland believes its expectations and assumptions are reasonable, but there can be no assurance that the expectations reflected herein will be achieved. Unless legally required, Ashland undertakes no obligation to update any forward-looking statements made in this presentation whether as a result of new information, future events or otherwise. Information on Ashland’s website is not incorporated into or a part of this presentation.

Regulation G: Adjusted Results

The information presented herein regarding certain unaudited adjusted results does not conform to generally accepted accounting principles in the United States (U.S. GAAP) and should not be construed as an alternative to the reported results determined in accordance with U.S. GAAP. Ashland has included this non-GAAP information to assist in understanding the operating performance of the company and its reportable segments. The non-GAAP information provided may not be consistent with the methodologies used by other companies. All non-GAAP information related to previous Ashland filings with the SEC has been reconciled with reported U.S. GAAP results. Although Ashland provides forward-looking guidance for adjusted EBITDA, Ashland is not reaffirming or providing forward-looking guidance for U.S. GAAP-reported financial measures or a reconciliation of forward-looking non-GAAP financial measures to the most directly comparable U.S. GAAP measure because it is unable to predict with reasonable certainty the ultimate outcome of certain significant items without unreasonable effort.

Note: This presentation contains a more detailed profile than we have reported in the past, or will report regularly in the future.

Our purpose: To define the New Ashland's shareholder value creation strategy

- Summarize our evolution and define the New Ashland
- Define financial targets to create shareholder value and their connection to:
 - Core operational levers to deliver financial targets
 - Market strategies to accelerate profitable growth
- Clarify capital allocation policies to turn cash into value
- Profile dimensions to drive strong execution

The transformation started more than a decade ago

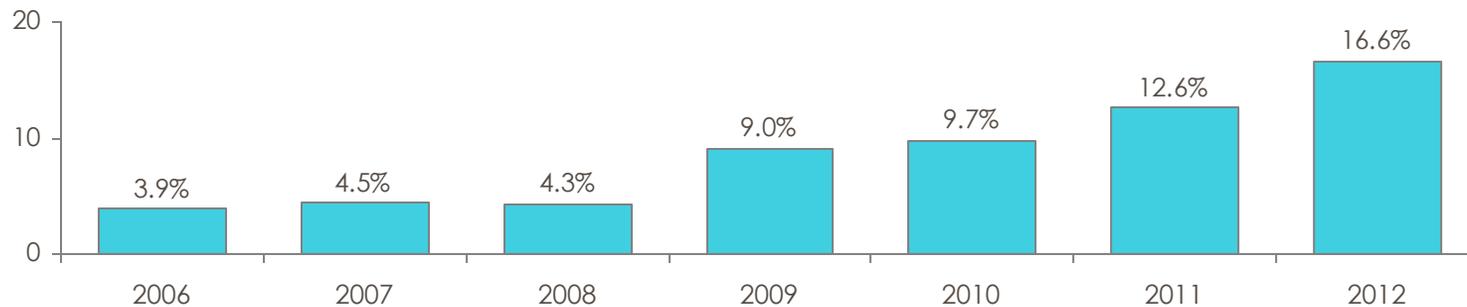
transformation

integration

separation

pivot to premier

EBITDA margin¹



Acquired

AIR PRODUCTS
(Adhesives)

HERCULES

ISP

Exited

apac

Ashland
Distribution

- Ashland has a **long history of successfully** executing challenging strategic plans
- Management and Board have made difficult and important decisions to transform from an oil refiner to **a premier specialty chemical company**
- Completed numerous **transformative** transactions

Strategic decisions have expanded
EBITDA margins¹



Over the past 5 years, we've completed the transformation and integrated the business

transformation

integration

separation

pivot to premier

- **Capital Allocation Actions**
 - ✓ Divested over \$2B non-core businesses
 - ✓ Returned over \$2B to shareholders
- **Operational Improvements**
 - ✓ Fixed supply chain → On-time delivery > 95%
 - ✓ Reduced SG&A by > \$200 MM
 - ✓ Put businesses onto common IT platform

Primary focus of the organization:

- Improved adj. EBITDA margin
- Increased role of ASI¹: Now 69% of company sales

Over the last 18 months, we have successfully completed the separation of Valvoline

transformation

integration

separation

pivot to premier



Key Deliverables

- ✓ Completed IPO one year after announcement
- ✓ Took action to enable cost neutrality
- ✓ Structured separation to be tax free
- ✓ Kept separation costs <\$150MM
- ✓ Kept mid to high BB credit ratings for both companies
- ✓ **Created two great companies**

Distribution date *May 12, 2017*



We begin our next era, “pivot to premier” with a new corporate profile

transformation

integration

separation

pivot to premier

\$3B+

Revenue

15+

End markets served

6,000

Employees

69%

ASI¹ share of Ashland sales

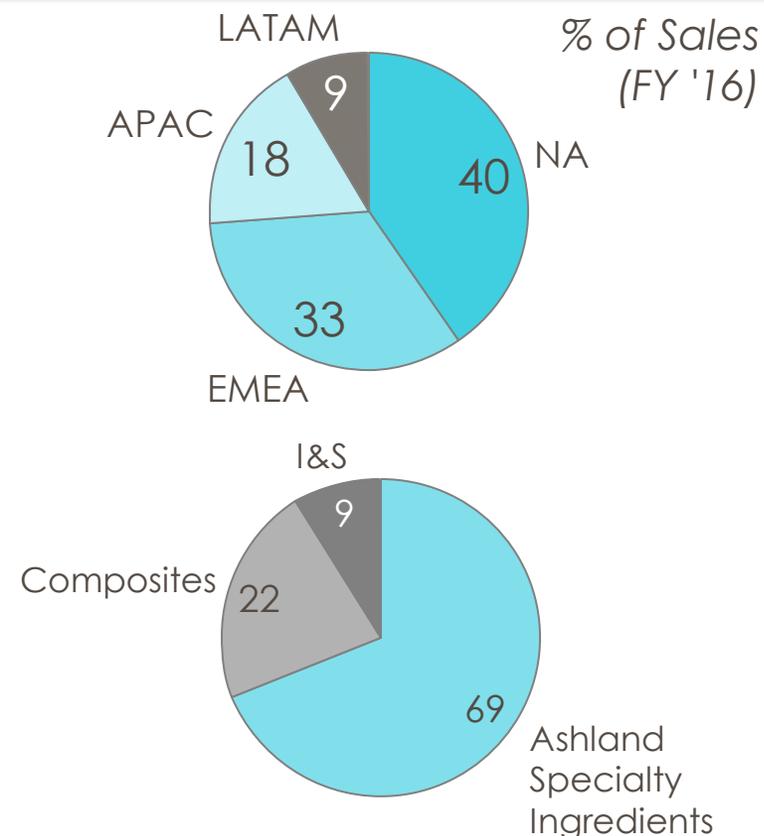
42

Production plants

23%

ASI adj. EBITDA² margin

Diverse set of geographies and target industries



Note: All figures as of FY'16

1. Defined as Ashland Specialty Ingredients reporting segment

2. EBITDA margin has been reconciled with reported U.S. GAAP results in previous SEC filings

With a new leadership team

transformation

integration

separation

pivot to premier

Operating Committee



Dave Neuberger
VP Pharma,
Nutrition &
Agriculture



Suzanne Rowland
Group VP Industrial
Specialties



Vito Consiglio
VP Personal &
Home Care



Andy Johnston
Group VP
Composites



Osama Musa
VP R&D & CTO



Brian McGrath
VP Supply Chain



Keith Silverman
VP, EHS, Quality &
Regulatory Affairs



Jean Zappia
VP Intermediates
and Solvents



Bill Wulfsohn
Chairman & CEO

Executive Committee



Anne Schumann
VP HR & IT



Kevin Willis
SVP & CFO



Peter J. Ganz
SVP, General
Counsel &
Secretary

★ 8 of 11 in new or expanded role

With a new brand proposition, organizational blueprint and integrated culture

transformation

integration

separation

pivot to premier

Brand Promise



Blueprint



Ashland Way



Ashland is now working as one team
with a common purpose

One thing that has not changed, is unwavering commitment to safe and responsible operations



International Excipients Certification

- Leads the pharmaceutical excipient manufacturing industry with the most facilities globally certified

European Federation for Cosmetic Ingredients

- 10 facilities globally GMP certified – leader within the cosmetic ingredient manufacturing industry

Global Food Safety Initiative

- Five food additive facility certifications

Lloyd's Register Quality Assurance

- 100% of manufacturing facilities with 10 or greater employees independently certified to ISO 9001

Awarded American Chemistry Council Responsible Care Initiative of the Year award in 2016



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Financial targets to create shareholder value

2018 – 2021 Performance Targets

Adjusted EPS
growth (CAGR)

>15%

Adjusted ASI
EBITDA (%)

>25%*

Cash
generation¹

\$1B+

Aggressive new targets



Note: Adjusted EPS growth, Adjusted EBITDA and Free Cash Flow are forward looking non-GAAP financial measures. See Slide 1 for an explanation for why reconciliations are not available to the most directly comparable forward looking GAAP financial measure;

1. Cumulative Free Cash Flow generation over target period less certain key items

* = 2021 Adjusted EBITDA Target

Driven by 7 core levers

2018 – 2021 Performance Targets

Adjusted EPS
growth (CAGR)
>15%

Adjusted ASI
EBITDA (%)
>25%*

Cash
generation¹
\$1B+

- **New actions to sustain and grow premium mix**
 1. Evolve business portfolio
 2. Implement new market strategies
 3. Expand new and proprietary product sales² (NPI)
- **New initiatives to improve competitiveness**
 4. Asset utilization programs
 5. Price to value efforts
 6. **SG&A inflation initiatives**

7. **Ensure CapEx plus changes in working capital <6.5% per year**

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* = 2021 Adjusted EBITDA Target



1 | Sustain and grow premium mix

Portfolio: Ashland's definition of Specialty

Blue chip markets

- Technology: Leverage our core platforms
- Customers: Technology, brand and quality critical
- End markets: Close to consumer
- Competitive landscape:
 - Few approved suppliers
 - High barriers to entry

Small cost with big impact on end product

- Amplify the efficacy
- Refine the usability
- Add to the allure
- Ensure the integrity
- Improve the profitability



Financial returns

- EBITDA % of sales > 20%
- GDP + growth
- Low cyclical/volatility
- Strong cash conversion
- ROIC well above WACC

Customization differentiates

- R&D: Create proprietary platforms
- Derivatize: Enhance functionality
- Tech service: Improve customer application
- Leverage our brand name, specifications or claims

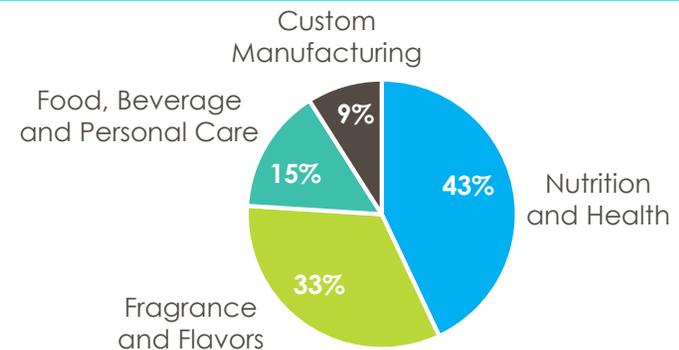


1 | Sustain and grow premium mix

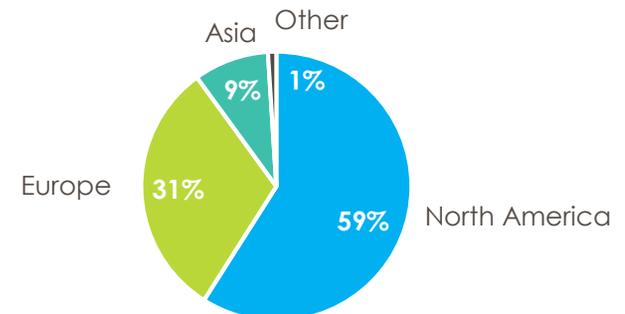
Portfolio: Pharmachem profile

- Revenue of ~\$300 million and adjusted EBITDA margin of ~20% in FY2016
- Leading provider of:
 - customized solutions and high quality ingredients to the global health and wellness industries
 - high value, differentiated products for fragrance and flavor houses
- Applications include nutraceuticals, fine perfumes, laundry and personal care products, skin care, cosmetics and food and beverage
- Strong capabilities in extraction, refining, granulation, spray drying, turnkey packaging solutions, fermentation and fermentation purification

FY'16 Pharmachem Revenue By End Market



FY'16 Pharmachem Revenue By Geography



Strong commercial & financial profile



1 | Sustain and grow premium mix

Portfolio: Pharmachem fit with Ashland

Leverages our customization capabilities into niches where we create value

- Customer-intimacy sales model emphasizing tailored products
- Creates unique industry offering: leveraging Pharmachem's custom manufacturing capabilities with Ashland's formulation knowledge and excipients expertise
- Leverages our extensive sales channels, technical service network and global applications labs to accelerate Pharmachem growth outside of North America
- Enhances Ashland's food ingredient business by adding customized functional solutions

Expands scope/range of our products and service offerings

- Adds high value, differentiated products sold to the major fragrance and flavor houses
- Enhances Ashland's position in the high growth nutraceutical market

Expands our presence in attractive end markets

- Focused on attractive end markets including food, beverage, nutrition, and fragrance and flavors

- Strongly complements Ashland's ASI business
- Business leaders will share specific synergies



1 | Sustain and grow premium mix

Portfolio: Pharmachem fits our investment philosophy

Core Principles ...

- **Fit with Ashland Specialty model**



- **"One degree from the core"**

- Technology
- Manufacturing
- Geography
- Customer/market

- **Economics**

- Near-term EPS accretion
- Risk weighted returns well above WACC
- Strong cash conversion
- Cost driven synergies
- Maintain mid to high BB credit rating

... In Action: Pharmachem

- **Fit with Ashland Specialty model**

- Profit zone: Pharma and PC
- Differentiation: Unique, high value ingredients critical to customer product
- Customization: Highly customized formulations
- Financial returns: See below

- **"One degree from the core"**

- ✓ Advanced formulation expertise
- ✓ Complementary production capabilities
- ✓ US/EU centric
- ✓ Close connection to PNS¹ & PC¹; new opportunity in fragrances and flavors

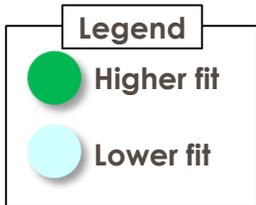
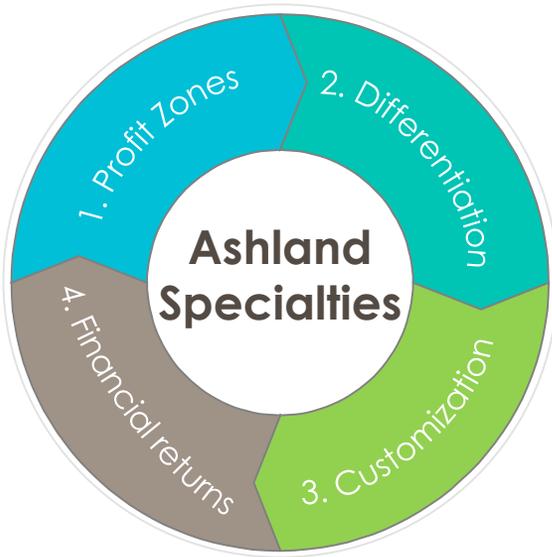
- **Economics**

- ✓ Expected to be accretive 1st year
- ✓ Attractive double digit returns
- ✓ Strong cash conversion
- ✓ ~\$10MM cost/~\$110MM NPV tax synergies
- ✓ Believe metrics substantiate mid to high expected BB credit ratings

1. Pharma and Nutritional Specialties, and Personal Care

1 | Sustain and grow premium mix

Portfolio: Plan to address I&S¹ impact on portfolio



End Market	Profit Zone	Differentiation	Customization	Financial returns
Pharma	Higher fit	Higher fit	Higher fit	Higher fit
Personal Care	Higher fit	Higher fit	Higher fit	Higher fit
Coatings	Higher fit	Higher fit	Higher fit	Higher fit
Adhesives	Higher fit	Higher fit	Higher fit	Higher fit
Other ASI ²	Lower fit	Lower fit	Lower fit	Lower fit
Composites	Lower fit	Lower fit	Lower fit	Lower fit
Intermediates & Solvents	Lower fit	Lower fit	Lower fit	Lower fit

We are expanding end market segmentation and connecting to operating imperatives



1 | Sustain and grow premium mix

Portfolio: pro forma perspective

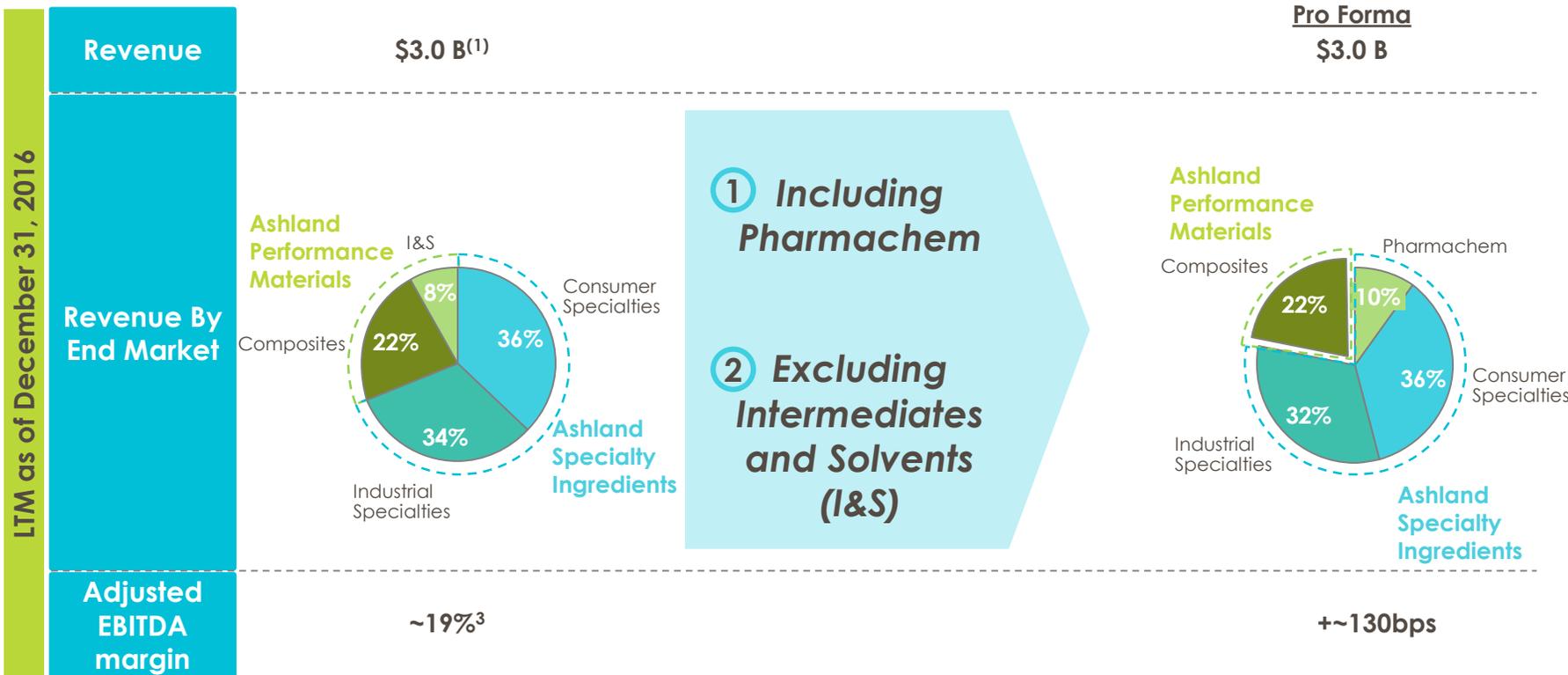


(Post-Valvoline Separation)



(Post-Valvoline Separation)

Pro Forma
\$3.0 B



On track to highly concentrated specialty mix



1. Represents Ashland Specialty Ingredients and Ashland Performance Materials as reported in Q1 2017 Earnings Presentation
 2. As previously disclosed, Ashland is currently exploring strategic alternatives for the I&S division
 3. Adjusted EBITDA of \$1,042 million as of December 31, 2016, adjusted for the Valvoline separation of \$471 million, over sales of \$3,016 million.

2 | Sustain and grow premium mix

Market strategies: Accelerating BU profitable growth

	Focus	Approximate VOL % CAGR ¹ '13-'16	Recent developments
Pharma	Growth	2%	<ul style="list-style-type: none"> – Added pharma capabilities in China and capacity in EU – Built pharma labs in India and China – Chosen as excipient supplier on several new drug launches – Identified synergy opportunities with Pharmachem
Personal care	Growth	3%	<ul style="list-style-type: none"> – Engaged with customers on new award winning technology – Redesigned organization with new leadership – Identified synergy opportunities with Pharmachem
Coatings	Growth	3%	<ul style="list-style-type: none"> – Commercialized and globalized new premium Aquaflo – Enhanced coatings labs in US and India
Adhesives	Growth	4%	<ul style="list-style-type: none"> – Commercialized new PSA technologies – Expanded global focus of this NA centric division
Other ASI ²	Select invest or harvest	-6%	<ul style="list-style-type: none"> – Reduced focus on cyclical energy and construction industries – Introduced new niche products (e.g., for Li ion batteries)
Composites	Margins/ cash	1%	<ul style="list-style-type: none"> – Announced highly synergistic acquisition of Reichhold France plant
Weighted total	Ex Divestitures	0%	<ul style="list-style-type: none"> – '18-'21 Projected volume growth CAGR: 2.5-3.5%

See detailed strategies, beginning page 44

3 | Sustain and grow premium mix

NPI: Leverage strong R&D foundation

~500

Scientists

22

Global laboratories

57

New platform releases in last 4 years

>2,800

Patents assigned

25%

Ashland sales from new and proprietary products¹

Very strong technical team and infrastructure



3 Sustain and grow premium mix

NPI: Four core R&D focus areas

4 Core innovation priorities

Multi-Generational Product Planning
 Page 112

Polaris™: innovative resins for engineered stone providing quality, durability, and improved surface gloss to enable new designs

Product line extension
 Page 113

Encapsulation: long lasting fragrance release technology suitable for aqueous products

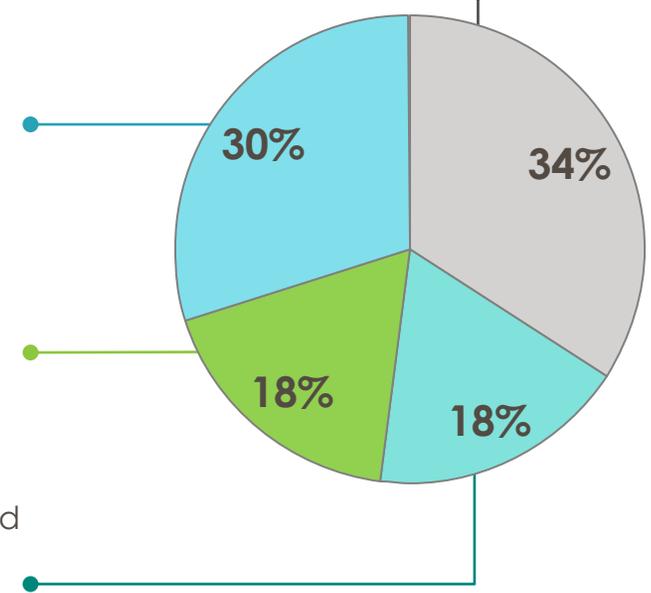
New to world/ Ashland
 Page 114

FiberHance™ BM solution: new technology to improve sustainability of hair strengthening

Mfg. cost/ capabilities
 Page 115

PolyAPTAC manufacturing process: reengineered process to purify industrial grade of PolyAPTAC technology into Hair Care applications with proven results

FY'16 R&D spend was ~3% of sales



Target 30% of current sales at 5% margin premium from new products



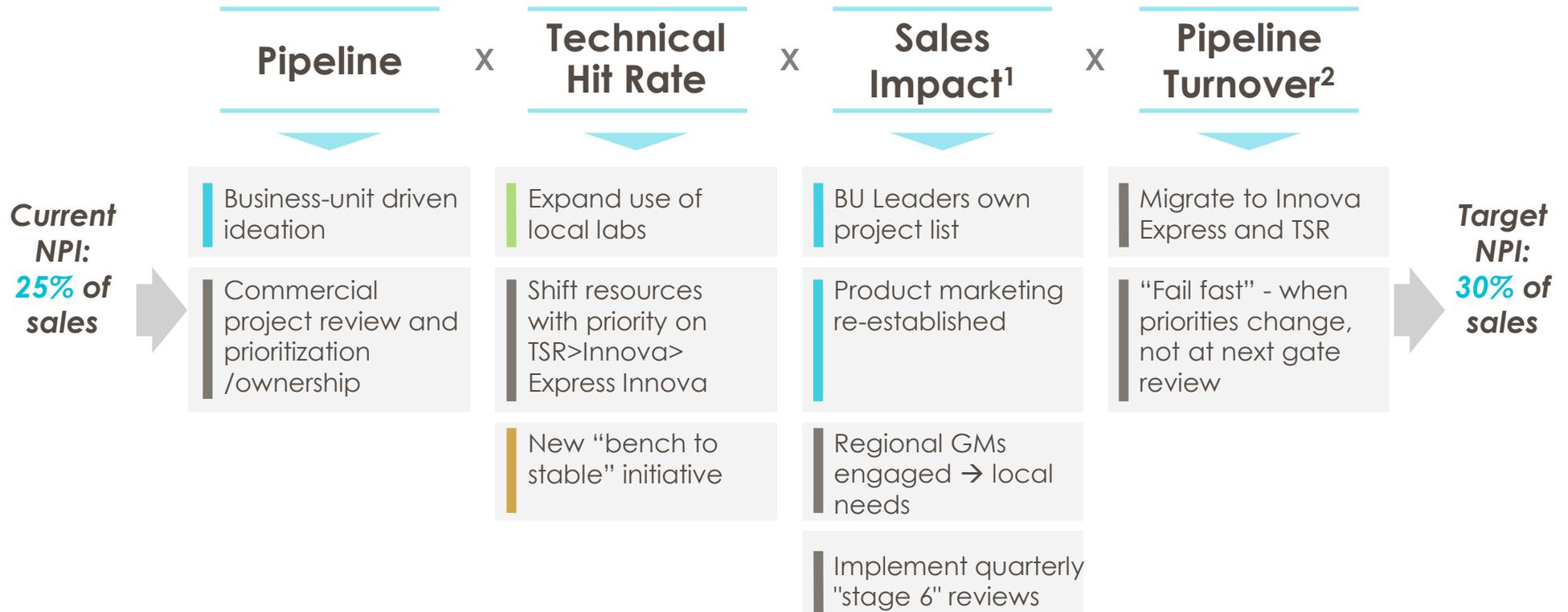
3 | Sustain and grow premium mix

NPI: Innovation that delivers on our brand promise



3 | Sustain and grow premium mix

NPI: Improving the impact of our R&D spend



Also implementing new metric and tracking system

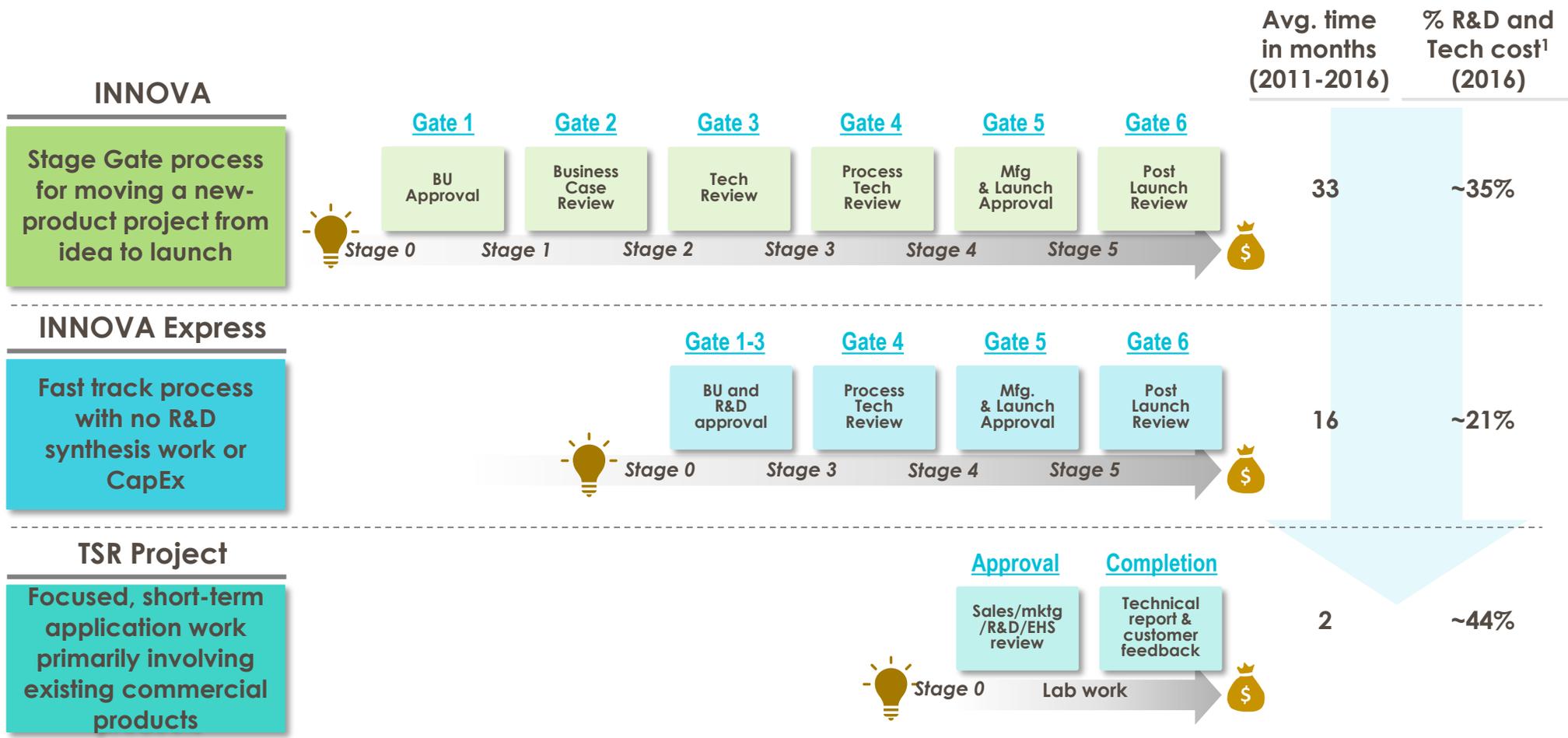
Legend: █ Last 12 months █ Last 3 months █ Current implementation █ To be initiated

23 1. Commercial Impact Factor is the ratio of actual commercial impact to the planned commercial impact; assessing degree of commercialization 2. Pipeline Turnover Factor is the ratio of the pipeline to the turnover within the pipeline



3 | Sustain and grow premium mix

NPI: Migrate resources towards TSR/Innova Express



Redeploy resources to more TSR/Innova Express projects



Driven by 7 core levers

2018 – 2021 Performance Targets

Adjusted EPS
growth (CAGR)
>15%

Adjusted ASI
EBITDA (%)
>25%*

Cash
generation¹
\$1B+

- **New actions to sustain and grow premium mix**

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* = 2021 Adjusted EBITDA Target

4 Improve competitiveness

Better asset utilization: Absorption opportunity

Ashland manufacturing fixed costs are
~\$700MM¹ per year...

Texas City,
TX

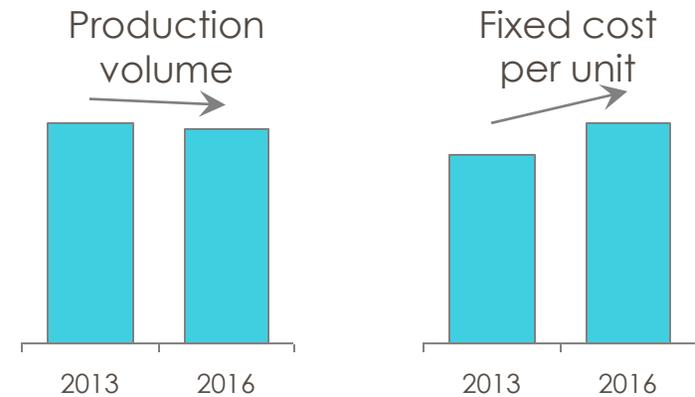


Poole,
UK



Wide range of asset intensity

... which drove significant cost
challenges from 2013-2016



Absorption cost/unit increases
concentrated in PNS², PC² and
Coatings

\$70MM

4 Improve competitiveness

Better asset utilization: Actions to leverage capacity

Driver	Action	Example	Theoretical Potential ¹
Excess/ Underutilized Capacity	Lower cost/unit by running plant at 95% capacity	Temporarily sell in non-strategic markets <small>Page 120</small>	\$125MM
	Fill plants at current average margin	Repurpose assets <small>Page 121</small>	\$100MM
	Consolidate plants/lines (products produced at 2 or more plants)	Underutilized plant closure <small>Page 122</small>	\$30MM
	Improve network product mix	Optimize source plant location	\$25MM
	De-tolling	Bring operations in-house <small>Page 123</small>	\$20MM
Constrained Capacity	Leverage current capabilities to upgrade product sales mix	Focus on profit velocity <small>Page 124</small>	\$25MM
	Improve in-plant operations	De-bottleneck <small>Page 125</small>	\$15MM ²

Tremendous profit potential with existing assets

27 See appendix for specific examples
 1. Not additive 2. Represents potential opportunity over three years

4 | Improve competitiveness

Better asset utilization: Accomplishing our initiatives

How we will accomplish our initiatives

- Aligned asset platforms to commercial leadership
- Redeployed commercial, operations, and R&D resources which leverage our unique production capabilities
- Enhance sales incentive system
- Define manufacturing improvement opportunity list
- Establish new cost per unit metrics to achieve full P&L impact
- Commission steering team with regular review cadence

Legend:  Last 12 months  Last 3 months  Current implementation  To be initiated

5 | Improve competitiveness

Commercial Excellence: Action plan

Action Plan

Marketing	<ul style="list-style-type: none">– Deploy new structure– Extend to regional view
Pricing	<ul style="list-style-type: none">– Price over raw material inflation– Target \$30MM "pocket price" improvements– Enable profit clarity → change sales incentive system
Sales Force Effectiveness	<ul style="list-style-type: none">– Enhance value selling training– Improve use of Salesforce.com– Develop customer impact statements– Redesign sales incentives– Revitalize distribution strategy

Legend:  Last 12 months  Last 3 months  Current implementation  To be initiated

5 | Improve competitiveness

Commercial Excellence: Initial focus on price to value

"Pocket Price"

- **Dedicated pricing leaders and analysts**
- **Implemented a pocket price tool for all businesses in order to assess price outliers and make smart price changes**
- **Implemented a price yield tool to track progress**
- **Established new order policies:**
order size, special requests, order changes
- **Standardizing terms:** >280 different credit terms
- **Assessing rebates and ensuring impact as contracts renew**
- **Deep analysis of freight**
- **Develop target pricing process to enable sales teams to respond and change incentives accordingly**

\$15MM identified to date

Legend:  Last 12 months  Last 3 months  Current implementation  To be initiated

5 | Improve competitiveness

Commercial Excellence: Initial focus on price to value

Profit Visibility/Sales Incentives

- **Align FPA** resources with BU
- **Implement new financial reporting** to enable better profit driver visibility
 - Profit across the globe
 - Variable vs. fixed cost
 - Cost by batch size
- **Redesign sales incentive plan** with:
 - Incentive to leverage excess capacity in the system
 - Matrix of GP\$ and GP%

Fixing visibility lost by merging IT systems

Legend:  Last 12 months  Last 3 months  Current implementation  To be initiated

6 Improve competitiveness

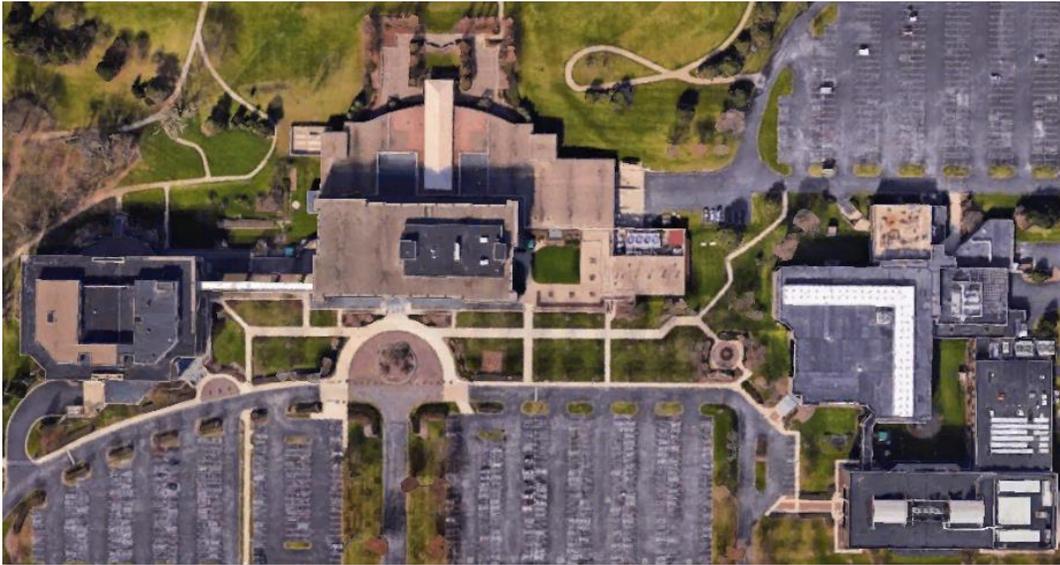
Offset SG&A inflation: Near-term opportunities

Near-term actions identified to reduce SG&A ¹	Opportunity
1 Global Business Services/Outsourcing	\$15-25MM
2 Footprint Optimization	\$5-10MM
3 Delaying	\$5MM

10% volume leverage on flat SG&A improves EBITDA margins by ~90 bps¹

6 Improve competitiveness

Offset SG&A inflation example: Dublin, OH campus



- Dublin complex housed ~1 400 employees in 2007; now less than 500
- The current cost per employee is roughly \$20K / year
- We are consolidating out of ~160K square feet of space in Dublin Administration building

**Example: reducing 6 sites
will save ~\$6MM**

6 Improve competitiveness

Offset SG&A inflation: Optimizing back-office ops

Back-office optimization started as a cost savings exercise...



Global Business Services (GBS)

- Two Global Headquarters of excellence in Poland and India with total headcount of 340
- Provides back-office support for Finance, IT, EH&S, Supply Chain, Legal, and others
- Continuous improvement focused with established governance model and metrics

...now we're optimizing through process improvements

In January, we redesigned our accounting close to save time and reduce cost

40%

Of activities found to be 'waste'

10

Processes redesigned/steps removed

12

Opportunities for automation

1

Process to be off-shored

2

Days potentially taken out of close¹

33%

Reduction in time on key closing activities

Driven by 7 core levers

2018 – 2021 Performance Targets

Adjusted EPS
growth (CAGR)
>15%

Adjusted ASI
EBITDA (%)
>25%*

Cash
generation¹
\$1B+

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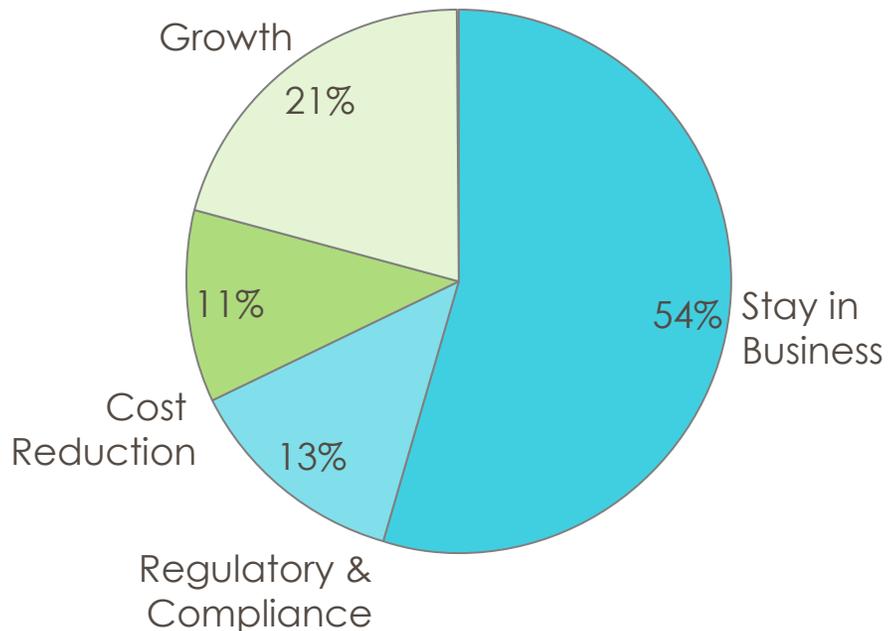
**7. Ensure CapEx plus
changes in working
capital <6.5% per year**

7 | CapEx + change in working capital <6.5%/year

CapEx: Leverage existing investments

Over past ~4 years, ~32% of CapEx spent on growth and cost reduction

2013-2016 CapEx spend¹

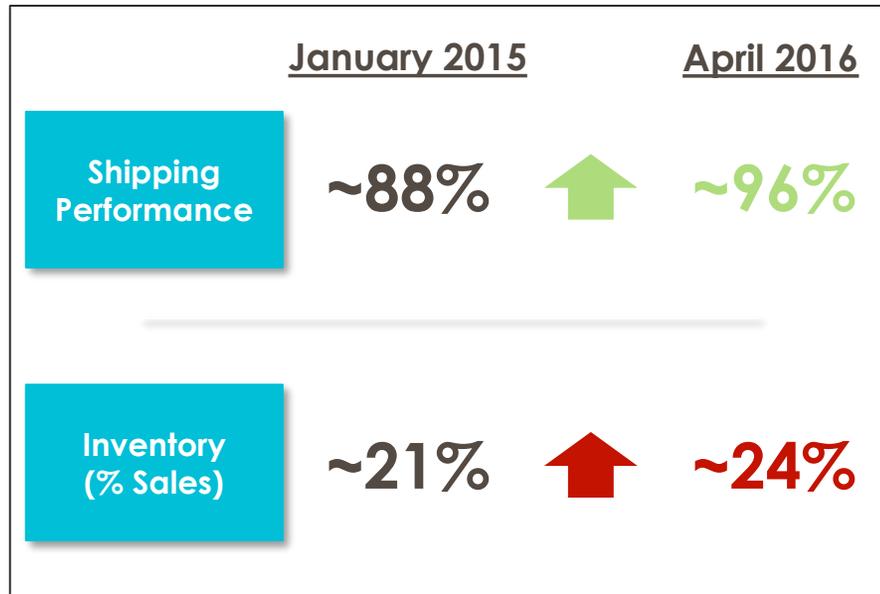


With many investments complete, we're able to reduce CapEx

- We spent ~21% of CapEx on growth from '13-'16
- With current utilization rate of 75-80%, we have 'room to grow' with reduced capital expenditures

7 | CapEx + change in working capital <6.5%/year

Working Capital: Reducing ASI inventory



Targeting reduction in inventory

- In early 2015 we struggled with on-time delivery
- We built inventory to support improvements in shipping performance
- Structural improvements have been made in inventory management, forecasting, and order execution enabling inventory reduction efforts without impact to service

300 bps reduction in inventory as percent of sales metric results in a \$60MM inventory reduction

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Capital allocation policies

Recent actions

Returned over \$2B to shareholders in the last 3 years

Paid down \$1.9B debt

Established Asbestos Trust

Assigned majority of pension liabilities to VVV

Signed agreement to acquire Pharmachem

Active capital allocation

Capital allocation policies

Pharmachem transaction overview



Purchase price of
\$660 million



Transaction to be funded
with bank financing and
available cash



Transaction multiple of ~10.5x
Pharmachem's estimated fiscal
2017 adjusted EBITDA; ~7.5x after
adjusting for expected cost
synergies and tax optimization



Expect to be accretive to EPS in
first year following close of
transaction and to enhance
long-term EPS growth; also
expected to generate significant
cash flow



Strong cash conversion and
expected ~\$10MM
cost/~\$110MM NPV tax synergies



Transaction expected to close by
the end of June quarter

Compelling Pharmachem financial equation

Capital allocation

Current priorities

First priority

Debt Reduction

- Eliminate debt related to Pharmachem acquisition
- Reduce other debt as appropriate
- Maintain mid to high BB credit rating

Other allocation priorities

Organic investment

- Capital expenditures + working capital investment < 6.5% of sales
- Willing to pursue high return opportunities

Acquisitions

- Selective small to mid-sized acquisitions with attractive returns well in excess of our cost of capital

Return cash to shareholders

Dividends

- Yield and payout ratios in line with specialty chemicals peers

Share repurchases

- Opportunistic after leverage reduced

Primary focus – debt reduction



Financial targets to create shareholder value

2018 – 2021 Performance Targets

Adjusted EPS
growth (CAGR)

>15%

Adjusted ASI
EBITDA (%)

>25%*

Cash
generation¹

\$1B+

Break

Pharma and Nutrition

Pharma & Nutrition Specialties (PNS)

Pharmaceutical generates the majority of PNS profits

Pharma



Cellulosics: **HPC, HEC, HPMC, CMC**
Acetylenics: **PVP, PVPP**

Today's focus

Nutrition



Cellulosics: **CMC, HPC, HPMC**
Acetylenics: **PVPP**

Pharmaceutical overview



We **enable** functionality that drug manufacturers need to promote and launch **safe, effective, and consistent products**

Expert in the \$2.1B oral solid dosage (OSD) excipient market with ~3% projected CAGR to 2020 driven by global middle class expansion, aging population, and growth in generics

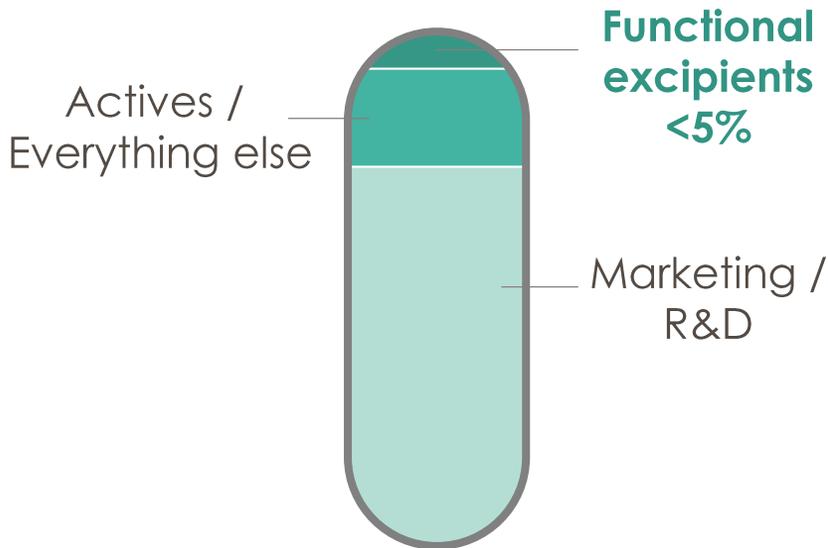
Our excipient portfolio is highly differentiated, however, product sub-segments have seen increasing price pressure

Recent strong unit volume growth; revenues tempered by modest pressure in the price sensitive product sub-segment

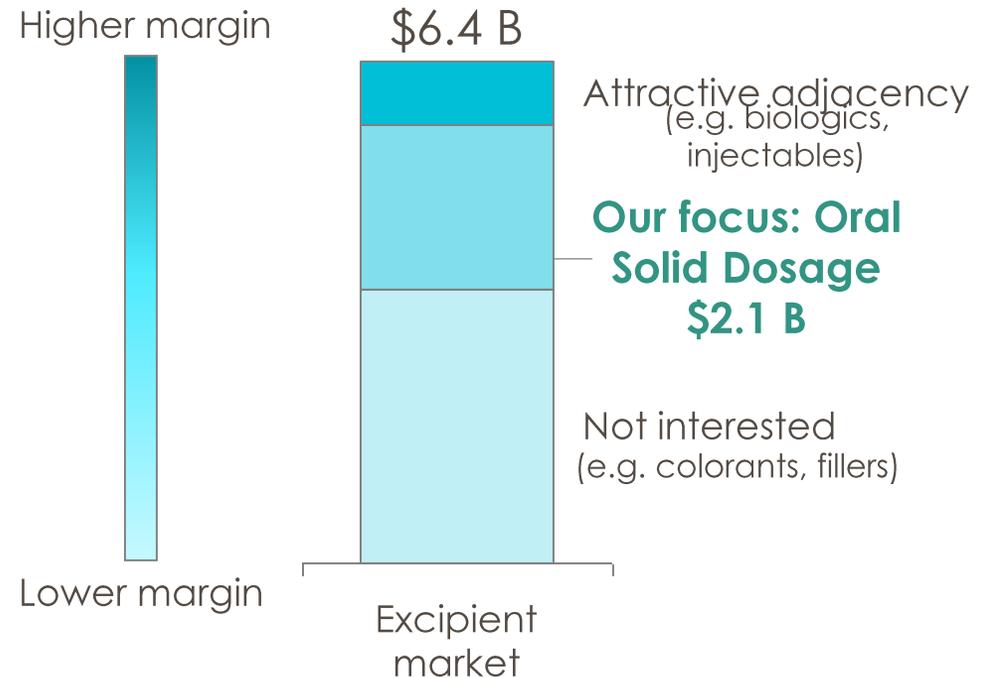


Excipients are small but critical part of every pill

Functional excipients account for a small fraction of total pill cost



We are well positioned in excipients with expansion opportunities



We're focused on the higher margin segment of the OSD market

Key strategic themes

1 | Pharma is a growing profit engine
Growth driven by mix shift towards higher-margin products and underlying volume growth

2 | We have a winning strategy
Utilizing the strength of our portfolio to deliver customized excipient solutions with industry leading tech service

3 | We are investing to accelerate growth
Capitalizing on recent regional and technological investments

4 | Expansion into Nutraceuticals
Pharmachem acquisition expands our position in this attractive high growth market

1 | Pharma is a growing profit engine

Strong performance driven by cellulosetics

Strong unit growth and margin expansion ('13-'16)

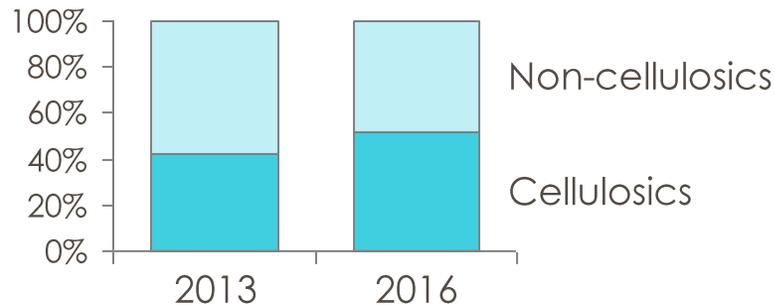
2.4%

Volume growth

60 bps

GP margin expansion

Cellulosetics as % of Pharma GP



Drivers of our performance ('13-'16)

- ✓ 3% industry growth
- ✓ Improving mix towards cellulosetics
- ✓ Cellulosetics value pricing
- ⚡ Capacity limitations
- ⚡ More competition in portions of the acetylenics product line

We have grown margins by driving portfolio to differentiated, cellulosetics products

2 | Winning strategy

Broad portfolio of functional excipients

We have the broadest portfolio of functional excipients in the market

10

Functional chemical platforms

~700

Uniquely tailored SKUs

We solve complex problems with our multi-platform portfolio



Metformin
diabetes treatment

Example

Major generic approached us to help:

- increase swallowability
- reduce tablet size

Our solution utilized a unique blend of our excipients, **reducing tablet size by 20%**

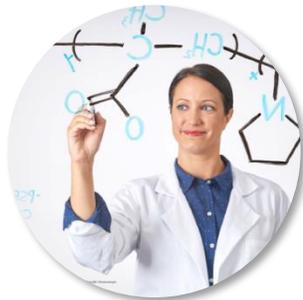
We win by leveraging the 'full excipients catalog'

2 | Winning strategy

Delivering tailored solutions with formulation expertise

We bring new products to market through customer collaboration

75 dedicated scientists and an interconnected network of global labs allows us to work alongside our customers



~25%
excipient
revenue from
new products



Tailored solutions for unique problems

Example

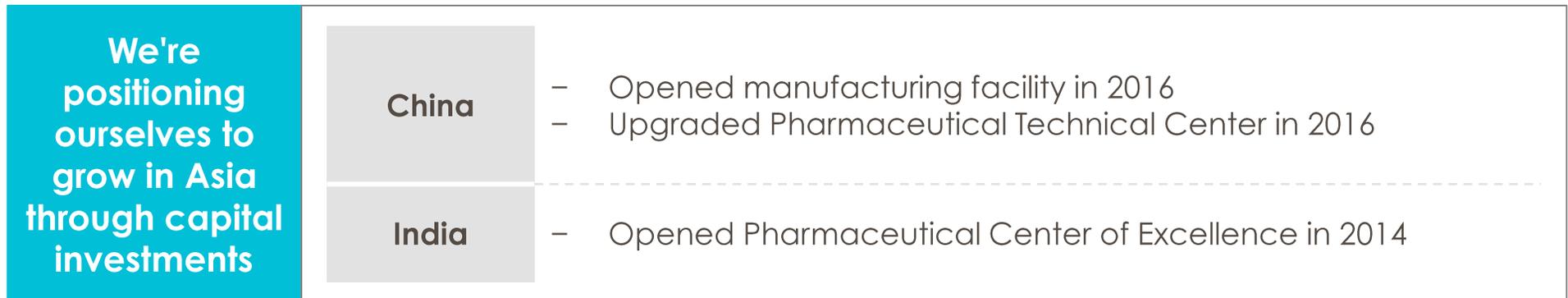
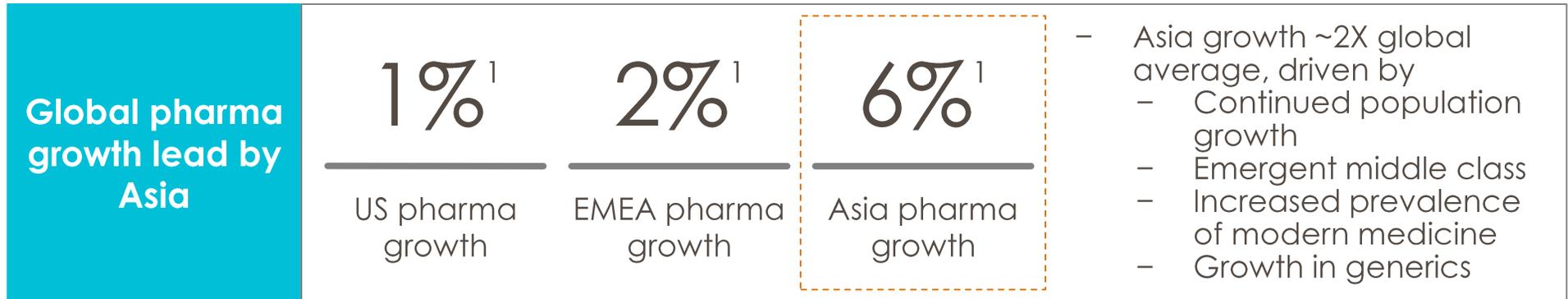
We launched a **novel DC HPMC excipient** that enabled **150% faster** material flow

Resulting in **increased customer throughput** without sacrificing performance

We win by tailoring solutions to meet customer needs

3 Investing to accelerate growth

Capturing regional growth with targeted investments



Asia accounts for ~30% of our portfolio today and continues to grow as we invest

3 Investing to accelerate growth

Improving the mix

Expanding capacity and capabilities in high-profit cellulosics

- ✓ Klucel® HPC capacity expansion online 2017
- ✓ Benecel® HPMC capability improvements online 2017

Example

'Optimization': Doel, Belgium plant

- Invested to **expand pharmaceutical capabilities**
- Allowing us to compete in a **\$150MM market**

Improving acetylenics position



Manufacturing cost reductions

- Manufacturing excellence and Lean Six Sigma implementation



Offerings enhancement

- Innovative packaging and higher purity products for niche applications



Asset optimization strategy

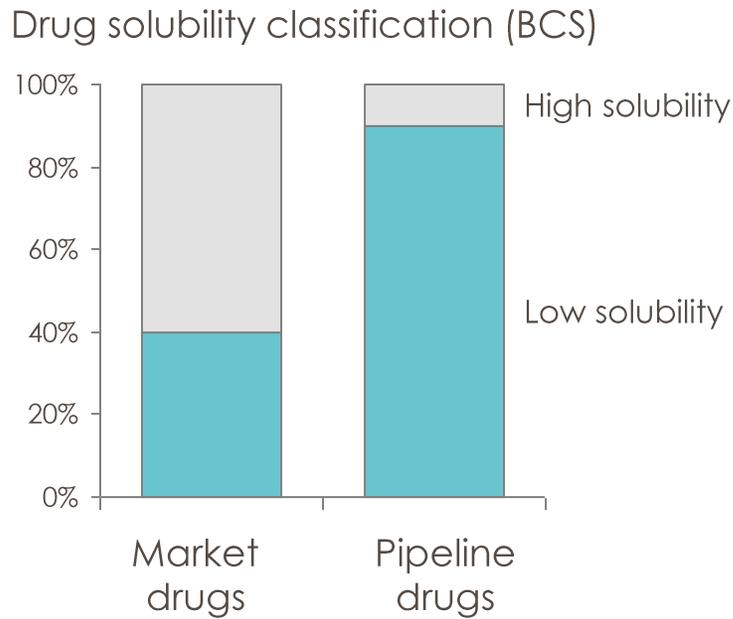
- Address non-pharma related volume declines with 'fill the plant' sales efforts and network / sourcing optimization

We're investing to capture 'premium' growth while improving our acetylenics position

3 Investing to accelerate growth

Focused innovation to enable bioavailability

Solubility¹ issues ahead in the pharma pipeline



Our solubility solution helped fix an HIV active with absorption problems



Lopinavir
HIV treatment

Example

We were asked to help remedy side effects to **minimize regulatory risk**

We developed a novel excipient package to **reduce side effects and improve solubility**

Bioavailability is the next frontier and we're well positioned to win

4 Expansion into nutraceuticals

Nutraceuticals is well-aligned compliment to PNS

Pharma – Ashland strengths:

- Formulation expertise
- Polymer science
- Customer intimacy
- Global lab network

Nutra-
ceuticals

Nutrition – Ashland strengths:

- Particle engineering
- Polymer science
- Customer relations
- Application expertise

Market metrics

\$39B

Global
market size

40%

US share of
market

6%

Forecast
growth rate

Market trends

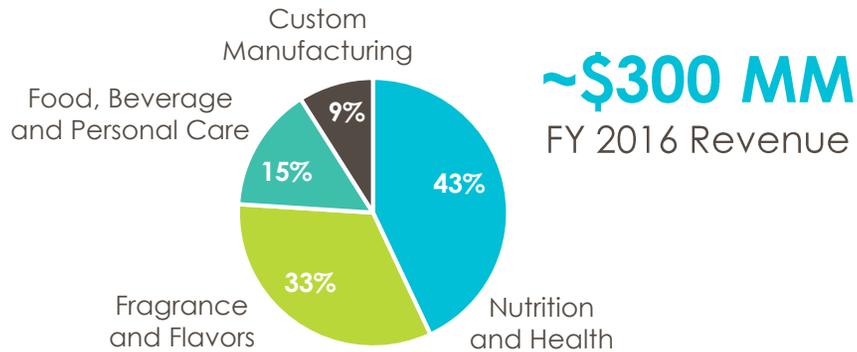
- Aging population
- Middle class growth
- Health and wellness
- Natural and clean label
- Functional nutrition

Nutraceuticals is a strong existing market for Ashland, however, we lacked the critical mass to penetrate further

4 Expansion into nutraceuticals

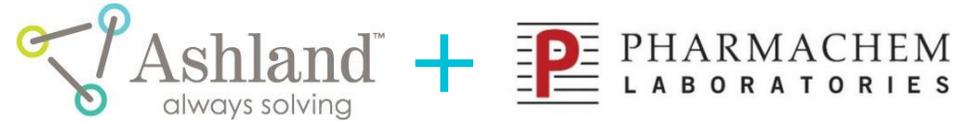
Pharmachem is a strong fit

Pharmachem is a leader in custom nutraceutical offerings and solutions



Manufactures **custom and branded nutraceutical formulations**

Global leader in all-natural fragrance fixatives



1. **Leverages Pharmachem:** nutraceutical channels to grow our excipients & food additives business
2. **Leverages Ashland:** channel strengths outside the US and in food and personal care markets
3. **Combined:** delivers more advanced, fully formulated solutions to the global nutraceuticals market

Not included in acquisition economics

Pharmachem allows Ashland to leverage strengths in nutraceutical markets



Pharma will continue to be an engine for profitable growth at Ashland

We are set up for success

1 | Pharma is a growing profit engine



- Healthy underlying market demand
- Mix shift towards high-margin cellulosics
- Cellulosics value-pricing

2 | We have a winning strategy



- Comprehensive portfolio of excipient technologies
- Uniquely collaborative technical service teams

3 | We are investing to accelerate growth



- Adding cellulosics capacity and capabilities to serve growing demand
- Enhancing acetylenics strategy
- Developing improved solubilization technology

4 | Expansion into Nutraceuticals



- Pharmachem acquisition accelerates market entry
- Additional upside synergies to be captured

Personal Care

Personal care overview



We **innovate** scientifically proven solutions for personal care with specialty ingredient platforms in **VP, VE, cellulotics and biofunctionals**

Leader in \$6B specialty ingredients market with ~3% projected CAGR to 2020 due to mega-trends: rising emerging market middle class and shift to higher-price natural products

Strong volume growth 2013-16, driven by specialty areas that are high-performance and innovation-focused (e.g., biofunctionals)

Some margin and pricing pressures due to increased competition in the lower end of our offering (e.g., purchase-for-resale)



Three business areas with strong market presence

Hair care



Top 3 in **styling fixatives**
Top 3 in **hair rheology**
Top 10 in **conditioning polymers**

Oral care



Leader in **functional polymers** and denture **bioadhesives**
Pioneered **whitening** actives delivery

Skin care



Pioneered **sunscreen waterproofing**
Top 3 in **skin rheology**
Top 5 in **UV absorbers**
Top 10 in **biofunctionals**

Broad product range and leading positions in hair, oral and skin

Key strategic themes

- 1** | Maintain strong focus on new, highly differentiated applications
Earn a premium with unique technologies, formulation expertise and customer enablement
- 2** | Accelerate growth from "naturals" and emerging market trends
Grow natural & sustainable portfolio and enable rapid regional launches with regional centers of excellence
- 3** | Improve margins in more competitive segments of the market
Increase asset utilization, engineer better processes and leverage suppliers partnerships
- 4** | Leverage synergies from Pharmachem
Strengthened biofunctionals, improved channel access, and enhanced "full solution" offerings

1 | Focus on new, highly differentiated applications

Strength in technology, formulation and customer enablement

3
areas of strength



Unique technology

Reputed platforms developed by 125 world-renowned scientists in 9 regional centers of excellence

- Skin biology expertise
- Root-to-tip hair care
- Oral actives delivery
- Sensory excellence



Formulation expertise

Expertise in creating products with enhanced performance

- Sustainable, cost effective alternatives
- Advancement of customer formulations
- Ashland-developed “complete solutions”



Customer enablement

Leading end-to-end product launch support

- Regulatory clearance
- Clinical testing
- Claim substantiation
- Consumer value articulation

1 | Focus on new, highly differentiated applications

Our unique technology repairs hair from root to tip



Example

FiberHance™ BM

Unique technology



Formulation expertise



Customer enablement

- Our **innovative and patented bond multiplier chemistry** addresses a key market need in repairing hair breakage from coloring and straightening
- **Displaces higher-price alternatives** with cost-effective manufacturing
- **Proven efficacy** on all hair types, including Caucasian, Asian and African



FiberHance™ BM recently won prestigious "Best Functional Ingredient" gold award at In-Cosmetics

Recent launch already garnering significant interest from multinationals

1 | Focus on new, highly differentiated applications

Our technology enables next gen whitening products



Unique technology



Formulation expertise



Customer enablement

Our **unique whitening technology** improves the stability and delivery of whitening agents – putting professional-grade whitening solutions in over-the-counter consumer products

Example



We made it possible for a major oral care firm to formulate peroxide in its whitening product – leading to **one of the most successful oral care product launches ever**

Whitening toothpastes are the fastest-growing toothpaste category – costing 2x+ per oz. as much as traditional counterparts

1 | Focus on new, highly differentiated applications

Our formulations set premium sunscreens apart



Unique
technology



Formulation
expertise



Customer
enablement

We work with customers to formulate customized sunscreens that **last longer**, feel **less greasy** - and have **novel textures**

Example



Bayer adopted our sunscreen mousse prototype to develop a **new and unique whipped sunscreen** that applies evenly and leaves skin feeling softer and smoother

Sunscreens are a \$10B market at retail; those with unique Ashland formulations commanding a premium and enhancing claims

1 Focus on new, highly differentiated applications

We help develop products that ensure customer success



Unique technology



Formulation expertise



Customer enablement

We help our customers to ensure end-product success by substantiating new & **unique label claims**, navigating **regulatory** challenges, and **communicating value** to consumers

Example



Retail price \$375/bottle

Ashland's Vincience team innovated a black truffle extract to energize skin cells in Estée Lauder's prestige Re-Nutriv "Ultimate Diamond" line...

... and helped them **demonstrate efficacy** and **develop consumer marketing** that brought to life the story "from soil to bottle"

Our ingredients provide functionality that enables customer price premiums

1 | Focus on new, highly differentiated applications

We have renewed focus on what drives success in innovation

✓ **Strong value proposition**

➤ Redesigned R&D process for **stronger early-stage marketing input** to ensure value proposition matches market needs and end user expectations

✓ **Engage the customer**

➤ **Beta-test earlier and more often** to increase customer engagement and intimacy, and enhance collaboration

✓ **Focus on core chemistries**

➤ **Focus on cellulosics, acetylenics and biofunctionals** where we have deep experience and manufacturing scale

✓ **Move quickly to market**

➤ **Decentralized development at regional centers of excellence** that are able to customize and test in-market rapidly and economically

2

Accelerate growth from "naturals" trend

We are actively growing our natural and sustainable portfolio

Zeta Fraction™

Example

Zeta Fraction™ uses **live plants** in a **natural, low-energy, zero-waste** process to deliver **high-efficacy** actives



Johnson & Johnson uses Zeta Fraction™ technology in its Aveeno range to improve **radiance** and provide **soothing properties**



Just-launched Harmoniance™ captures the metabolic activity of Sacred Lotus to deliver **age-defying skin care benefits**

Rest of portfolio

Cellulosics

Guar

Botanicals

Natural, organic and ethical products will outgrow the market ~3x to 2020
We are ready today

2 Accelerate growth from emerging market trend

Our labs will help customers capture dynamic regional trends

Customers require different capabilities to succeed in emerging market

- **Unique preferences, habits, hair/skin types and climates** driving personal care purchase behavior
- Greater e-commerce role in product selection and adoption, requiring **accelerated innovation**
- **Complex formulation engineering** needed to hit lower price point – while retaining quality and margins

Meeting local challenges with regional centers of excellence

Example



We helped an Indian oral care provider develop a new anti-cavity toothpaste

We built upon this success by expanding our **global network of regional centers of excellence**

~85% of end-market growth to 2020 will come from emerging market
We are ready today

3 | Improve margins in more competitive segments

Asset utilization, better processes and suppliers partnerships



Increase asset utilization

- Asset utilization-focused R&D
- Targeted sales and marketing efforts based on enhanced order-level information
- Rationalize product offerings



Better engineer processes

- Simplify complex manufacturing processes
- As appropriate, migrate from batch to continuous processes
- Continue to drive continuous improvement, cost-out programs

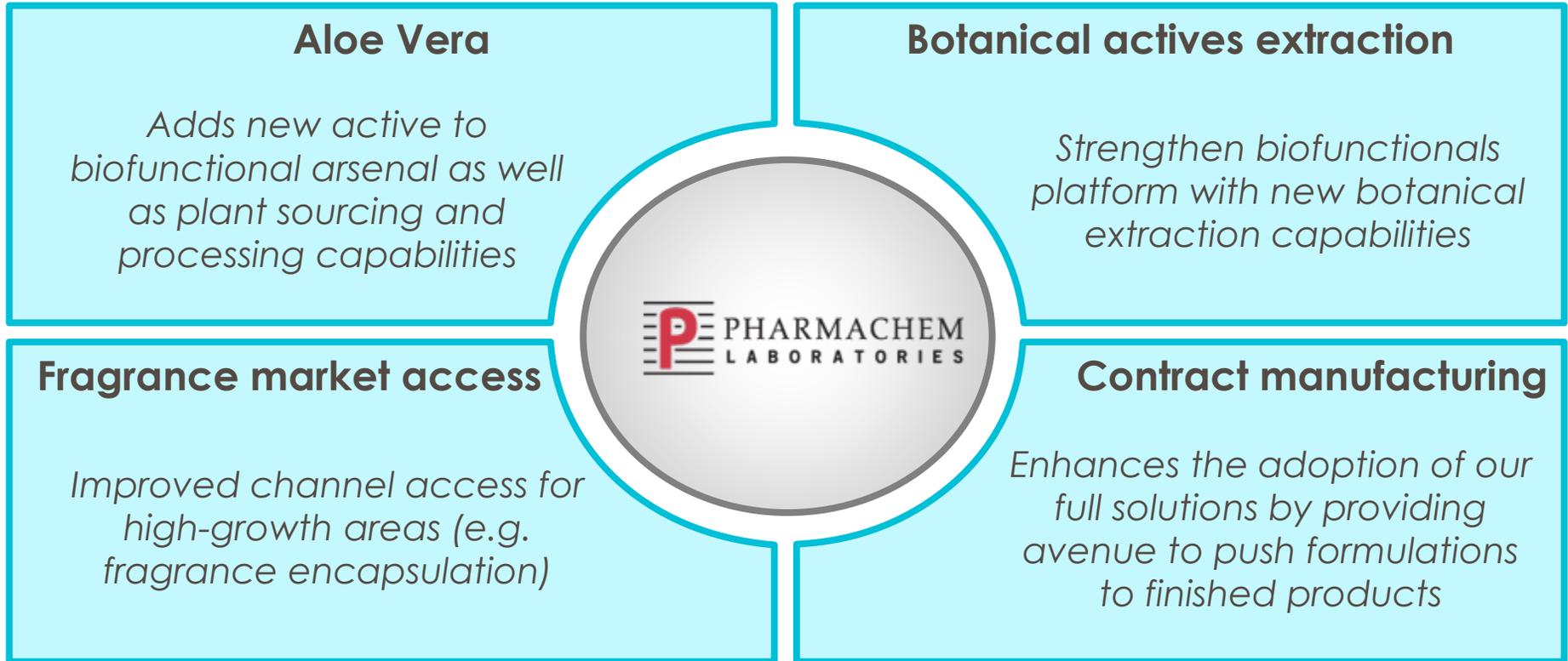


Partner with suppliers

- Consolidate purchases to fewer, valued suppliers
- Optimize global procurement system
- Drive predictability with long-term contracts

4 | Leverage synergies from Pharmachem

New capabilities and know-how to strengthen existing initiatives



Acquisition of Pharmachem will accelerate growth of both companies

Personal care will be one of Ashland's core growth drivers

We are set up for success

1 | Maintain strong focus on new, highly differentiated applications



- Unique technologies that expand applications
- Formulation expertise that sets premium products apart from the mass market
- Customer enablement to bring products to market at a premium price point
- Renewed focus on innovation success drivers

2 | Accelerate growth from "naturals" and emerging market trends



- Growing natural and sustainable portfolio
- Network of regional centers of excellence to enable rapid launches and customer interaction in emerging market

3 | Improve margins in more competitive segments of the market



- Increased asset utilization
- Process engineering to reduce production costs
- Partnerships with suppliers

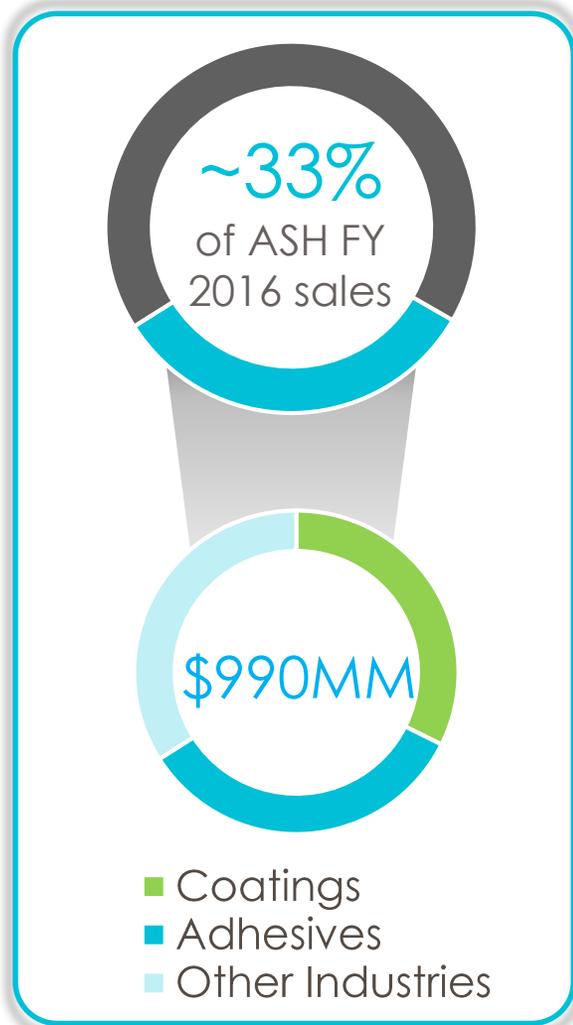
4 | Leverage synergies from Pharmachem



- Strengthened biofunctional with Aloe Vera and botanical extraction
- New channel access through fragrances
- Contract manufacturing enabling increased adoption of full solutions

Industrial Specialties

Industrial Specialties (IS) overview



We provide **high performance** products that are typically a small percentage of the total cost of the end product, but provide **significant value and impact**

Common business model:

- Focus on **premium sub-segments**
- **Close collaboration** with customers utilizing our regional **technical service & expertise**
- **Disciplined price and cost** management
- Ensure **high asset utilization** for high asset intensity product lines

IS – Other Industries \$337 MM

Performance Specialties



Focus on unique applications with **complex performance needs**

Target selective **areas for growth**

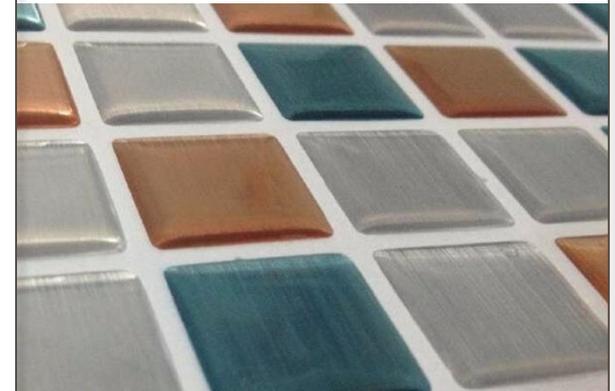
Energy



Energy is a much smaller portion today of Industrial Specialties' portfolio

Beginning to see an up-tick in the market as oil prices have recovered

Construction



Focus on **premium applications** & improving customer productivity

Significant cost restructuring and asset focus will **drive success**

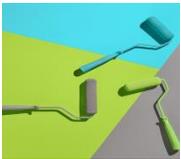
Industrial Specialties – Coatings



Our 3 strengths



Rheology



Surfactants



Foam control

We **solve** rheology & formulation challenges for architectural coatings with **industry leading technologies, a differentiated product portfolio, and award winning technical service**

Market leader in \$2.8B market for architectural coatings additives with 3% CAGR; the market is primarily driven by remodeling & new construction and a shift towards premium paints

Our products are **2-4% of the paint can** but provide **high value in use** to the painter and property owner

Our segmented strategy is driving growth in the premium segment, while improving our cost position



Coatings: key strategic themes

- 1 | We are the premier rheology provider
60+ years expertise in architectural coatings, #1 in HEC, industry standard for rheology and coatings additives
- 2 | We're driving a more premium mix through product differentiation, innovation, and customer intimacy
Our premium product lines and formulation expertise enable customer productivity, improved paint performance
- 3 | We're focused on further strengthening our leadership in HEC
Our global presence allows us to manage cost and customer supply, ensuring we stay #1

1 We are the premier rheology provider

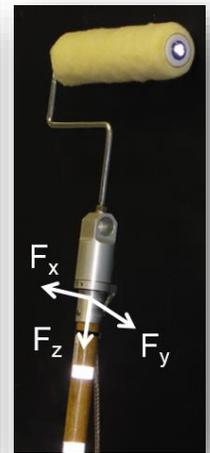
With strong capabilities and technologies

Global manufacturing capabilities



We are the leading HEC producer & the only one with manufacturing capabilities in 3 regions

Patent pending ART (Application Reader Technology) device



- We span the paint range from low to premium with the key rheology chemistries
- We continually innovate rheology chemistry
- We advance measurement science

2 Enabling customers with premium products

Our expertise and technical support leads the industry

Customers come to us to solve their hardest rheology problems...

...and develop new products

Examples



France



Portugal

Problem: customer needed a more effective rheology agent



Italy



Switzerland

Solution: partnered to formulate our Aquaflow™ product for superior efficiency & application feel across multiple brands



Working together, we **improved viscosity** and **enhanced color** for a new solvent-free paint

With our 6 regional tech centers we partner with our customers to deliver the perfect rheology solution for the local market

3 We're staying cost competitive in HEC

Proactive actions to improve HEC leadership position

HEC market overview

Soft pricing environment...

- Decreased demand because of softness in energy markets
- Global capacity additions have increased supply

But stable volume demand...

- Firm demand in core applications

Actions



Implementing new asset optimization strategy aligned with commercial strategy



Increasing research focus in process technology improvements



Accelerating on-going manufacturing cost reductions with lean six sigma program

We are executing to ensure we stay competitive in any market environment

Industrial Specialties – Adhesives



We **enable** high performance applications across end markets through **customer centric innovation, pioneering new applications, and renowned expertise**

Niche player in the \$22B specialty formulated adhesives market with a 3% CAGR.

Adhesives is a materials business with high performance demands and continual innovation

Our Adhesives portfolio is nimble, capturing a premium in niche applications throughout the market



Adhesives: key strategic themes

1 | Adhesives is a significant contributor to Ashland's profit and has demonstrated strong growth

Successful value proposition; disciplined pricing and cost management; leadership position in Pressure Sensitive Adhesives (PSAs)

2 | We win with customer focused innovation, R&D, and tech service
30% of revenue generated from new products

3 | We're accelerating growth by extending our global reach
Capacity expansions / additions in UK to support premium adhesives

1 | Adhesives is a growing, high profit contributor

Leadership position in PSAs drives significant growth

Our Success Model

Target specialty niches with high performance demands in:

- Graphics
- Specialty tape & Label
- Packaging
- Transportation adhesives
- Structural adhesives

Capitalize on mega trends to accelerate growth

- 50+ years experience in automotive adhesives

Constantly upgrade our product mix

Fast innovation through deep technical expertise and customer collaboration

Price and cost management



We have established a clear leadership position in water based and solvent PSAs and great niche positions in other segments

2 | We win with innovation, R&D, and tech service

Solving customer's problems through collaboration

Examples

New Product: Heat seal adhesive



Problem: adhesive for perishable product with heat sealing sleeve label

Solution: worked closely through scale up with our Pureseal™ product

- ✓ Successful label for Yoplait

New Product: UV cure coatings



Problem: strong adhesive performance & low migration for food safety

Solution: developed UV cure coatings, Purerad™

- ✓ Low migration for food safety
- ✓ Excellent coat-ability

New Product: Adhesive for house wrap tape



Problem: need ability to seal joints & seams of house wrap to withstand various temperatures & multiple surfaces

Solution: developed Aroset™ PSA:

- ✓ Reduces waste
- ✓ Adheres to multiple surfaces
- ✓ Higher performance at various temperatures

Our R&D and tech service are always solving for our customers, driving strong profit growth

3 We are accelerating growth with global reach

Investments in assets and R&D to meet global needs

Examples

Capacity expansion to extend geographic penetration



Kidderminster, Worcestershire, UK

Capacity expansion in the UK will:

- Provide a platform for growth
- Enable **customized service** to our European customers

New structural adhesive Products for Europe



We provide adhesives to **Porsche** and **Mercedes**, which enable:

- Improved processing and application time
- Superior adhesion & robustness in high performance situations

Regional R&D / technical service centers



Innovation from global labs delivers **30%+ revenue from new products**

- Dublin, Ohio
- Kidderminster, UK
- Shanghai, China
- Mumbai, India

Expansion to enable faster growth

Industrial Specialties will continue to deliver innovation around customer needs

We are set up for success

1 | Strong profit generation

- Growth in higher-margin premium synthetics
- Adhesives growth and disciplined pricing
- Selective growth & optimization in Other Industries

2 | We win through customer collaboration

- Adapting marquee coatings products for diverse customer needs
- Adhesive application innovations for direct customers & end-users
- Local service & customized solutions earn us a premium across the Industrial portfolio

3 | Global growth & capabilities drive success

- Cost reduction and process improvement in HEC
- Synthetic rheology technology advances
- Pioneering new applications and markets in Adhesives
- Driving asset optimization across the portfolio

Composites

Composites overview

\$669M



Specialties

Epoxy vinyl ester resins (EVER)

Gelcoat

Core

Unsaturated polyester resins (UPR)

We solve customer problems around the world, improving the **integrity** and **allure** of their composite products with high performance resins

Premium resins used in structural & semi-structural applications

- Infrastructure – corrosion & fire retardant
- Automotive & heavy duty truck
- Marine
- Building & construction

Strong gross profit growth 2013-16 despite flat volume due to aggressive cost & margin management

Segmented our business into core (UPR) and specialties (EVER, Gelcoat)

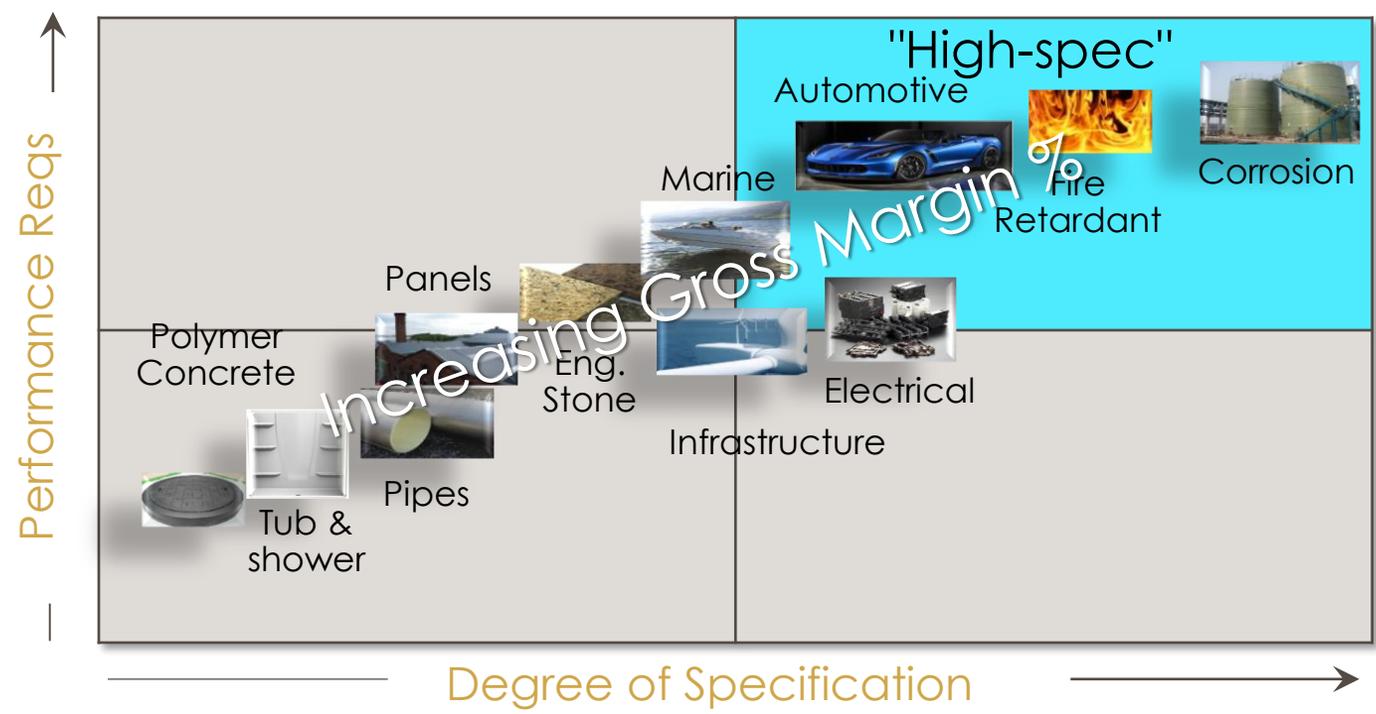
Key strategic themes

- 1** | Accelerate growth in the premium "specialties" segment
Re-align resources, leverage 50+ year track record (Derakane™), global reach, and world class technical service to accelerate growth in high-spec segments (e.g. corrosion, marine, automotive)
- 2** | Manage our cost structure in non-specialty core UPR
Continue to execute aggressive cost management through footprint optimization, cost-out initiatives, and facility utilization
- 3** | Drive cash generation
Margin growth, with low working capital and Capex requirements, support significant Ashland overhead, and cash generation

1 | Accelerate growth in the "specialties" segment

We focus on high-spec resins

Targeting "high-spec" applications



High-spec ~30% of the \$9B UPR market – but ~45% of profits

1 Accelerate growth in the "specialties" segment

We are the brand name in corrosion resistance

Strong Derakane™ brand, technical service, global reach & over 50 years of case histories



Example

Our Epoxy vinyl ester resins have...

- Higher strength
- Better corrosion resistance & durability
- Wider operating range
- Lower maintenance

Drivers of value

- 50 years of proven experience with Derakane™
- Dedicated science center
- World-class technical service & end-user selling team
- Highly specified – “When failure is not an option”
- Lower “lifecycle costs”

We earn a premium in EVER through superior reliability and lower lifecycle costs

1 | Accelerate growth in the "specialties" segment

Our gelcoats have superior performance

Maxguard™ gelcoats, outermost layer on a boat hull, **ensures the integrity & adds to the allure**



Example

Our gelcoats have superior...

- Gloss / depth of color
- Blush / UV resistance
- Weather-ability
- Consistency

Drivers of value

- Small part of cost, but significant cosmetic and functional impact - it's what you see in the showroom
- Industry-leading application knowledge and formulation support
- High degree of customer touch and customization

We differentiate in gelcoats through customization and quality

1 Accelerate growth in the "specialties" segment

Our UPR is used for high-end, high-spec applications

Polaris™ engineered resins **improve quality and durability** and provide **a range of design options**



Example

Our UPR meets the most demanding applications...

- Durable & stain resistant
- Efficient processing and manufacturability
- High-gloss, ultra-white enabling marble / granite appearance

Drivers of value

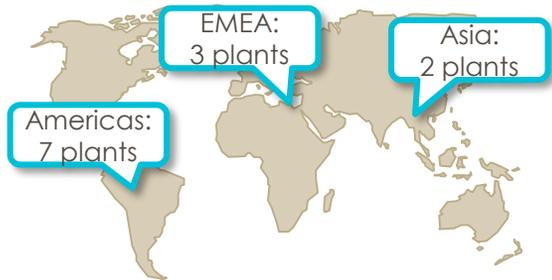
- Dedicated Engineered Stone lab & global technical support
- Product customization
- Improved performance vs. competing alternatives
- Reduced waste during production
- Leverage multi-generational product planning

We seek premium applications within the UPR market

2 Manage our cost structure in core UPR

Multi-pronged strategy to stay cost competitive

1 Maintain efficient network



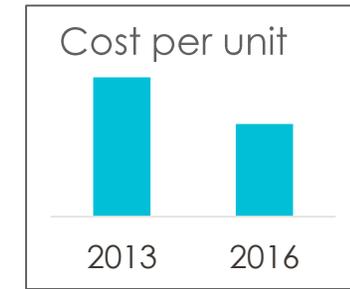
- Actively manage footprint to optimize cost (3 facilities closed in past 5 years)
- Leverage Reichhold acquisition to support EMEA cost initiatives (e.g. logistics, CapEx, etc.)

2 Drive cost out initiatives



- Drive profit improvement opportunities (e.g. waste & utilities cost reduction)
- De-bottle necking & yield improvement
- Dublin campus consolidation (~\$6MM annual savings)

3 Asset utilization

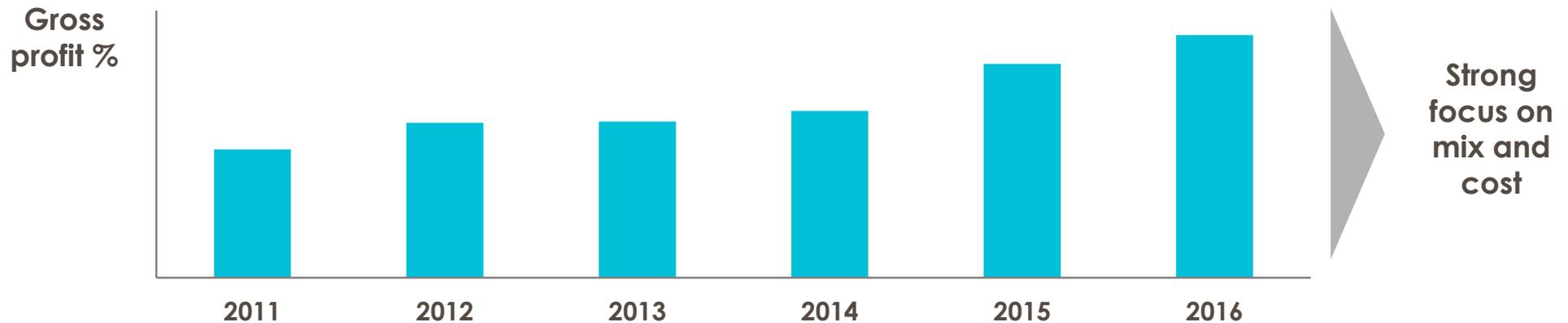


- Implement performance metrics and incentives to drive utilization
- Leverage local, regional teams to win & drive business targeting >90% utilization

Aggressive actions to lower costs

3 Drive cash generation

Composites has driven significant cash contribution



Low capital Intensity

- Focus on driving working capital
 - 7% is typical in composites
- Low capital spending (<5% of sales)

Contribution to rest of business

- Absorbs significant portion of overall Ashland corporate overhead

Composites will drive profitability with growth in high-margin segments and cost control

We are set up for success

Accelerate growth in the premium 'specialties' segment



- 50+ year track record (Derakane™)
- Global reach
- World-class technical service

Aggressively manage our cost structure



- Footprint optimization
- Cost-out initiatives
- Facility utilization

Drive cash generation



- Margin growth
- Low working capital and Capex requirements
- Support significant Ashland overhead

Our purpose: To define the New Ashland's shareholder value creation strategy

- Summarize our evolution and define the New Ashland
- Define financial targets to create shareholder value and their connection to:
 - Core operational levers to deliver financial targets
 - Market strategies to accelerate profitable growth
- Clarify capital allocation policies to turn cash into value
- Profile dimensions to drive strong execution

Drive strong execution—5 system elements



Drive strong execution



Pillar Priorities

- Take new actions to sustain and grow premium mix
 1. Continue to evolve business portfolio
 2. Implement new market strategies
 3. Expand new and proprietary product sales¹ (NPI)
- Pursue new paths to improve competitiveness
 4. Better asset utilization
 5. Price to value
 6. Offset SG&A inflation
- 7. Ensure CapEx plus changes in working capital <6.5% per year

Internally connecting our core operating levers to our blueprint

Driven by 7 core levers

2018 – 2021 Performance Targets

Adjusted EPS
growth (CAGR)
>15%

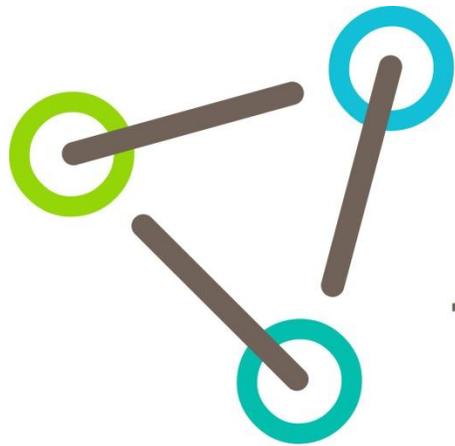
Adjusted ASI
EBITDA (%)
>25%*

Cash
generation¹
\$1B+

- **New actions to sustain and grow premium mix**
 1. Evolve business portfolio
 2. Implement new market strategies
 3. Expand new and proprietary product sales² (NPI)
- **New initiatives to improve competitiveness**
 4. Asset utilization programs
 5. Price to value efforts
 6. SG&A inflation initiatives

7. Ensure CapEx plus changes in working capital <6.5% per year





AshlandTM
always solving



Appendix

Biographies/key accomplishments



Bill Wulfsohn

- Former CEO Carpenter Technology
- Previous leadership roles at PPG, Honeywell, Morton International / Rohm & Haas
- Serves as a Director of PolyOne Corporation

Operating Committee



Dave Neuberger

- Former director Ashland IR, 10 yrs at Ashland
- Wharton Palmer Scholar



Suzanne Rowland

- 17 yrs of senior executive and Board experience
- Driver of high performance in complex markets



Vito Consiglio

- 23 yrs in Specialty Chemicals
- Global JV, PE and M&A experience



Andy Johnston

- 23 yrs at Ashland focused on composites and adhesives
- Experience in turn-arounds, growth, M&A



Anne Schumann

- Multi-faceted career with leadership roles in finance, IT, supply chain & HR



Kevin Willis

- Leads worldwide financial functions and processes including the transformation to new Ashland

Executive Committee



Dr. Osama Musa

- More than 350 patents and patents pending
- Published book on Maleic Anhydride based materials



Brian McGrath

- 27 yrs with Ashland in various leadership roles
- Moving to Zurich in June to also lead European Leadership team



Dr. Keith Silverman

- 23 yrs in pharmaceuticals- R&D, EHS
- 14 patents
- 5 yrs at Ashland
- Board Member SOCPMA



Jean Zappia

- 30 yrs chemical industry experience
- Featured in "Successful Women in Chemistry - Corporate America's Contribution to Science"



Peter Ganz

- 30 yrs private and corporate law experience
- 12 yrs general counsel for multinational corporations
- 6 yrs at Ashland

Acronym reference guide

Acronym	Definition	Acronym	Definition
APAC	Asia Pacific Region	LATAM	Latin American Region
ASH	Ashland	LMW	Low Molecular Weight
ASI	Ashland Specialty Ingredients	LTI	Long Term Incentive program
BU	Business Unit(s)	NA	North American Region
DC	Directly Compressible	NPI	New products in the market for <= 5 years, and patented products for life of product
EMEA	Europe and Middle Eastern Areas	OSD	Oral Solid Dosage
EU	European Union	PC	Personal Care division
GBS	Global Business Services	PNS	Pharma and Nutritional Specialties
GM	General Manager(s)	TPRR	Total Preventable Recordable Rate
GP	Gross Profit	US	United States
I&S	Intermediates and Solvents division	VOL	Volume
IS	Industrial Specialties division	VVV	Valvoline

Backup: Pharmachem

Pharmachem: Financial Impact

- Expected to be accretive to EPS in first year following close of transaction and to enhance long-term EPS growth
- Strong cash flow generation
- Attractive double-digit returns
- Expected to be accretive to EBITDA margins
- Financed primarily with bank financing with remainder from cash on hand
 - Average cost of debt (pre-tax) of approximately 3-4%
 - Incremental ~\$20MM of annual interest expense
 - Estimated pro forma net debt/adjusted EBITDA ratio at closing of 3.8x with strong post-close de-leveraging profile
- Remain committed to targeting mid to high BB credit ratings
 - Expected gross debt/adjusted EBITDA below 3.5x¹ over time

Pharmachem: Synergies

- Expected annual cost synergies of ~\$10MM, primarily driven by leverage from Ashland's scale and infrastructure, de-tolling opportunities and in-sourcing initiatives
- Cost synergies expected to be realized by end of second year following transaction close
- Incremental tax synergies with expected net present value of ~\$110MM driven by integration of Pharmachem into Ashland's global business structure

Examples: R&D focus areas

Polaris™ resins provide quality, efficiency, and durability in engineered stone



The challenge:

- Engineered stone products demand high customization, ample design possibilities & durability for frequent use

The solution:

- Polaris™ resins enable improved quality, process efficiency & durability adapted to multi-designs
- Superior mechanical performance, wetting & curing behavior of our resins facilitate smooth processing, reduces scrap, & minimizes re-polishing

The result:

- Unique, innovative resins allowing new design creativity, high gloss & other aesthetic possibilities from ultra white modern surfaces to comparable exotic granites & marble
- Durable for daily use

Captivates™ Encapsulation



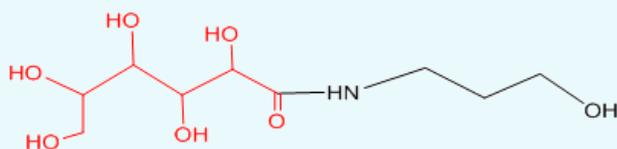
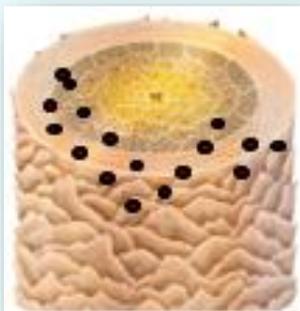
The offering:

Offers “cleaner” encapsulation technology versus competitive technology with improved stability, long term aesthetic and performance compared to benchmark

Customized capsules in size, color and ingredients with:

- Exciting visual impact
- Dynamic color release
- Unique delivery method
- Stability of incompatible ingredients
- Texture and sensory signals
- Controlled fragrance delivery
- Low toxicology profile and biodegradable

FiberHance™ BM solution supports customers to improve sustainability footprint



The challenge:

- Market needed a new hair strengthening ingredient

The solution:

FiberHance™ BM Solution “brings damaged hair back to virgin – from inside” with:

- Hair mechanical strengthening
- Lower water uptake
- Provide limited damage during hair chemical treatments

The result:

- Initial launch of technology in April, 2017, was 1 year faster than standard R&D timelines due to customer collaboration and intimacy
- Green manufacturing process (no organic solvent, 100% yield reaction)

Re-engineering polyAPTAC manufacturing process to expand end market use



The challenge:

- PolyAPTAC technology was suitable for industrial applications; Ashland wanted to extend the ability to use this technology into Personal Care

The solution:

- Developed an innovative way to purify the industrial polyAPTAC grade, lowering the level of monomers and making it suitable for Personal Care applications on a global base, including China

The result:

- A marketable product that provides:
 - Long lasting hair damage repair and restores hair to its original hydrophobic state, with enhanced smoothness and shine
 - Improved conditioning, durability and substantive conditioning polymer for hair
 - Reduced or eliminated need for silicone, ideal for silicone-free shampoos and conditioners
 - Compatible with wide range of cationic, nonionic and anionic surfactants.

Examples: Innovation that delivers on our brand promise

Atorvastatin achieves stable active ingredient delivery with Klucel™



The challenge:

- Formulating a once-daily, oral cholesterol medication

The solution:

- Klucel™'s non-ionic and pH insensitive properties ensures controlled delivery
- Our R&D team's customized solution ensured safe, effective performance with the customer's formulation

The result:

- A reliable, safe, and trusted treatment for high cholesterol leading to a market leading blockbuster, with cumulative sales >\$130B

Bayer achieves revolutionary texture with ProLipid™ lamellar gel and Ganex™ polymer



The challenge:

- Sunscreen application is messy and ‘sticky’ which negatively impacts consumer compliance
- Coppertone wanted to revolutionize sunscreen with a formulation that was:
 - A unique rich and creamy foam
 - That goes on easily and absorbs quickly
 - Helps leave skin feeling soft & smooth

The solution:

- Our innovative solution combines ProLipid™ lamellar gel, designed to exert a ‘second skin’ effect and reinforce the skin’s natural barrier function. The combination of the ProLipid™ and Ganex™ creates the texture – a creamy foam that applies easily and absorbs quickly.

The result:

- A revolutionary new aesthetically pleasing texture available in SPF 30 and SPF 50

Tuberlux™ black diamond truffle extract helps energize skin cells



The challenge:

- Estée Lauder was looking to build on a successful line of prestigious skin repair and moisturizing products

The solution:

- In collaboration with Estée Lauder we discovered Tuberlux™, an unseen cellular energizing biofunctional extract derived from the rare and precious "black diamond truffle"

The result:

- We helped Estée Lauder create a unique solution that makes skin look vividly renewed as next-generation sculpting technologies power a profoundly younger look

Aroset™ PSA provides convenience and minimizes waste



The challenge:

- Avery needed re-sealable industrial packaging to meet growing demand for greater customer convenience and waste minimization

The solution:

- Our Aroset 2570 PSA has removable and re-sealable characteristics

The result:

- Aroset 2570 was selected for re-sealable packaging because of its resistance to water, alcohol, & chemical resistance
- A re-sealable tape for applications including baby wipes and other towelette packaging

Derakane™ is saving our customers money



The challenge:

- Gas cylinder manufacturers were looking to replace metal with a **lighter, safer** and more **cost effective** material

The solution:

- We worked closely with Thanh Tai Composite Plastic (in Vietnam) to design a cylinder with outstanding corrosion resistance, toughness, and fire retardance
- Derakane™ epoxy vinyl ester resin captured all of these needs and enabled better productivity, operability and a longer shelf life

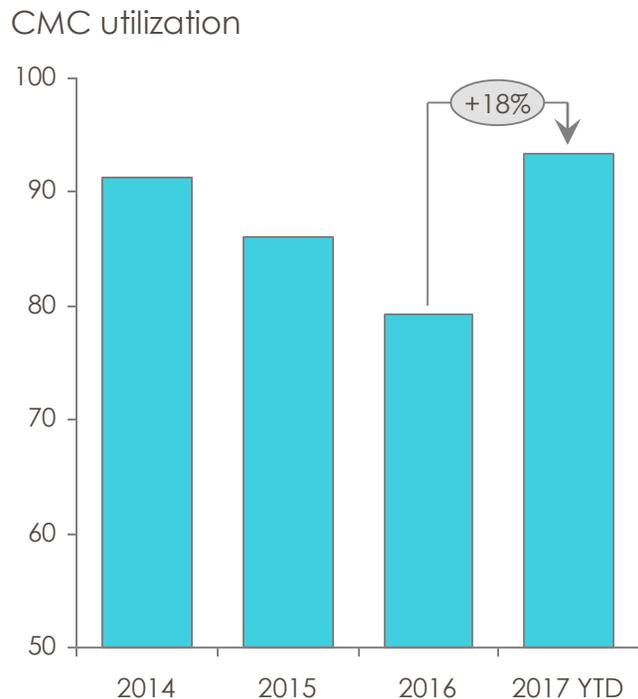
The result:

- Derakane™ gas cylinders are lighter and safer
- Customer “failure rate” fell from 10%+ to <2% while driving \$10K savings per month

Examples: Better Asset Utilization

Lower cost-per-unit in Jiangmen

CMC utilization in Jiangmen rebounded in 2017...



After a fall off in the energy market utilization at the Jiangmen facility fell by 12%

...thanks to targeted sales and marketing efforts to 'fill the plant'

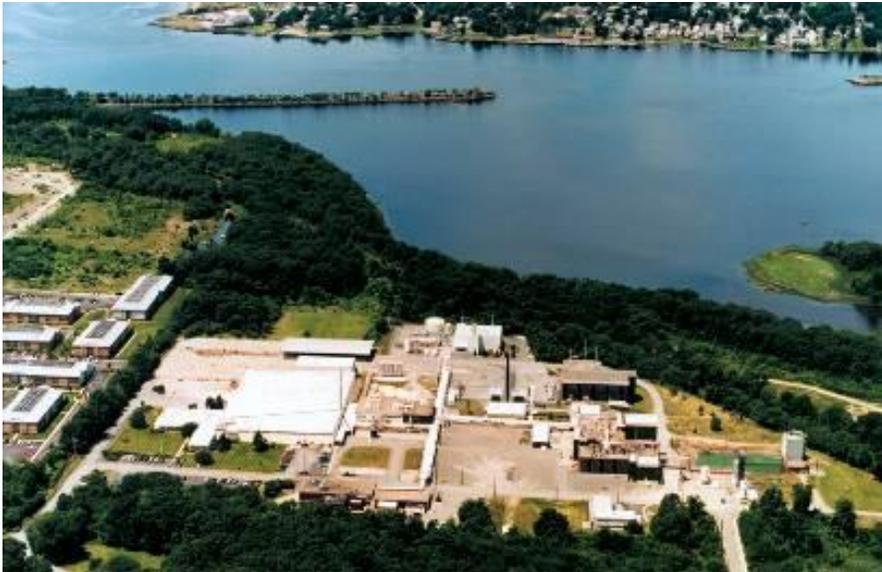
Decreased production volume would **increase per unit fixed cost burden by ~15%** from 2014-16

To address the per unit increases, sales, marketing, manufacturing, and supply chain teams identified two new ways to go to markets

- Go 'smaller' to address tier 2 nutrition manufacturers
- Address the 'lower spec', higher volume applications—paper coatings and mining

The two pronged approach has driven a full recovery in utilization. **Driving per unit fixed costs below their 2014 low**

Freetown plant repurposed to reduce need for CapEx

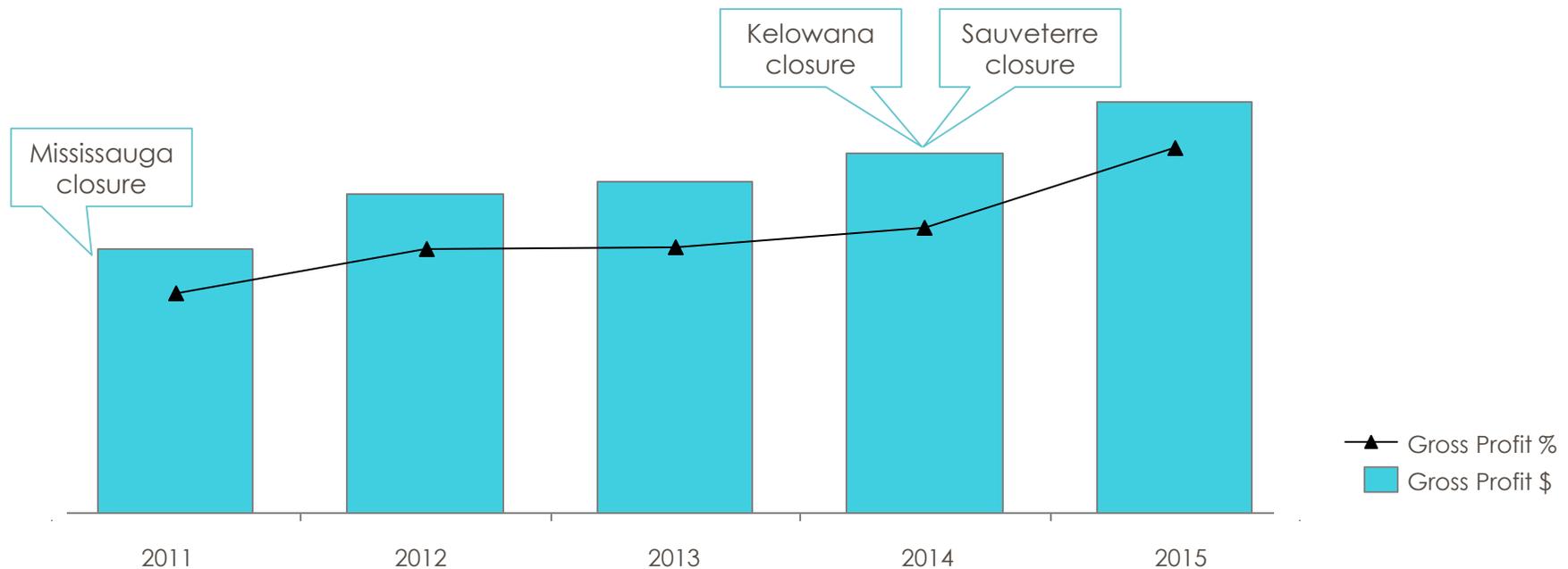


Freetown plant successfully completed the 2nd commercial batch trial of Flexcryn 1624

Once approved, plant will be able to supply 400-450MT/month of material to support business growth

Repurposed equipment in Freetown will successfully reduce the need for **\$5MM** of CapEx at the Piedmont plant

Three plant closures since 2011 improving utilization & GP ... but there's more to do



Additional sites across Ashland are being evaluated, representing a further \$30MM in savings

To optimize utilization, we've identified products to bring in-house



We spend ~\$38MM per year with 60+ tollers to outsource various operations.

As we've focused our operations, we've built **new capabilities** and **achieved critical mass** in certain operations.

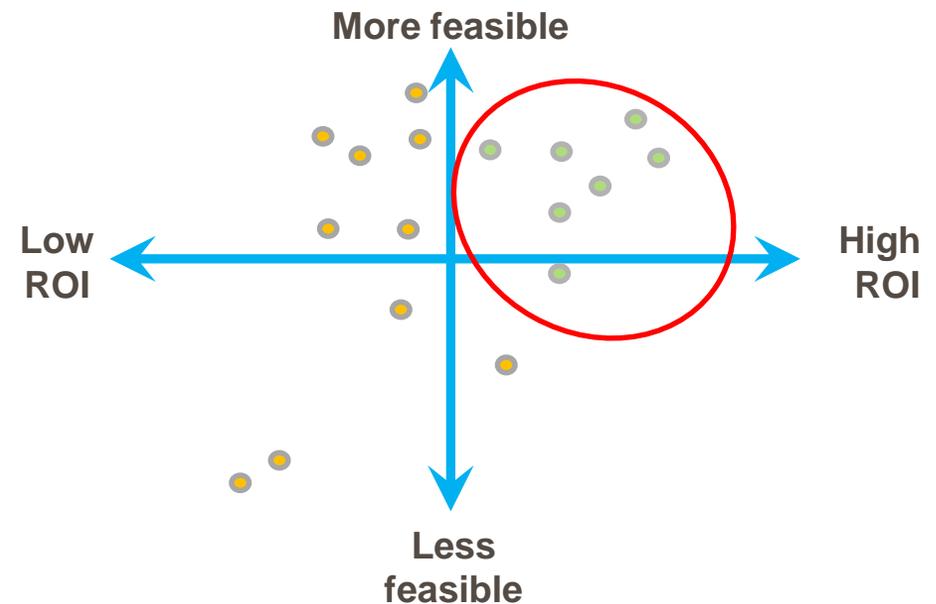
In an effort to save money and increase utilization, we've begun **exploring options** to bring products and operations in-house.

Back

123

We've identified and targeted seven products/operations to bring in-house

Analysis sanitized



Shifting the mix at Doel



We had **poor profit realization** from our Low Molecular Weight (LMW) HPMC product lines

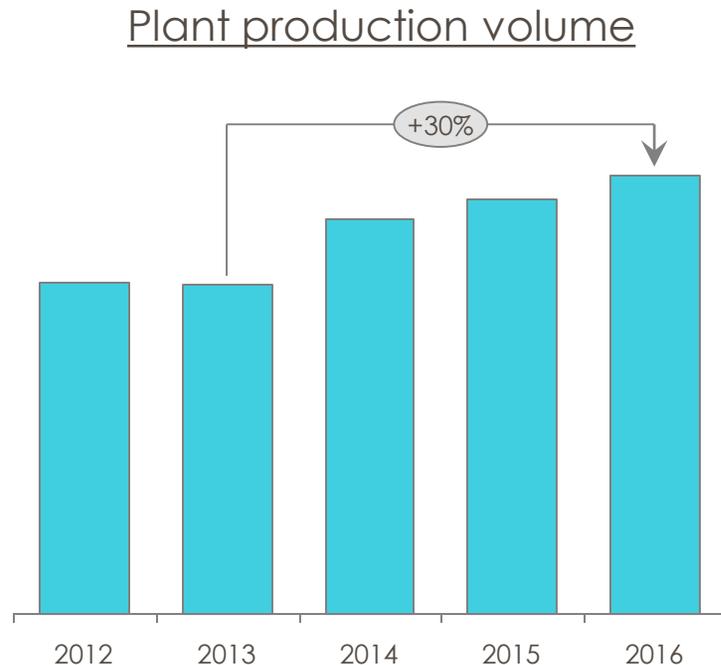
Its costly, multi-step manufacturing process **required 2-3X equipment time**, compared to other product lines produced

In 2015, we made the decision to stop LMW production; **shifting & rationalizing the mix** to higher profit realization lines

The benefit: with facility upgrades we reduced the number of products produced, **increased total output volume by 6%** and **increased EBITDA by 50%**

De-bottlenecking at Parlin plant has reduced need for HEC expansion projects

De-bottlenecking activities at Parlin increased capacity by 30%



The challenge: From 2012 to 2015, increasing global HEC demand caused Ashland to explore opportunities for additional manufacturing capacity

Mitigation activities: The Parlin plant made incremental Capex investments to debottleneck several process steps and improve operating efficiency

The result: Plant increased capacity by ~30% which added ~3,000 MT of Natrosol capacity to Ashland's network. The increased production volume improved cost absorption, lowering HEC unit costs at Parlin