

RESEARCH AND DEVELOPMENT

Mike Murtagh

USA Investor/Analyst Tour – Wednesday 18th September 2013

AGENDA

- R&D Overview – US and Asia-Pacific
- FC Technology
 - Product Performance
 - New Products
 - Platform Development
- Non-FC Technology
- Summary/Key Takeaways



RESEARCH AND DEVELOPMENT OVERVIEW



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TECHNOLOGY ORGANIZATION

Three Research Centers – US and Australia

- Research: Core understanding of technologies and the science behind them
- Development: Focused organization around implementing new technology products

Resources

- Diverse workforce of 130 technologists
 - Fontana R&D
 - Sydney R&D (Rosehill)
 - Chicago R&D (Non-FC Development)
 - Mfg. Services/Engineering
- Diverse mix of scientists/engineers (30% PhD, 30% Masters, 40% Bachelors degrees)
- >70% with greater than 5 years service



Fontana – USA



Chicago – USA



Sydney – Australia

TECHNOLOGY STRATEGY

Enable James Hardie Product Leadership Strategy

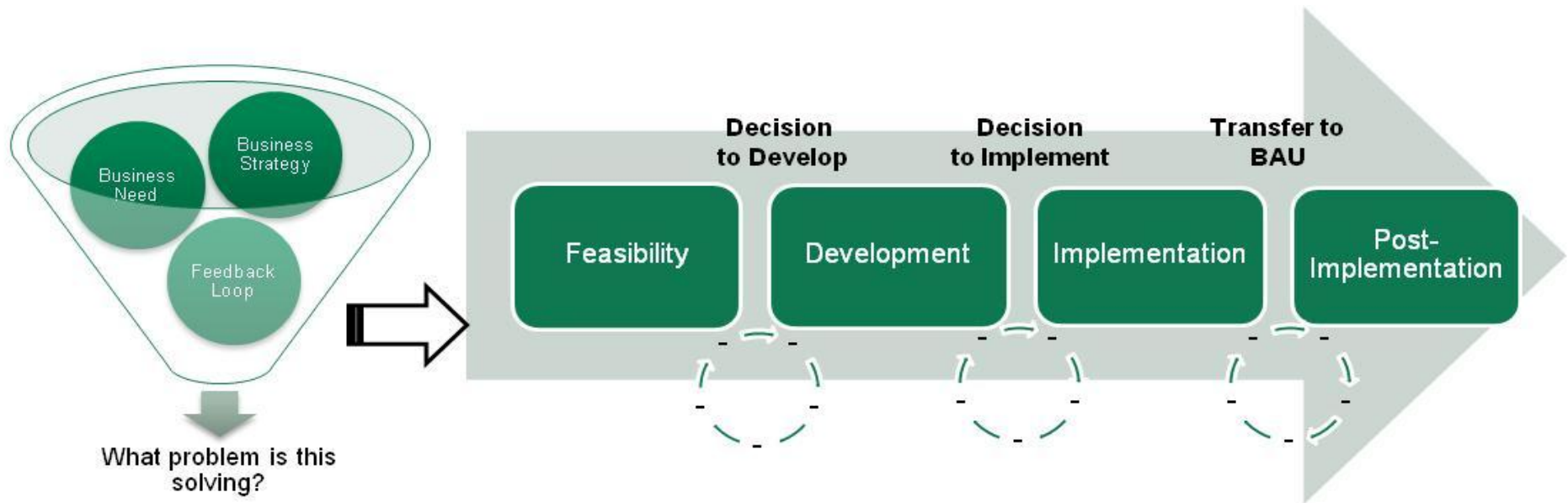
- Provide a continuous pipeline of innovative new products and technologies with sustainable advantages to achieve our category and market share goals
- Our role is to act as the technology pipeline for the organization



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JH INNOVATION PROCESS

- ***Enable effective development and implementation of key initiatives***
- ***Ensure continuous pipeline of new concepts and ideas***





FIBER CEMENT RESEARCH AND DEVELOPMENT



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FC STRATEGIC PRIORITIES

Product Performance

- Substrate Development
- Coatings Development
- Raw Materials Formulation
- Test Method Development
- Competitive Intelligence

Technical Support

- Best Practices/Install
- Raw Material Sourcing
- Manufacturing Process Optimization
- Zero-to-Landfill

Platform Development

- Product Smoothness
- Product Flatness
- Embossing
- Advanced Finishing
- Concealed Fastening

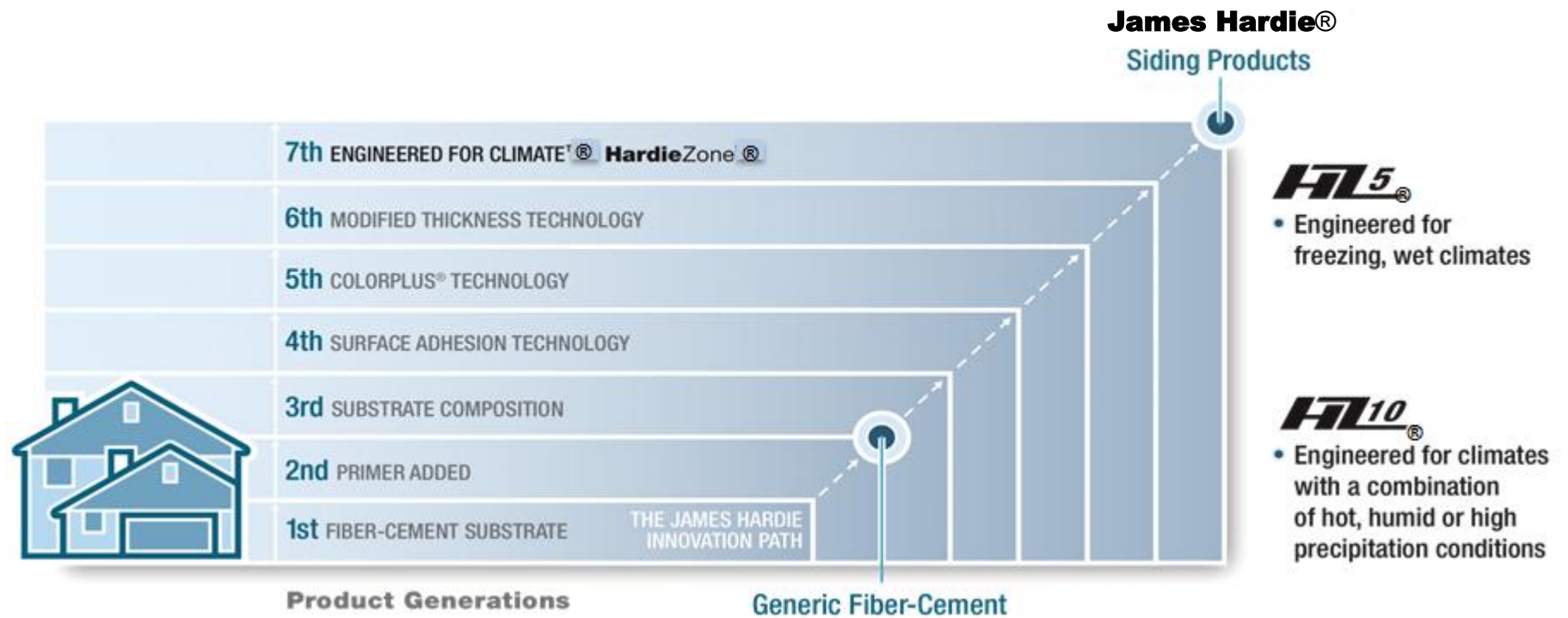
ENABLERS

New Product Development

- Trim/Shapes
- ColorPlus® Development
- Reveal®
- Scyon® Extensions
- Invibe™

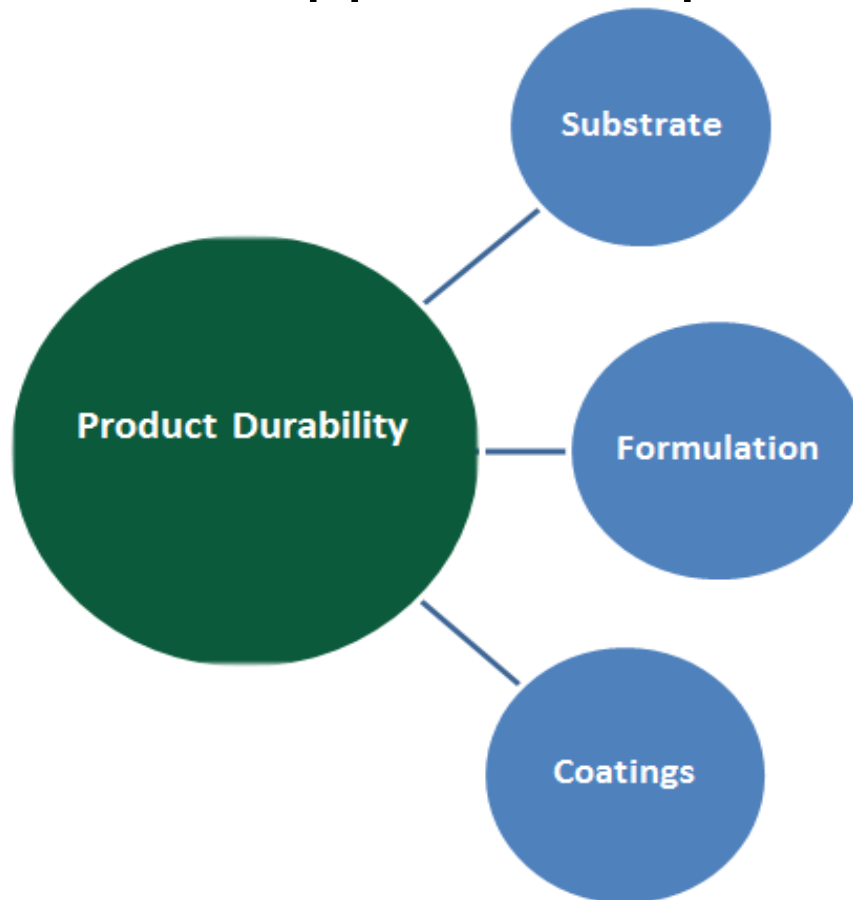
FIBER CEMENT PRODUCT PERFORMANCE

HARDIE ZONE – ENGINEERED FOR CLIMATE



PRODUCT DURABILITY

- Multi-faceted approach to product durability



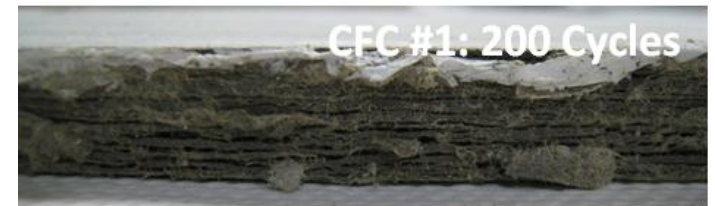
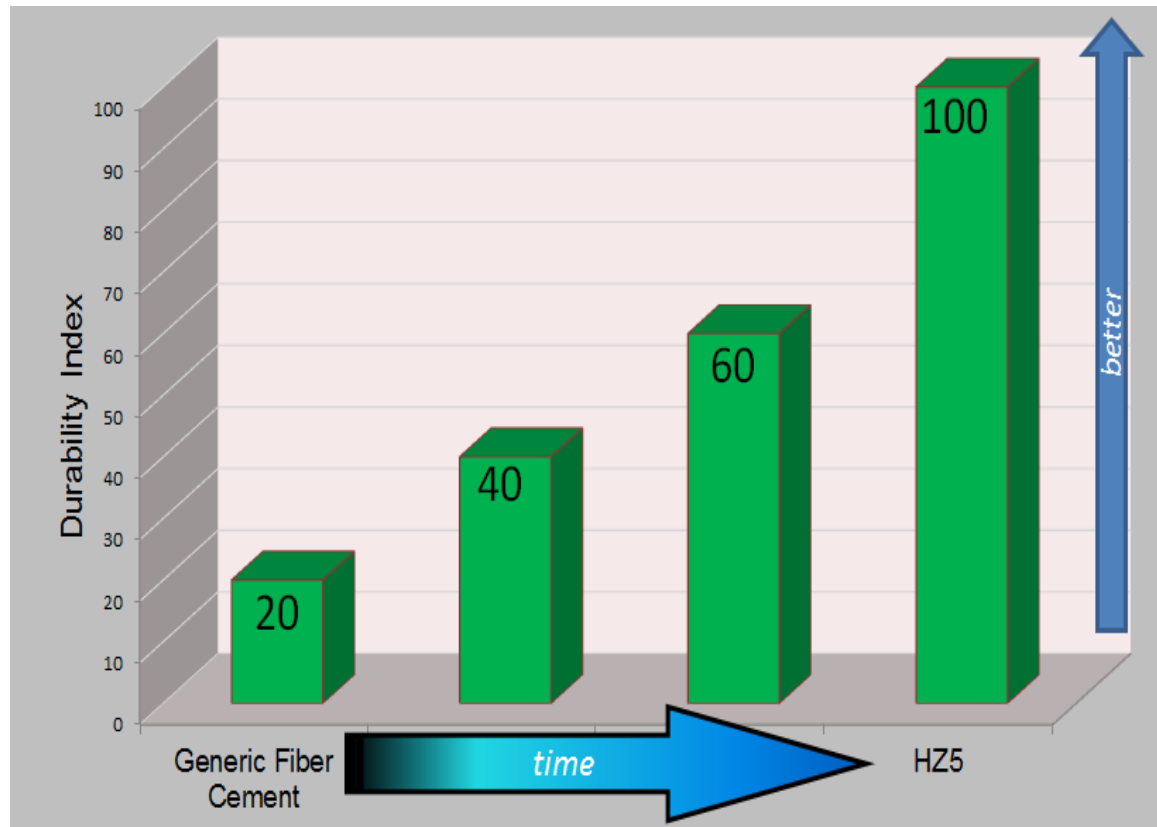
PRODUCT PERFORMANCE EVALUATION





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PRODUCT PERFORMANCE



HZ5® performs 5X better than generic FC in system testing

Source: James Hardie internal research and testing

COMPETITOR ANALYSIS (OSB)

OSB Siding is still a wood product:

- It **splits** relatively easily
- It can support **termites**
- It **burns**; releases cyanide gas



- Toxic gases released when OSB is burned (CO, Nox, cyanides, formaldehyde)

Source: James Hardie internal research and testing



Splitting after just 2 wet/dry cycles



Termite activity in OSB



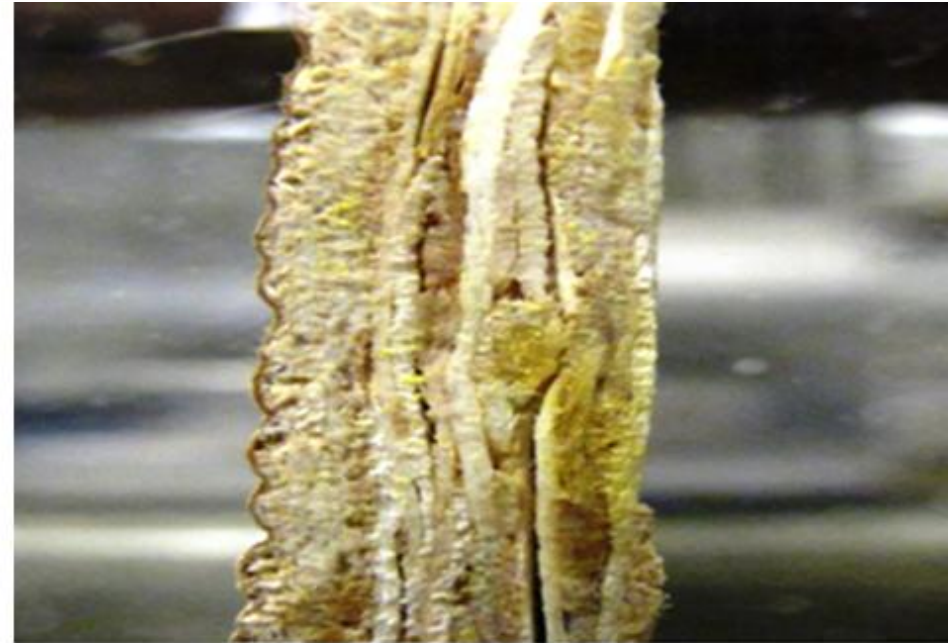
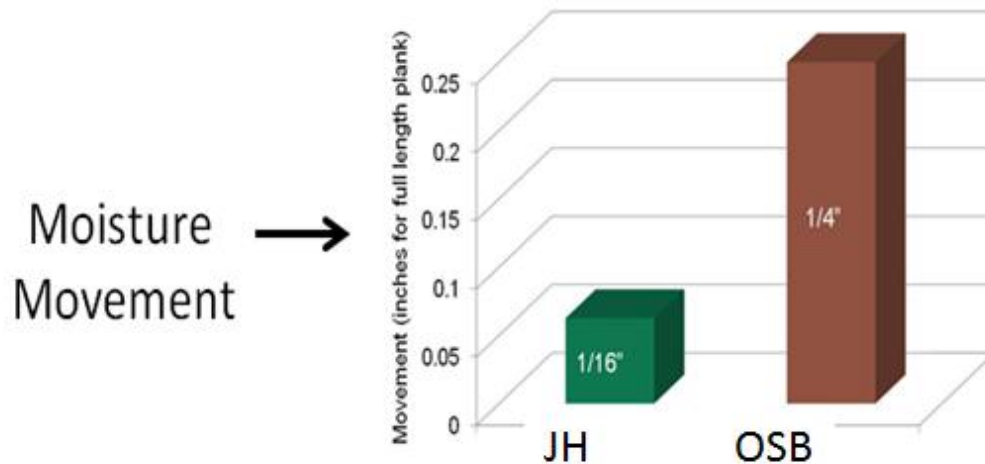
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COMPETITOR ANALYSIS (OSB)

OSB Siding is still a wood product:

- It can support **mold**
- It absorbs more water than FC
- It moves/swells when wet

Real world movement is 4X, damp to ambient



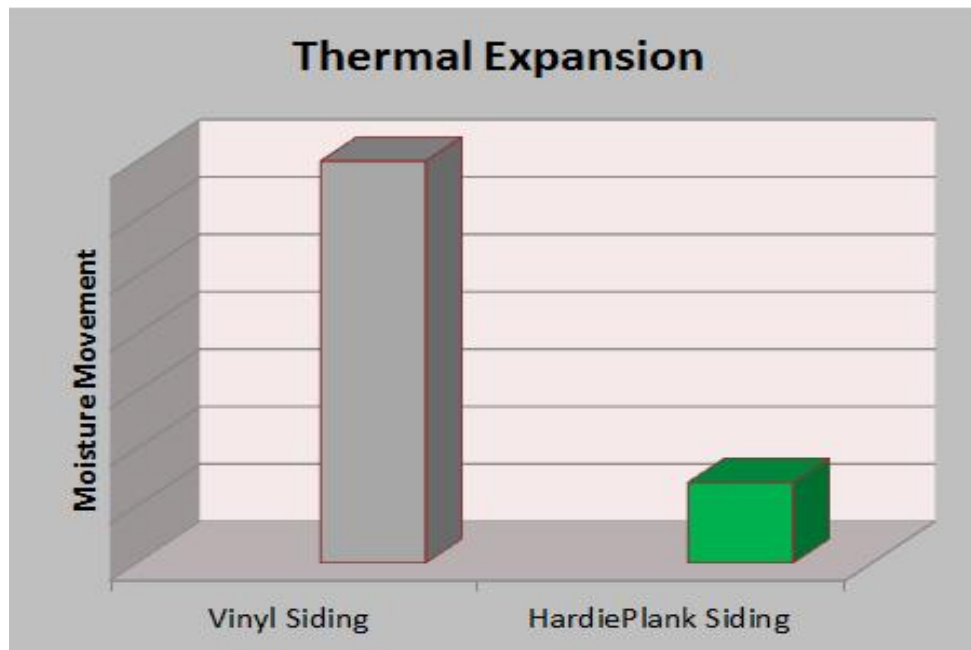
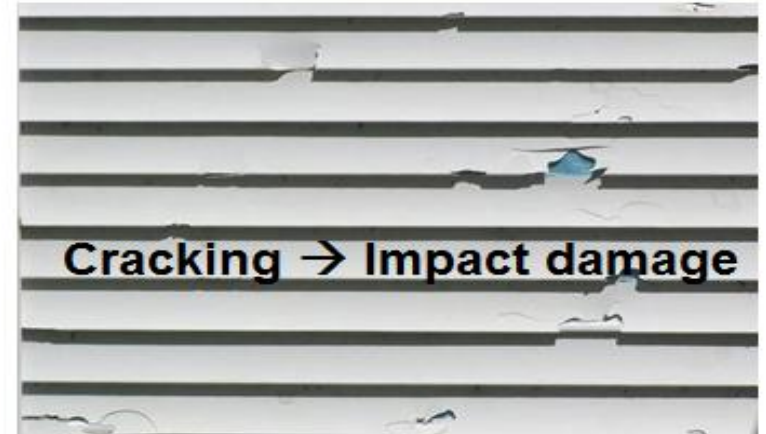
Mold Growth

Source: James Hardie internal research and testing

COMPETITOR ANALYSIS (VINYL)

Vinyl/PVC siding:

- Looks cheap
- Relatively durable but can melt, even from reflected light
- Very high thermal movement → 7x JH



Source: James Hardie internal research and testing 16



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COMPETITOR ANALYSIS (CFC)

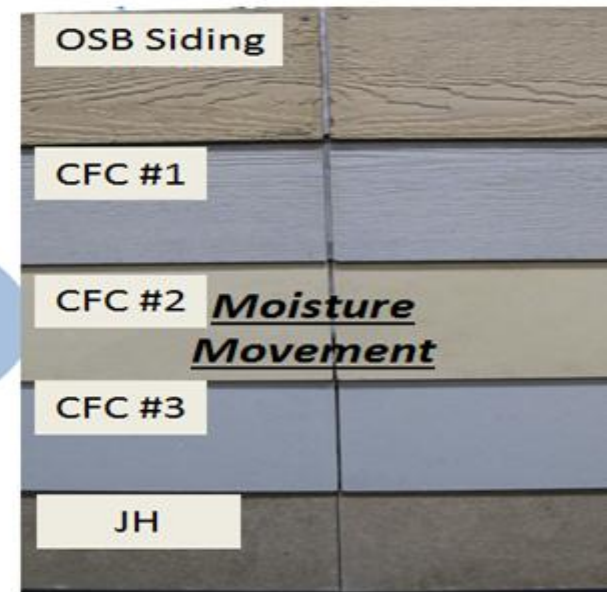
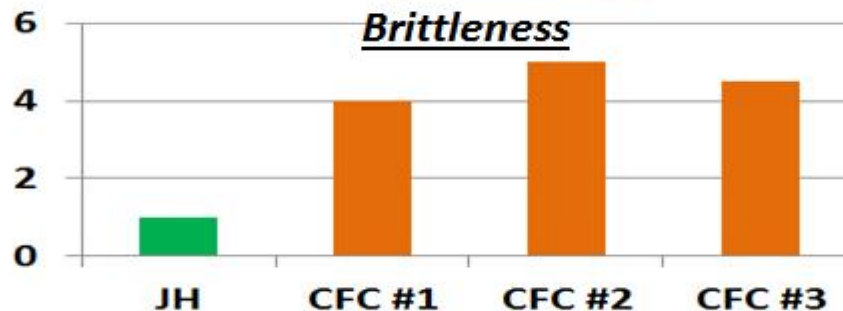
JH vs. CFC



Nailing

Competitive Fiber Cement

- Low quality raw material – fly ash
- More brittle; nailing damage
- High movement
- Poor paint and primer adhesion



Source: James Hardie internal research and testing

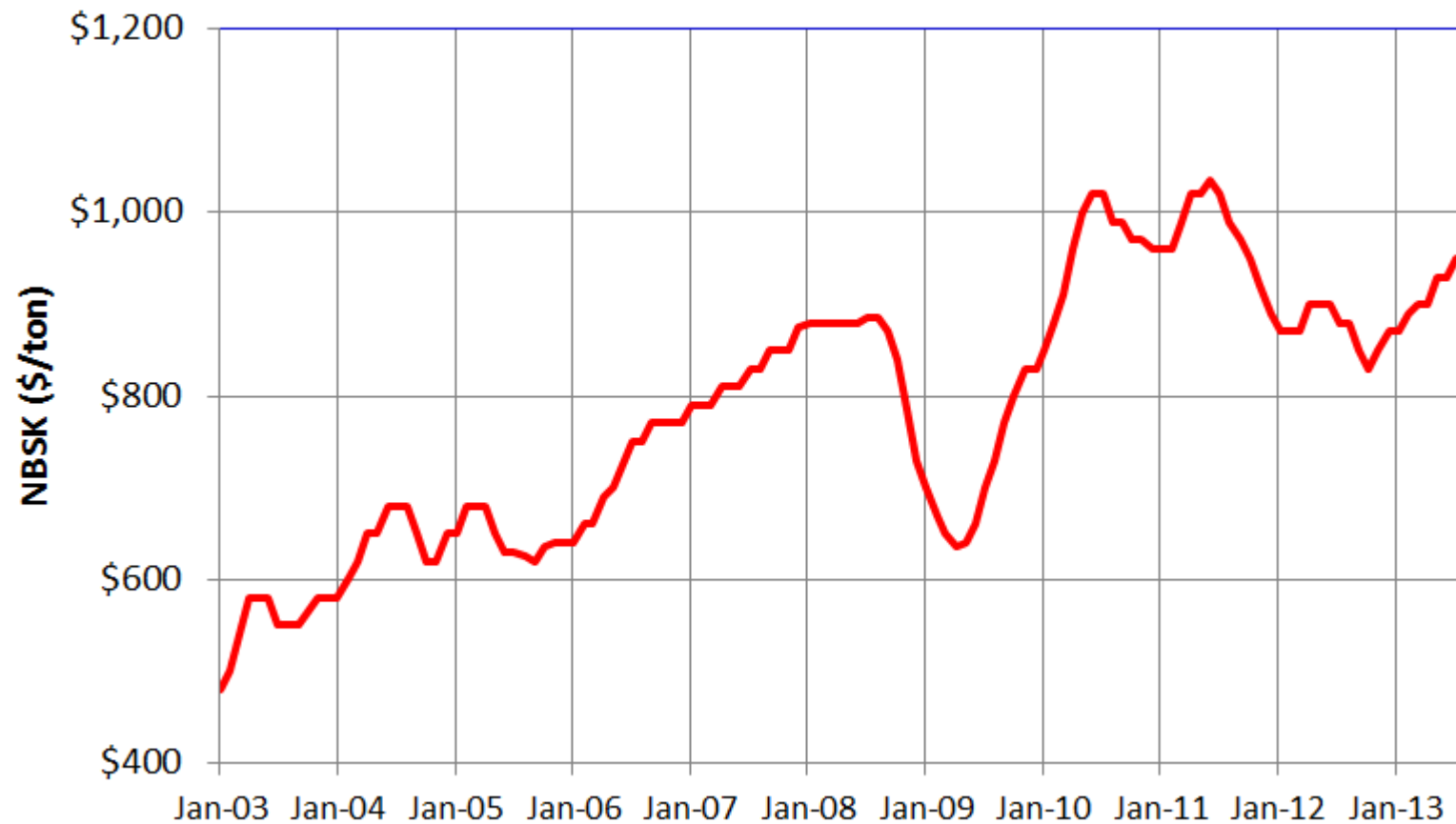
RAW MATERIAL STRATEGY

- Secure Supply – Pulp, Cement, Silica, et al
 - Raw Material Sourcing
 - New Formulations
- Ensure Quality
 - Consistent Supply
 - Universal Specs
- Improve Utilization
- Enhance Product Performance



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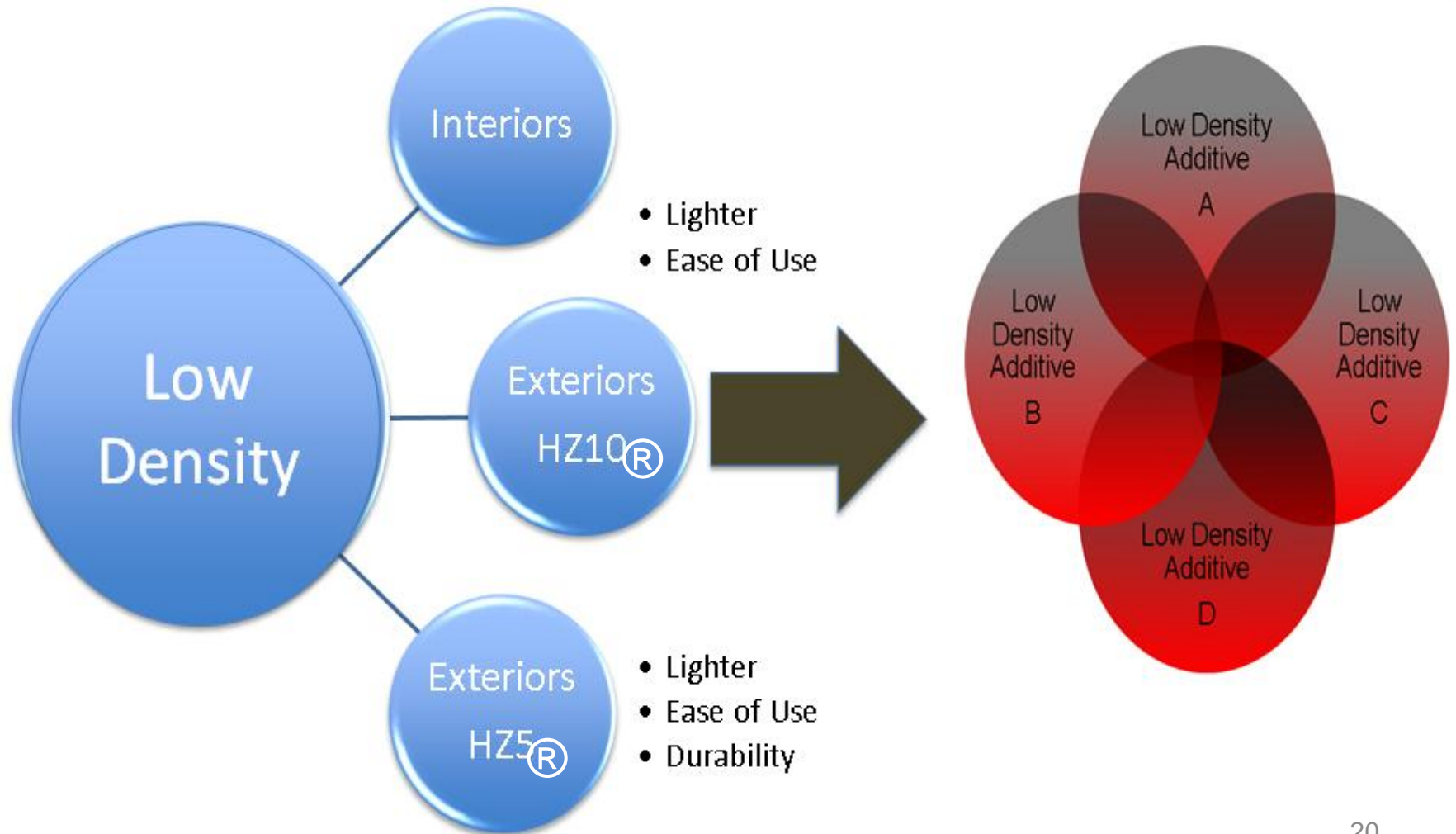
PULP PRICE INDEX





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LOW DENSITY ADDITIVES





FIBER CEMENT PRODUCT/PLATFORM DEVELOPMENT



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FC PRODUCT/PLATFORM DEVELOPMENT

Objective: Balanced mix of step-change products/platforms and product line extensions to drive category and market share growth strategy

PLATFORMS → PRODUCTS

Form

- Aesthetics
- Texture
- Shape
- Weight
- Color

Function

- Water Management
- Durability
- Energy Efficiency

Features

- Concealed Fastening
- Nail Line

FC PRODUCT/PLATFORM DEVELOPMENT - US



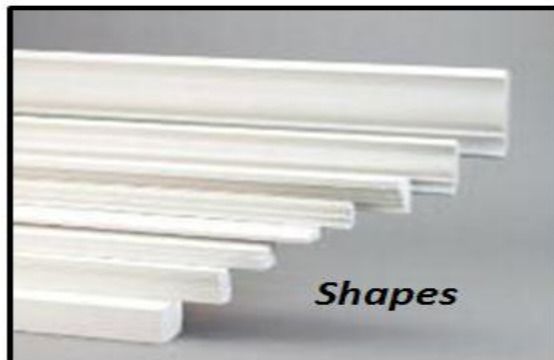
Foam-Backed Plank

Key Products:

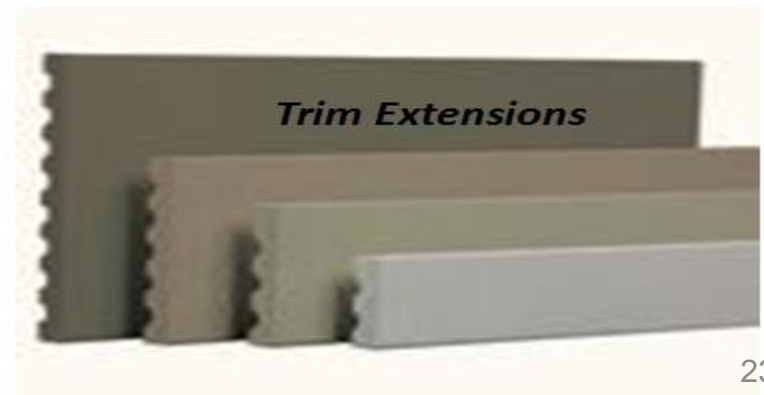
- Trim Portfolio
- Shapes
- Foam-Backed Plank
- Reveal[®]

Key Platforms:

- Product Smoothness/Flatness
- Embossing
- Advanced Finishing
- Concealed Fastening



Shapes



Trim Extensions

FC PRODUCT/PLATFORM DEVELOPMENT - AUS



Key Products:

- Stria® Splayed
- Axon® Grained
- Architectural Range
- HardieDeck™



Key Platforms:

- Product Smoothness
- Product Flatness
- Advanced Finishing
- Energy Efficiency



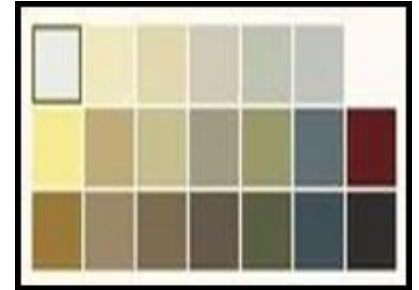


NON-FIBER CEMENT PRODUCT/PLATFORM DEVELOPMENT

NON-FC PRODUCT/PLATFORM DEVELOPMENT

Strategy: Evaluate emerging technologies for fit with current and future JH business

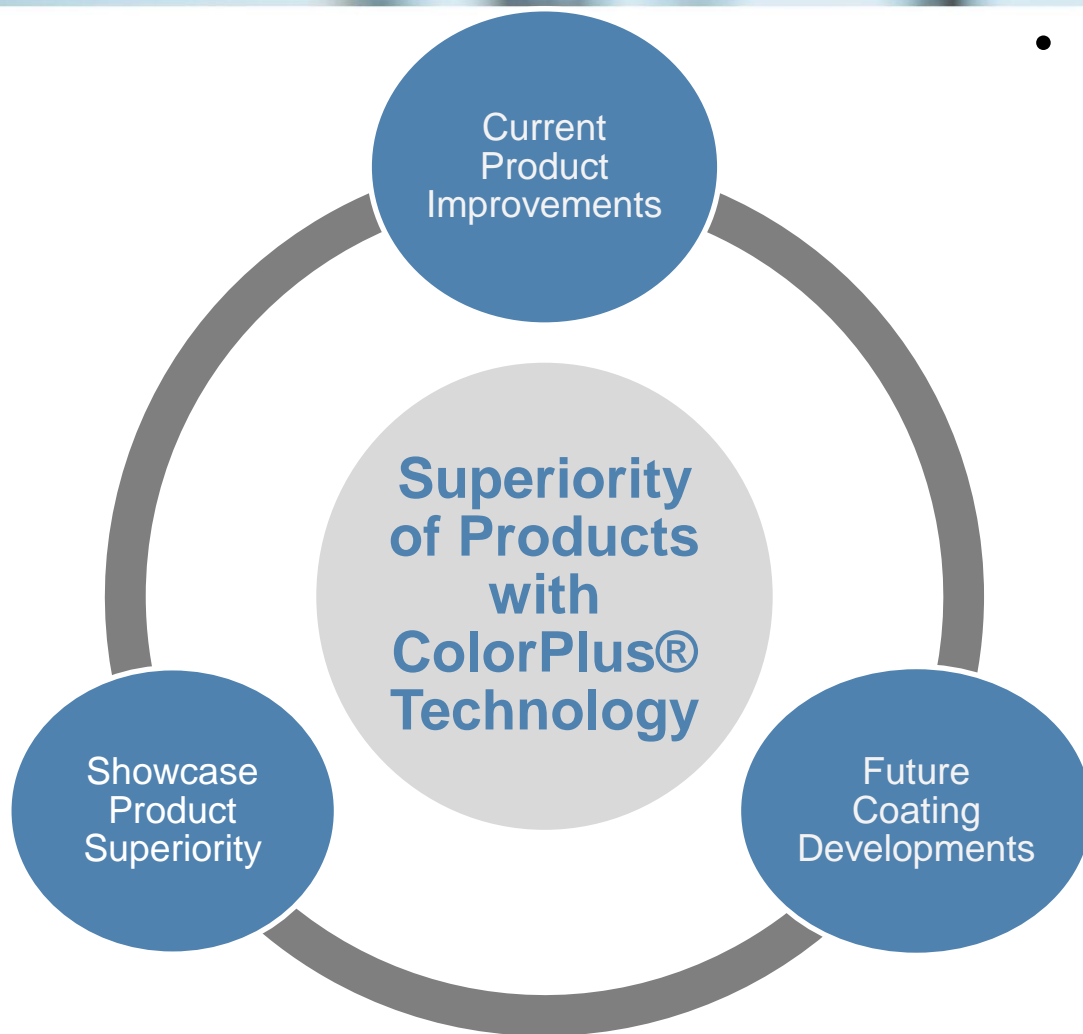
- Color Expertise
 - Develop internal top-coat expertise to support ColorPlus® technology
- Shapes Product Line
 - Test launch of shapes product line with non-FC technology
 - Product offers similar performance and value proposition as FC against wood and PVC
 - Long-term manufacturing capability initiated
- Pultrusion Technology
 - Develop fiberglass pultrusion as an entry vehicle into a new building product segment





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COLOR EXPERTISE



- Chicago Technology Center has been operational since Q4 FY13
 - Resources
 - Lab capability
 - Pilot line capabilities





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SHAPES & PULTRUSION

Shapes

- Multiple shapes developed and launched in test markets for product evaluation
- Sales in current test markets up 76% vs. PYTD
- Long-term manufacturing capability initiated
- Product offers similar performance and value proposition as FC against wood and PVC

Pultrusion

- Pultrusion technology development towards entering new building product segments in the future
- R&D mainly focusing on fiberglass raw materials, process & current OEM product support



Bed Mould



Sub Sill



His. Sill



Brick Mould



Skirt Board



Rams Crown



Drip Cap



Base Cap

SUMMARY/KEY TAKEAWAYS

Ensuring Product Performance

- JH products demonstrate superior durability vs. the competition

Maintaining Product Leadership

- Differentiated products are being created to enable future PDG vs. wood and vinyl options

Enabling Platforms

- New FC and Non-FC platforms are being developed to enable future business growth

Aligned with Corporate Strategy

- R&D acts as the technology pipeline for JH and is **well-aligned with the company's overall category and market share growth strategy**



QUESTIONS?