

Morgan Advanced Materials Capital Markets Presentation 21st November 2013

Key themes of today's presentation

- Building sustainable competitive advantage in attractive markets ...
- ... with truly differentiated products and services underpinned by world-leading technology
- Implications for proactive portfolio re-shaping initiatives
- Our goal is for all our businesses and technologies to have the potential to deliver mid-teen operating profit margins

Today's agenda and timings

	Speaker	Time
Introduction and executive summary	Mark Robertshaw	2.30 – 2.55pm
Technology, innovation and differentiation	Dr Mike Murray	2.55 – 3.30pm
Delivering “One Morgan” and Europe: driving increased returns	Dr Andrew Hosty	3.30 – 3.55pm
Break		3.55 – 4.15pm
Asia/Rest of World: differentiating for profitable growth	Ian Robb	4.15 – 4.35pm
North America: moving beyond mid-teen margins	John Stang	4.35 – 4.55pm
Financial transformation of the Group	Kevin Dangerfield	4.55 – 5.15pm
Conclusion and Q&A	Mark Robertshaw	5.15pm to close

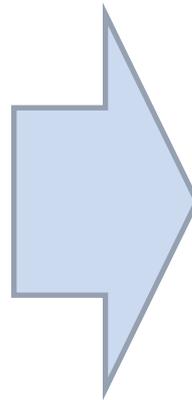
Introduction

- Context and background on where we have come from over the past several years
- Overview of “One Morgan” business model and strategy going forward

Where we have come from: strategic priorities

Strategic Priorities

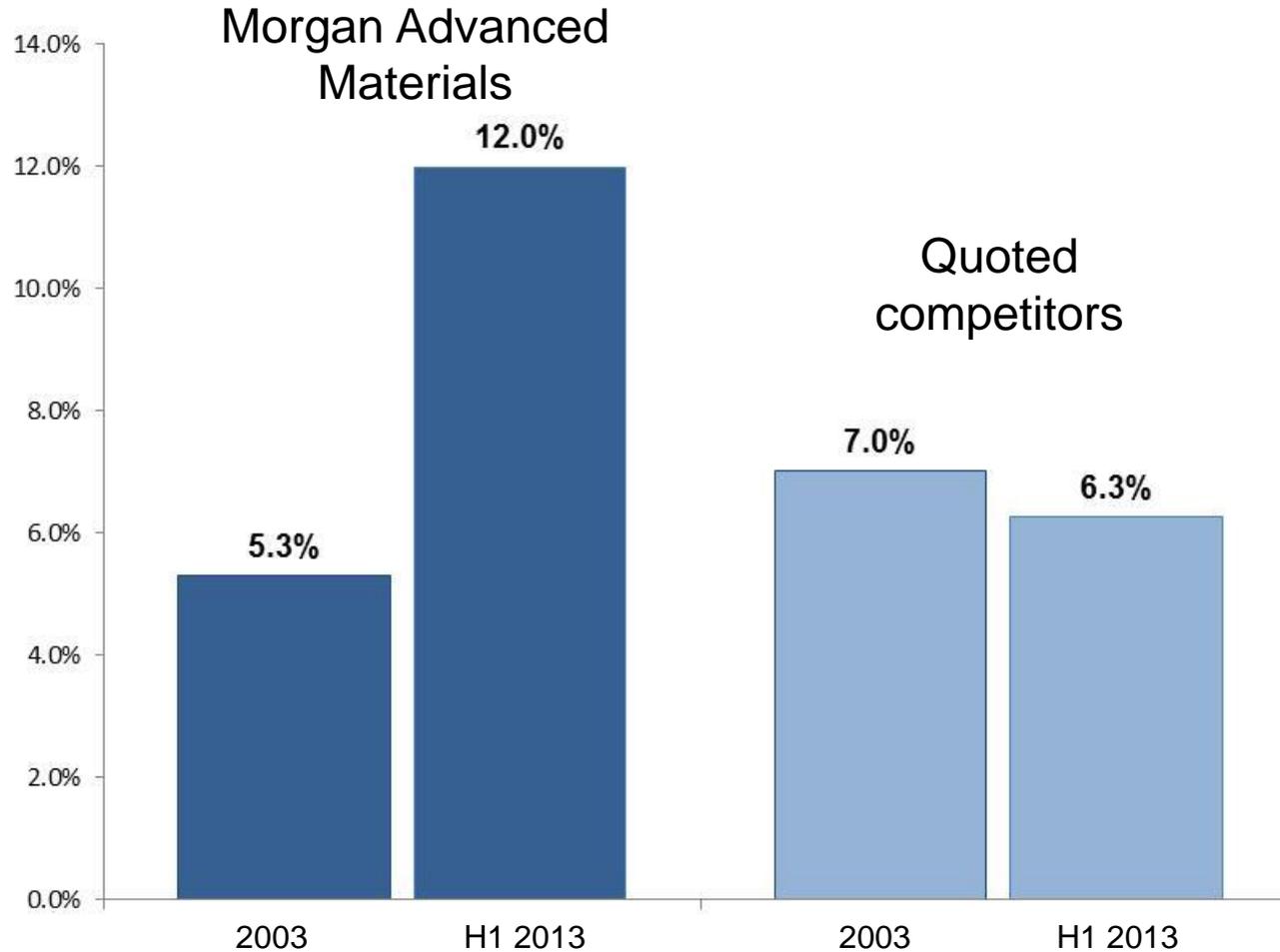
- Focus on higher growth, higher margin non-economically cyclical markets
- Be differentiated and high value-added for our customers
- Be number one or two in our chosen market segments
- To have a culture of operational excellence and cost efficiency
- To find, keep and develop the right people



Implications

- Positive mix shift
- Sustainable competitive advantage predicated on world-leading technological differentiation
- Greater operational flexibility: superior margin resilience in industry down-cycles and strong operational drop through in industry up-cycles
- Premium pricing, growth and significantly higher operating margins and return on capital employed (ROCE)

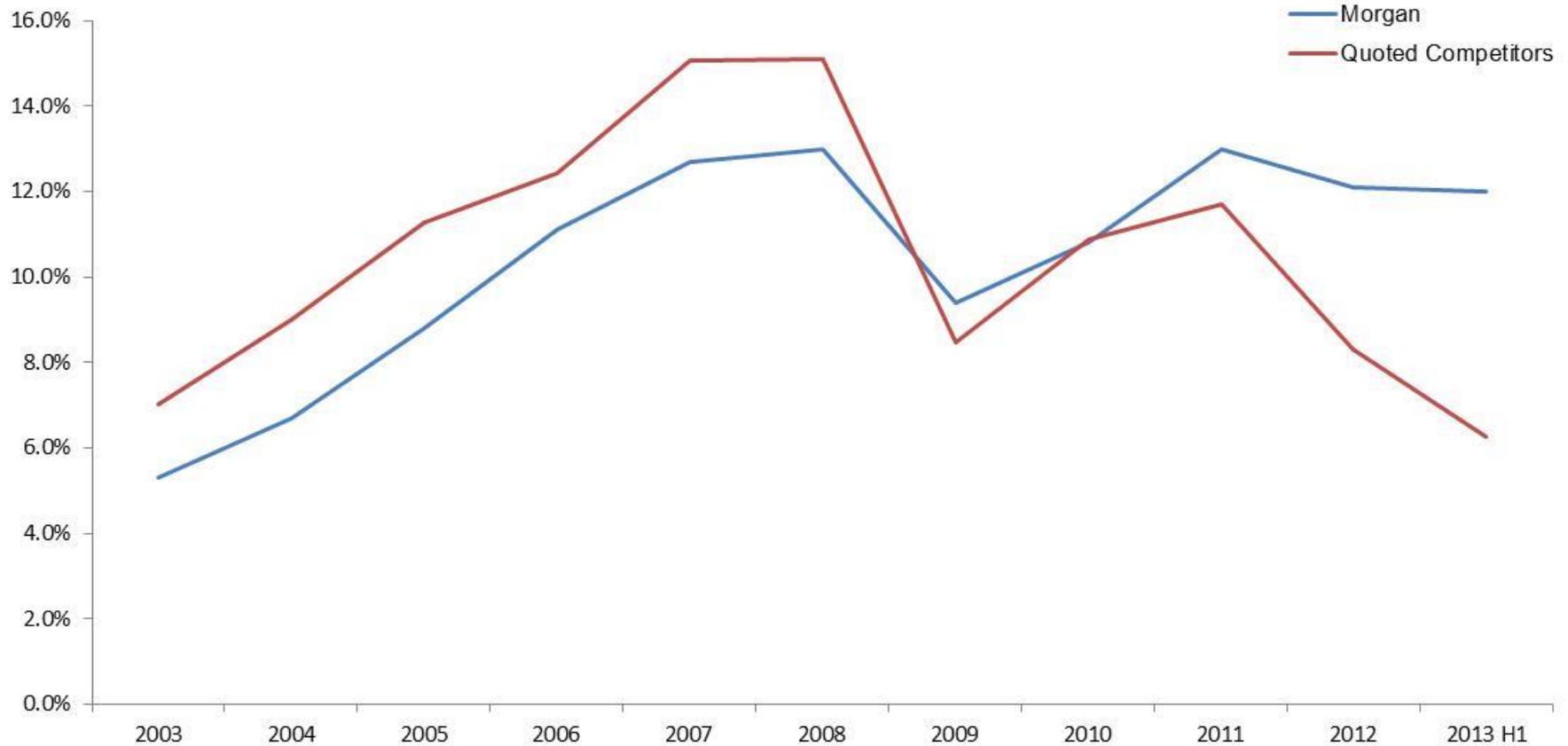
Margins now best in class ...



Quoted competitors are SGL Carbon, Mersen and Vesuvius

... in a challenging competitive landscape over the past 12-18 months

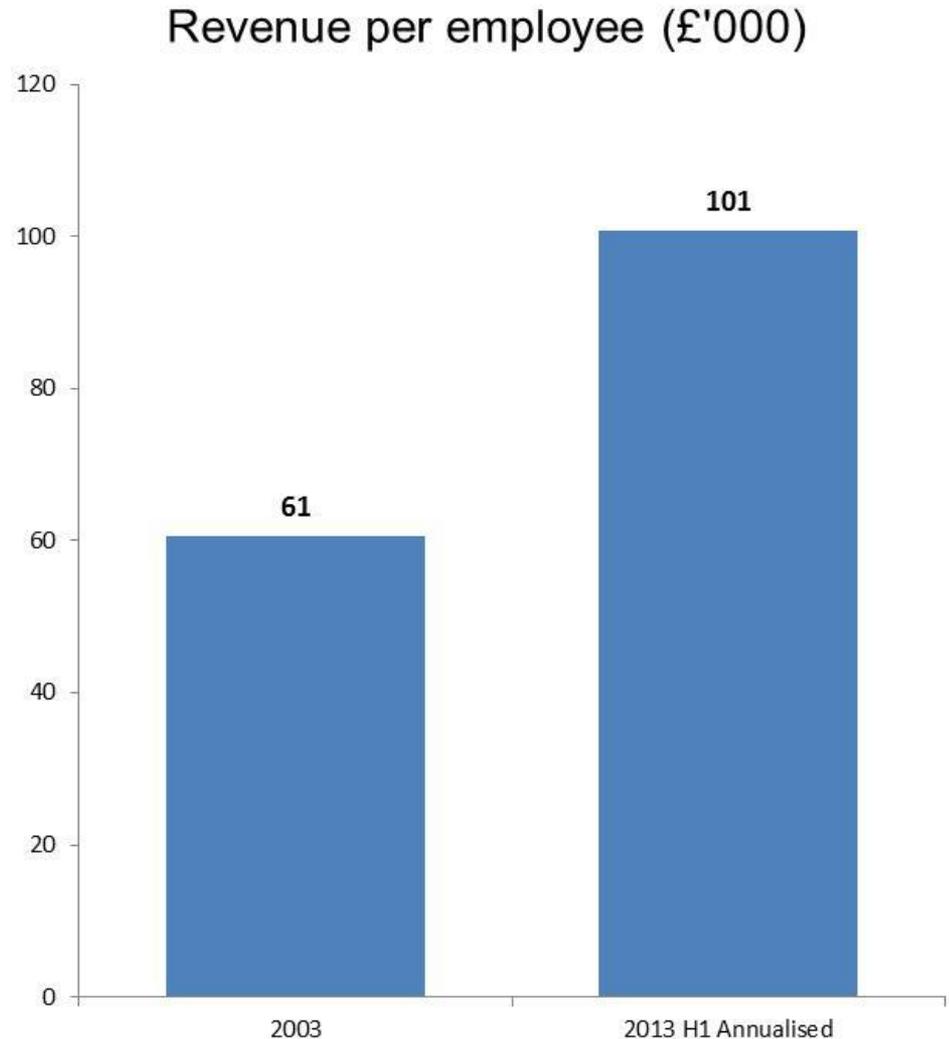
Morgan and quoted competitors margins
EBITA before one offs



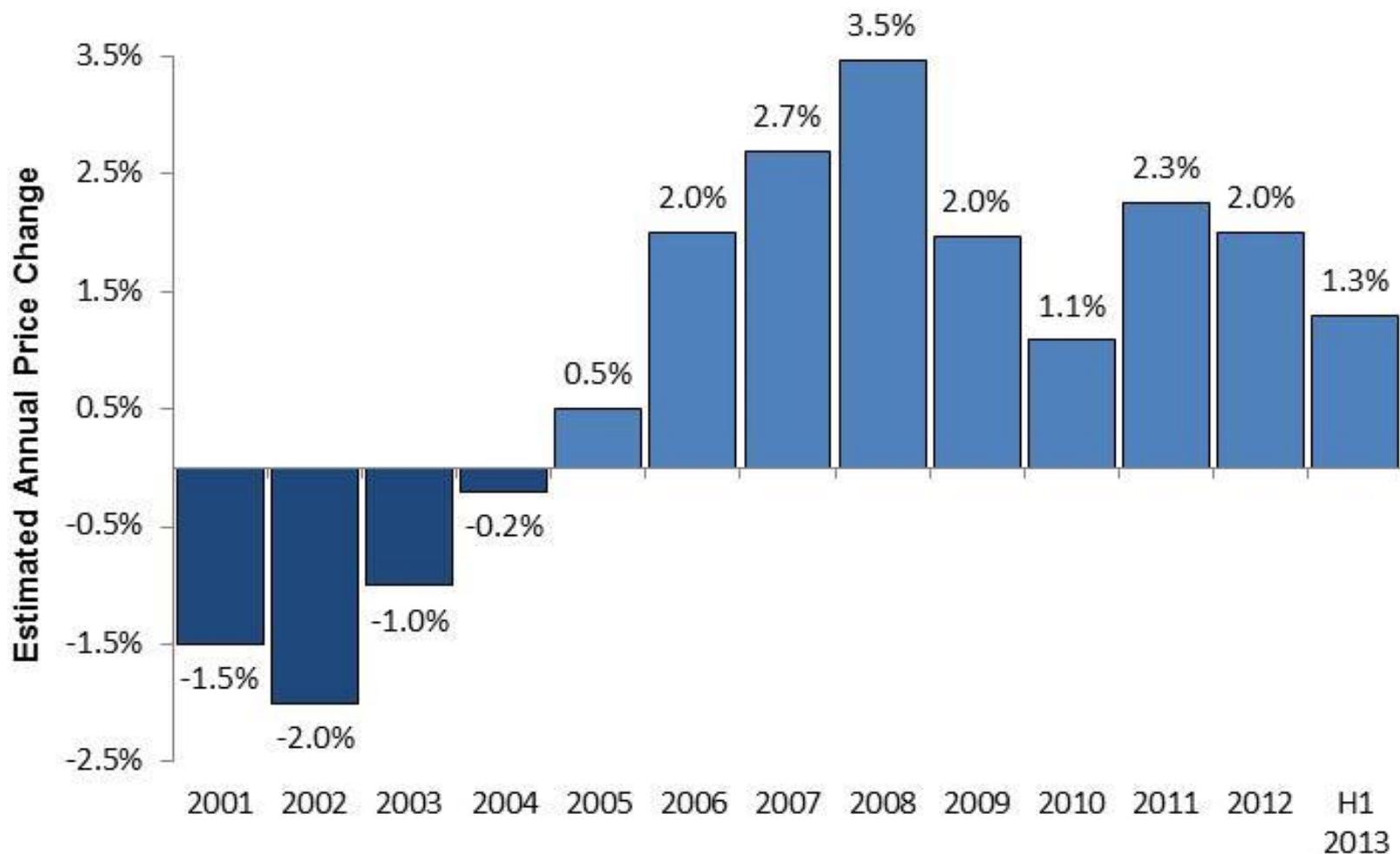
Quoted competitors are SGL Carbon, Mersen and Vesuvius

Positive mix shift has been a fundamental driver of our relative outperformance

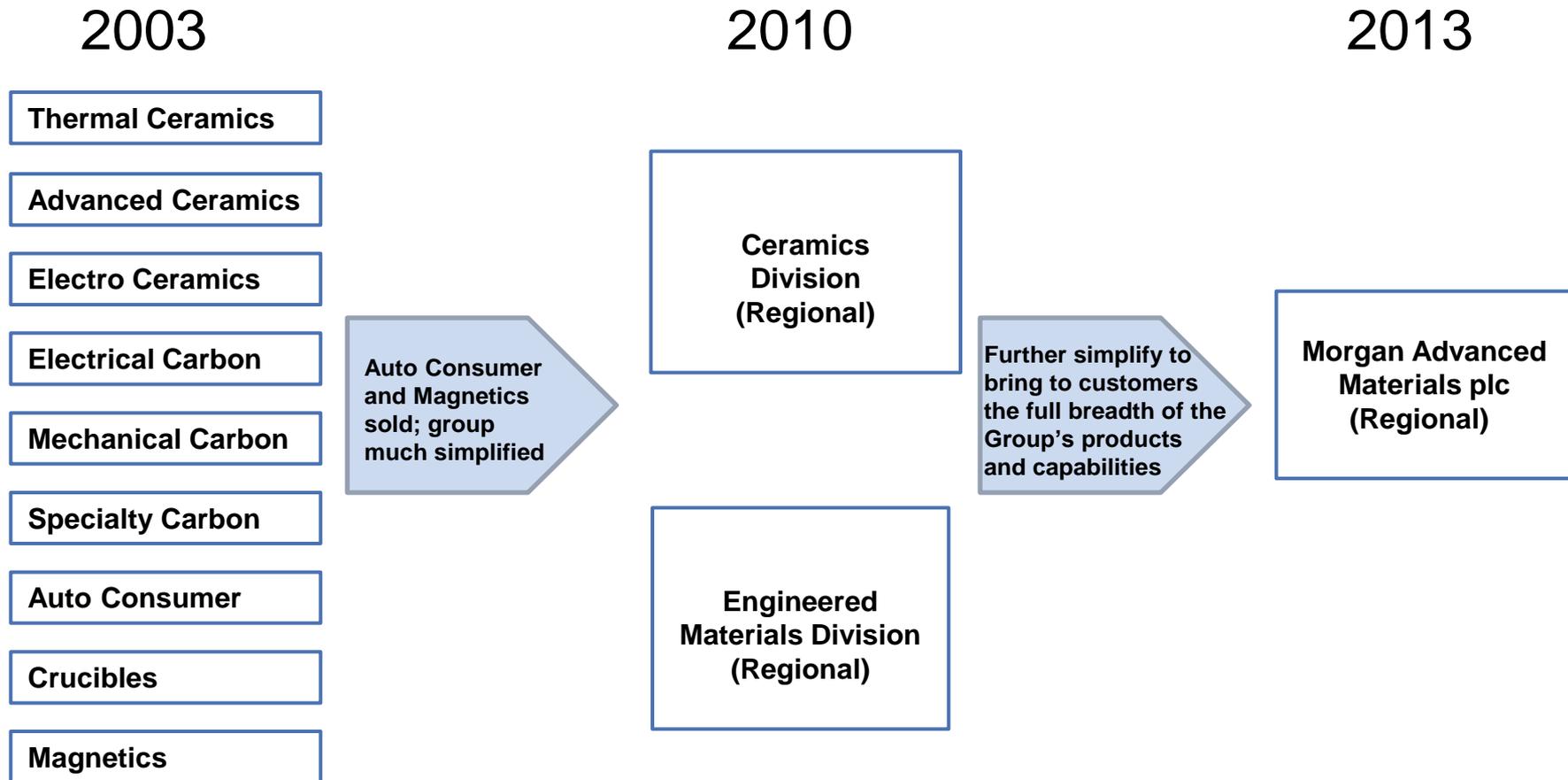
- We have consciously come out of markets and businesses where we did not have sustainable competitive advantage...
- ..and focussed our efforts on attractive markets where we can create real differentiation
- As a result, combined with continuing to drive operational and productivity improvements, our revenue per employee has grown by 65% over the past decade



Market positioning and differentiation absolutely fundamental to continued positive pricing



One Morgan: focusing the Group on a higher quality core of technologies with sustainable competitive advantage



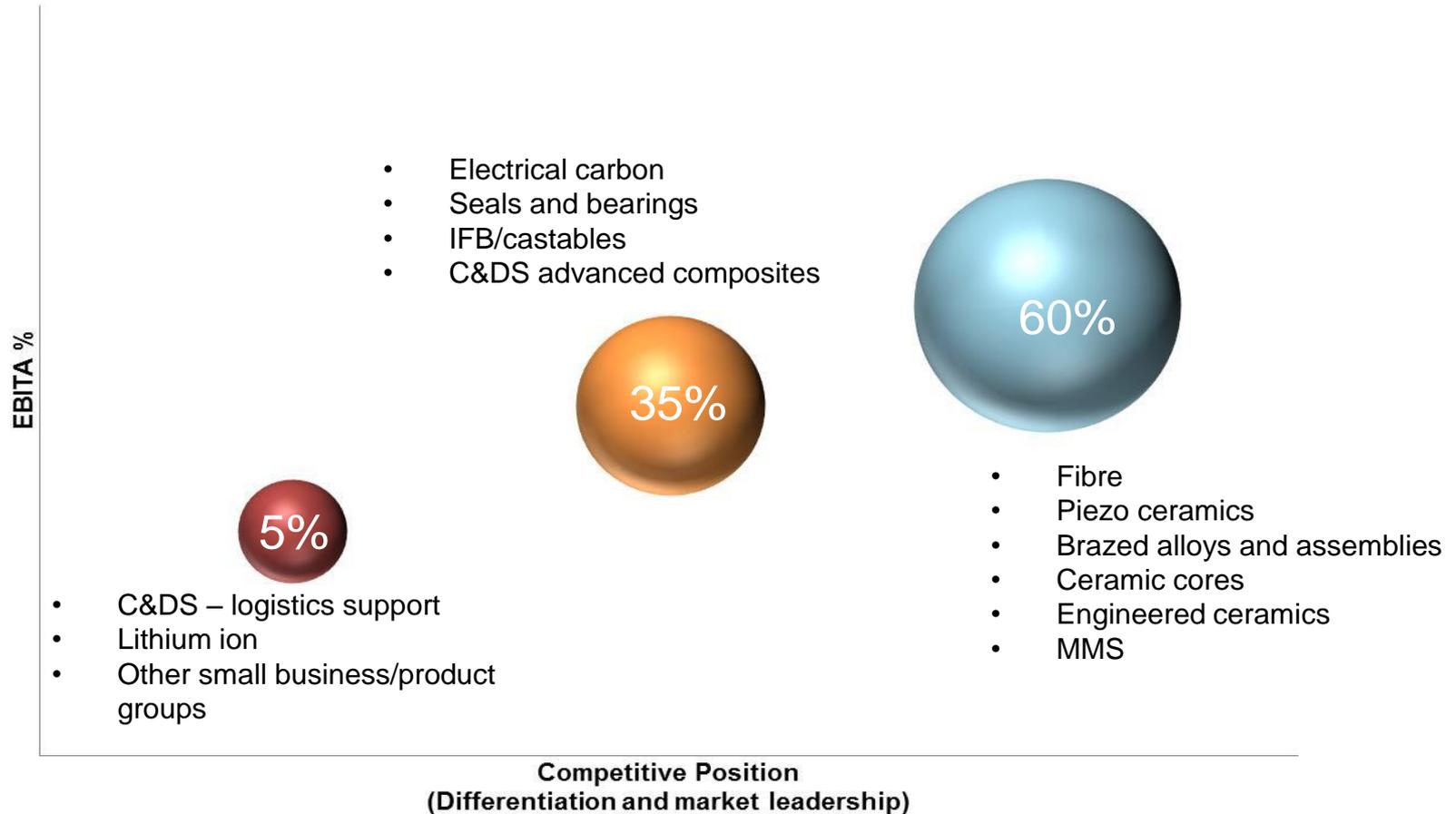
Continuation of direction of travel from a Group with 9 Divisions to a single integrated Advanced Materials business, operating on a regional basis with specific, tailored priorities, but with a common business model

.. but with all our businesses sharing the same unifying characteristics

- Leading edge material science
- Sophisticated application engineering
- Solving complex challenges in technically demanding applications
- Providing real value-add to our customers, enabling their products and processes to perform more efficiently, more reliably and for longer

Driving differentiated, market-leading positions

Implications for portfolio reshaping



- All businesses expected to have the potential to deliver mid-teen margins through sustainable competitive advantage
- If we cannot see our way to this we are unlikely to be long-term holders of such businesses

Technology, innovation and differentiation

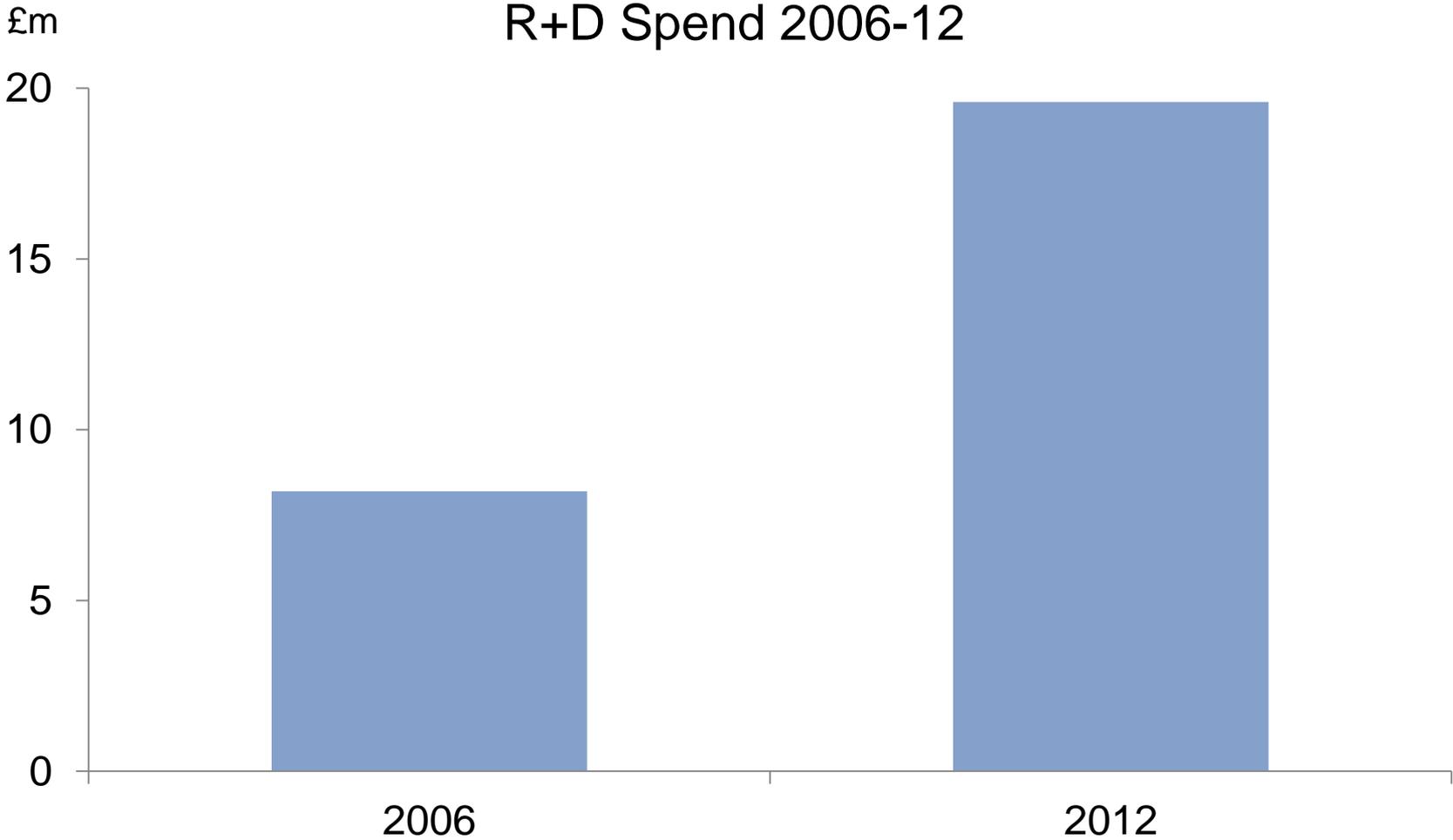
Dr Mike Murray
Chief Technology Officer

What we do

- Leading edge material science
- Sophisticated application engineering
- Solving complex challenges in technically demanding applications
- Providing real value-add to our customers, enabling their products and processes to perform more efficiently, more reliably and for longer

Driving differentiated, market-leading positions

We have increased our R+D spend by 2.5 times since 2006



Understanding how and where we invest in R+D is fundamental to our innovation and growth strategy

Strong existing player	Selectively invest e.g. fibre	Working with world-leading customers e.g. technical ceramics
New market entrant	Work with the world-leading external organisations e.g. graphene with Manchester University	Joint development with leading customers e.g. diesel particulate filters with Ibiden
	Technology push	Customer pull

Focusing on technically demanding, attractive growth markets



Energy



Transportation



Electronics



Security and Defence



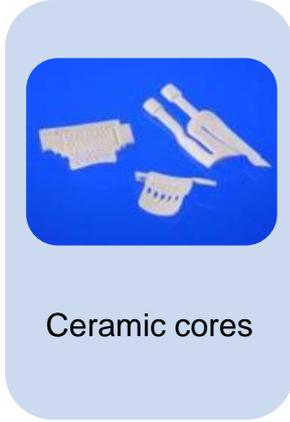
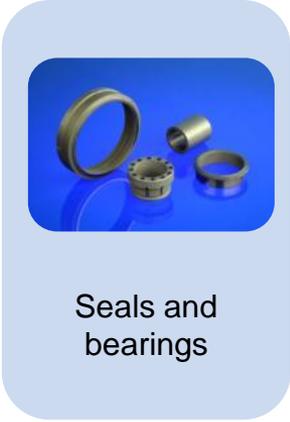
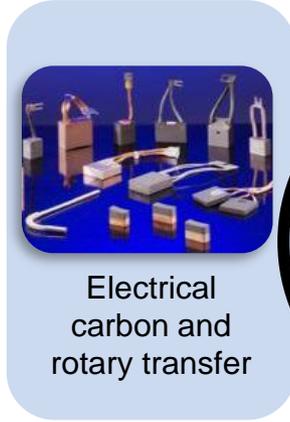
Healthcare



Industrial

Petrochemical

Our technology families - leading positions in the markets we serve



‘One Morgan’ is delivering a consistent R+D strategy across our materials technologies

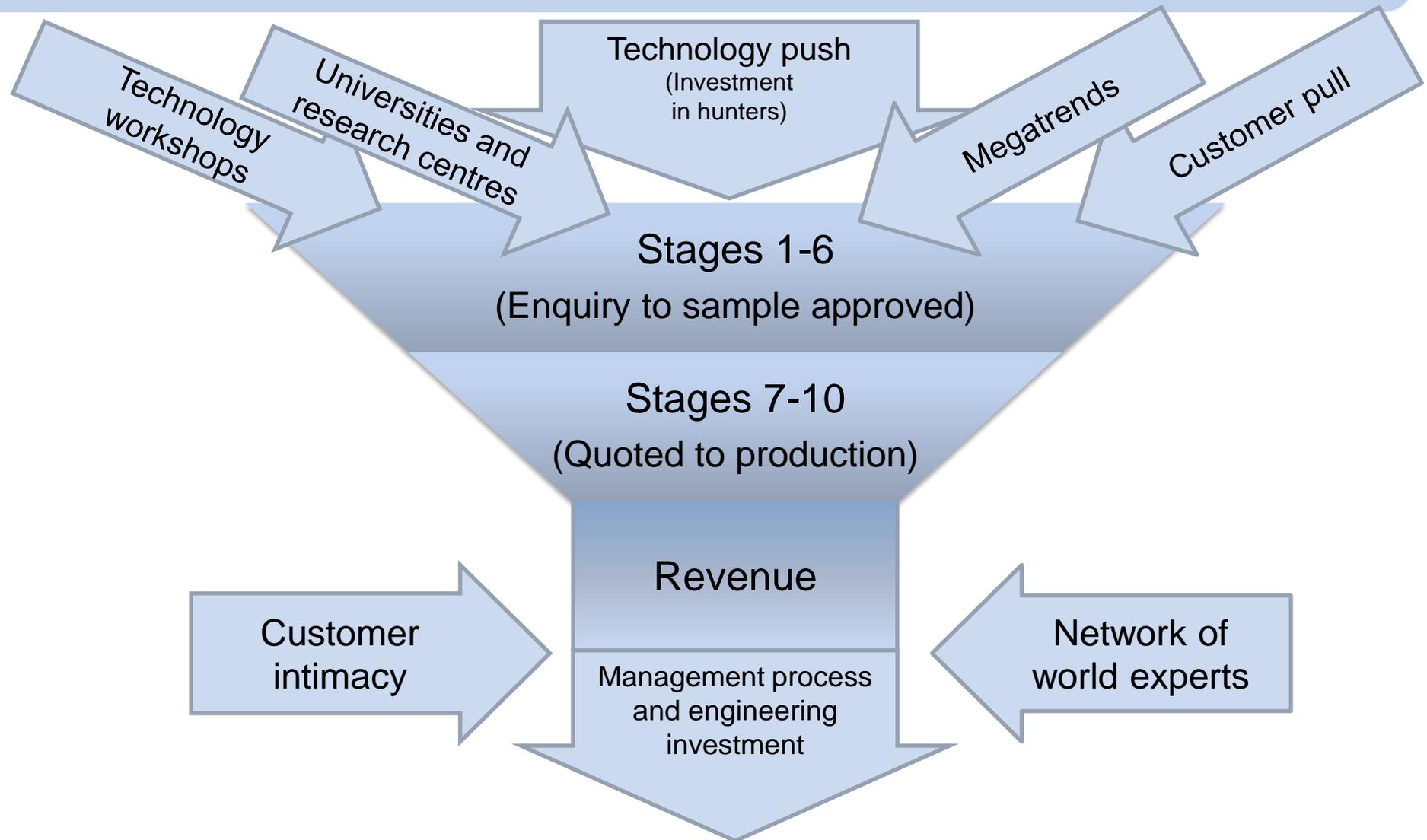
R+D Strategy

- Our long term profitable strength depends on constantly refreshing our innovation pipeline to anticipate, or respond to, market needs
- Morgan's R+D strategy is governed by 3 underlying principles
 - Driving innovation and targeting our chosen markets through our New Business Development Pipeline (NBDP) tool
 - Establishing Primary Material Centres of Excellence to build critical mass and focused expertise in our core technologies
 - Use technology as key promoter of One Morgan for the Group's largest or largest potential customers

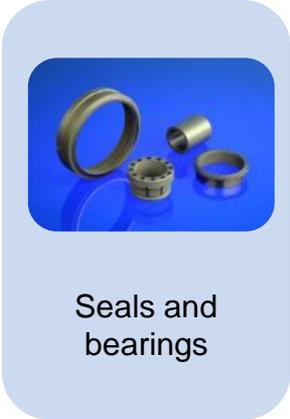
Morgan Advanced Materials

New Business Development Pipeline

A systematic process for managing new business development across the “One Morgan” structure

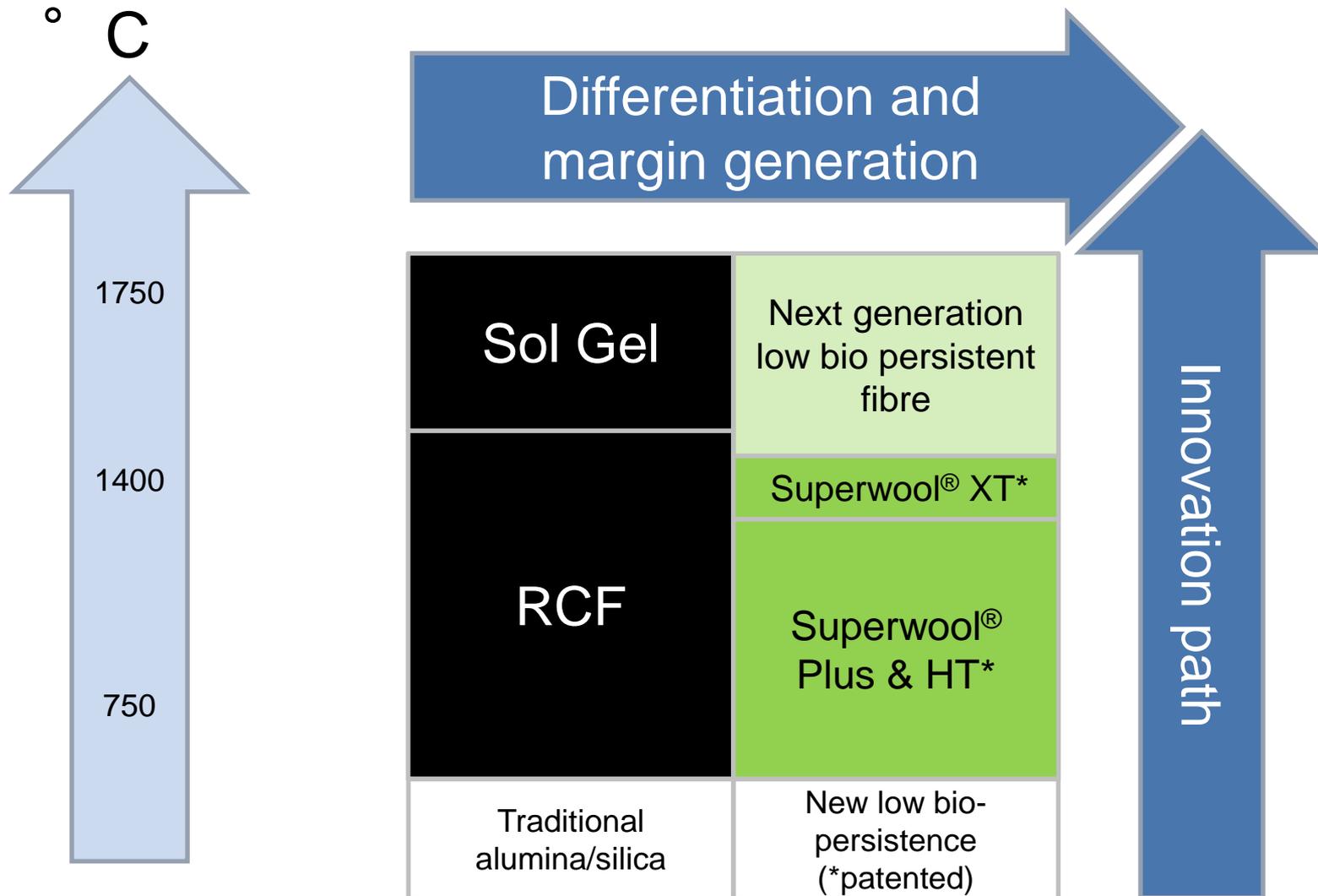


Our technology families - leading positions in the markets we serve

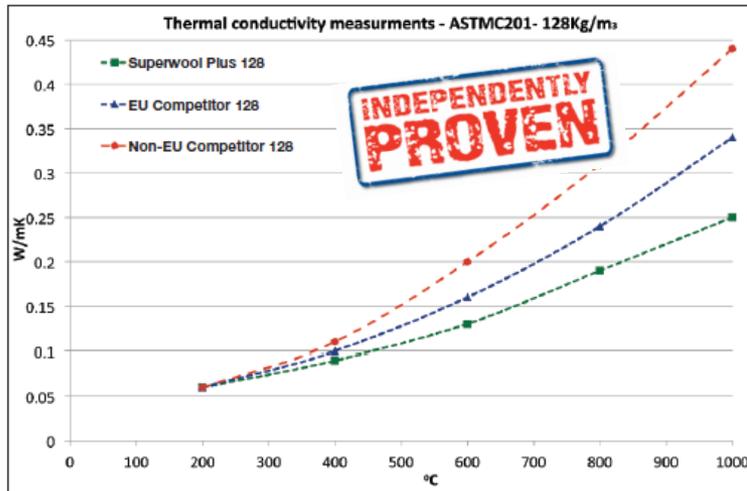
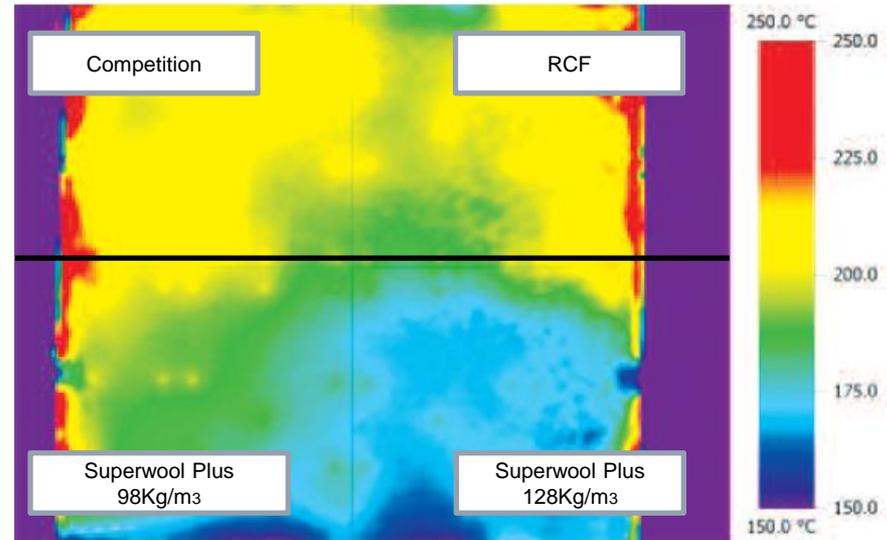
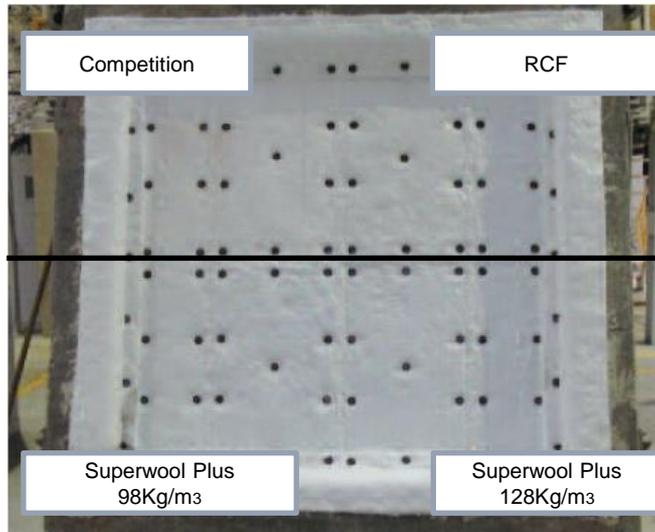


‘One Morgan’ is delivering a consistent R+D strategy across our materials technologies

Insulating fibre innovation path



Superwool[®] Fibre offers up to 40% lower thermal conductivity than competitive insulation at 1000°C



Superwool[®] Plus[™] and FireMaster[®] Marine Plus[™] offer:

- Superior insulation performance
- Up to 40% weight and volume savings

Fire protection for off-shore platforms and floating production storage

- FireMaster Marine Plus blanket product saves 20 tonnes of topside weight in living quarters allowing a further 40 tonnes of saving in the support structure
- Also efficient sound insulation
- Highly differentiated through comprehensive testing and certification, product performance and manufacturing tolerances



Protection for off-shore platforms, floating production storage and liquid natural gas terminals

- Morgan's superior insulation properties provide valuable time in the event of a fire
- Custom engineered systems
- Morgan is the only insulation producer producing the finished system
 - Differentiation in design features and performance standards
 - Comprehensive testing and certification



Each fibre innovation can be leveraged around the globe with scale across chosen markets



Our technology families - leading positions in the markets we serve



Fibre



Structural ceramics



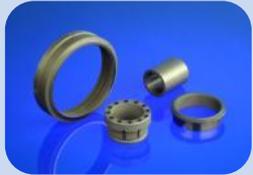
Insulating firebricks / castables



Electrical carbon and rotary transfer



Composites and Defence Systems



Seals and bearings



Ceramic cores



Assemblies and braze alloys



Molten Metal Systems



Piezoelectric ceramics

‘One Morgan’ is delivering a consistent R+D strategy across our materials technologies

Step change improvement in performance



99.999% pure aluminium

Silicon metal recycling

Precious metals processing

Nuclear waste treatment



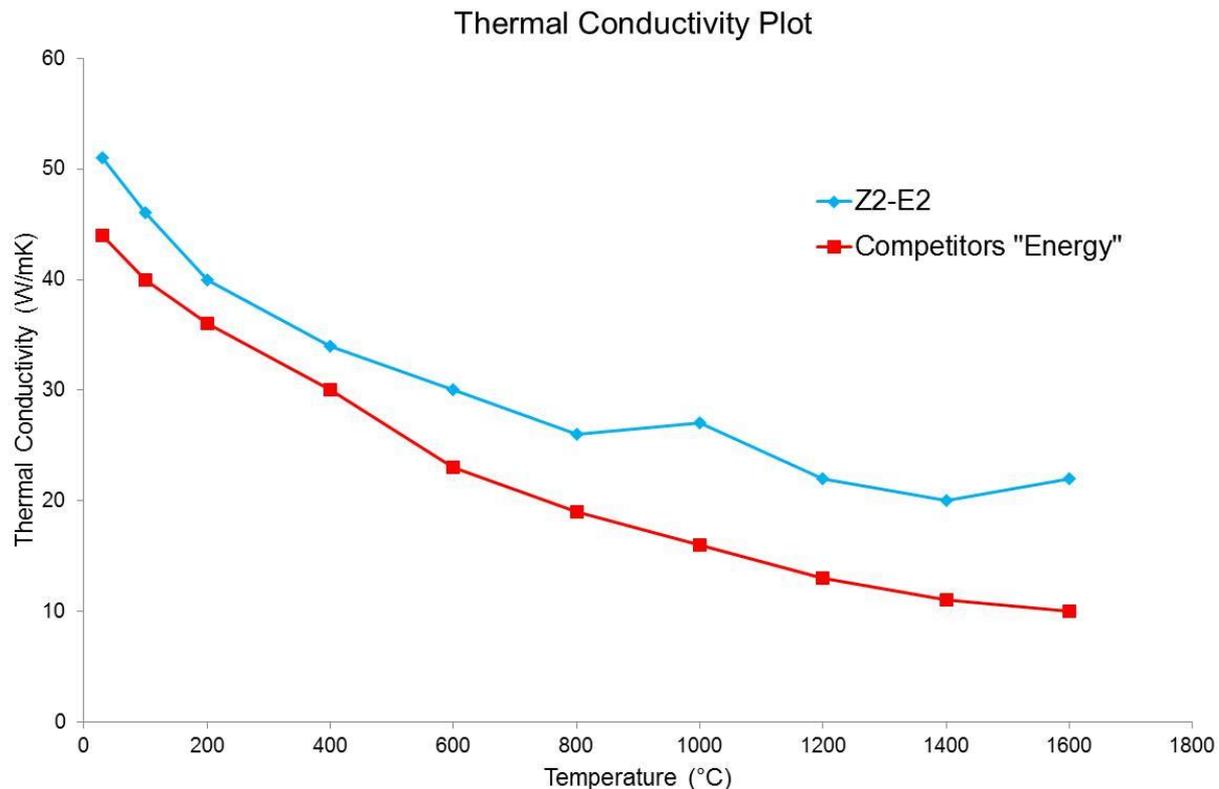
No detectable metal pollution

Higher temperature application

100% longer lifetime

New process with crucible technology

Continued innovation with energy efficient materials



Reduced customers' cost of ownership thanks to lower energy consumption and longer lifetime

Our technology families - leading positions in the markets we serve



Fibre



Structural ceramics



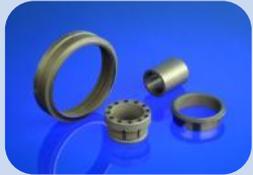
Insulating firebricks / castables



Electrical carbon and rotary transfer



Composites and Defence Systems



Seals and bearings



Ceramic cores



Assemblies and braze alloys



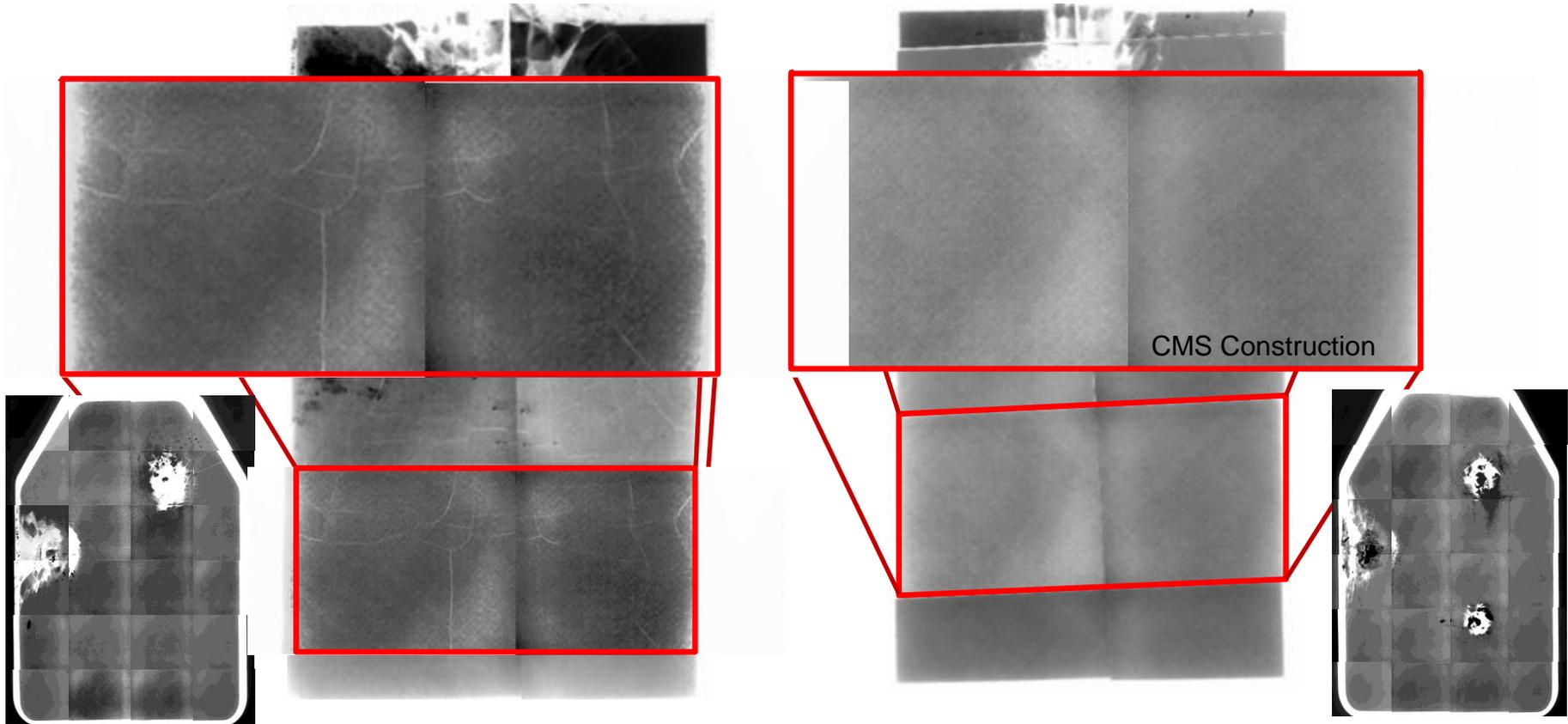
Molten Metal Systems



Piezoelectric ceramics

‘One Morgan’ is delivering a consistent R+D strategy across our materials technologies

World-leading light weight body armour solutions



Conventional construction (No CMS)
- severe damage across ceramic strike face
Shot 2 performance compromised by shot 1 damage

Crack Mitigation System (CMS) construction
- zone of damage reduced
No damage seen in shot 2 location
Improving performance – reducing mass

A step change in helmet technology

Current technology

- Aramid construction
- Provides significant fragmentation protection
- Offers class leading blunt trauma protection – severe impact requirement compared to rivals
- Has been shown to reduced casualties through traumatic brain injury (TBI) – feedback from theatre

- Shell mass 1.0kg
- Helmet mass 1.4kg



Next generation helmet

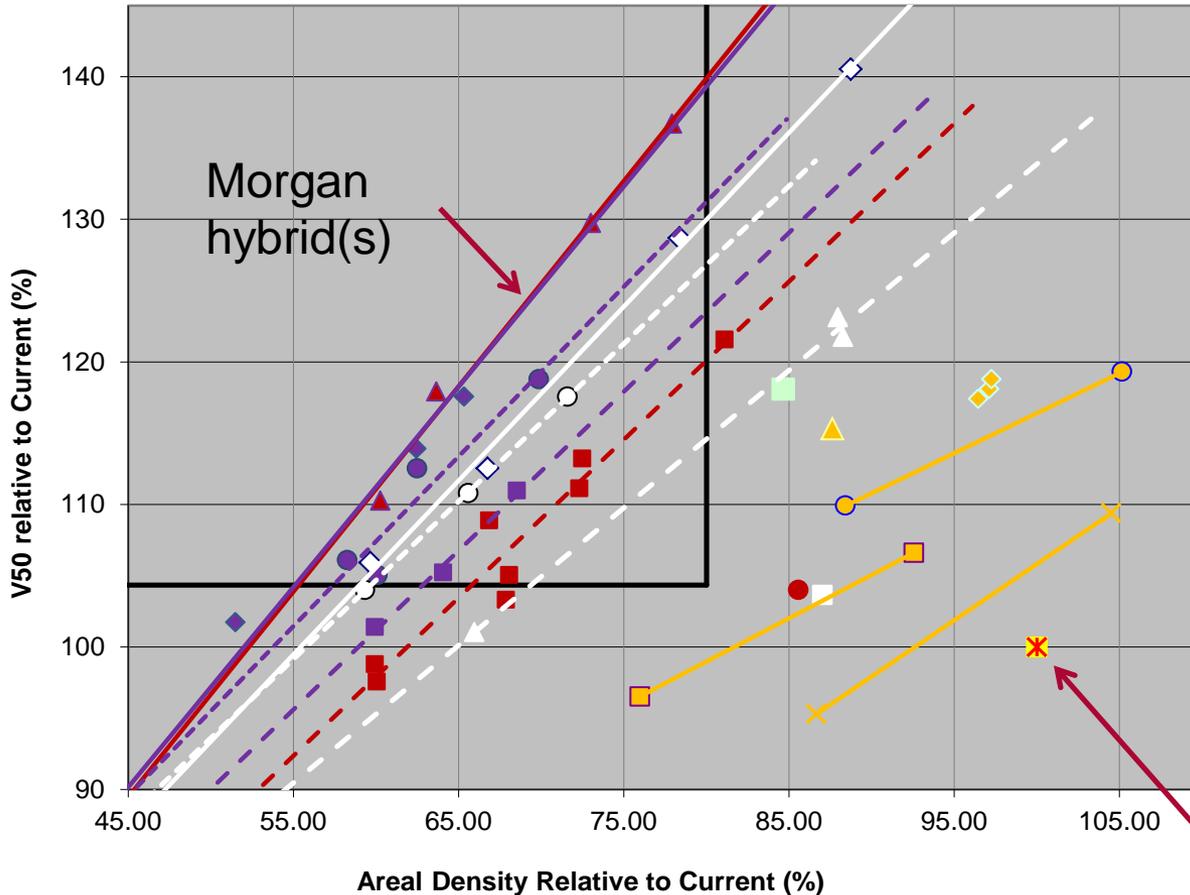
- Morgan's lightweight hybrid construction
- Maintained fragmentation protection
- Enhanced ability to stop 9mm rounds against NIJ IIIA
- Improved blunt trauma protection
- Expect to launch the new helmet next year

- Shell mass 0.6kg
 - 40% reduction
- Helmet mass 1.0kg
 - 28% reduction



Achieved through fundamental understanding of material science

Flat panel 1.1g FSP V_{50} data



- Hundreds of iterations
- Significant weight savings achieved with monolithic PE solutions (white lines) but reduced structural performance
- Morgan hybrid enhances ballistic performance and maintains structural properties
- Combination of optimum materials science and new processing technology

In-service solution

Leading the world in composite pod technology

Morgan has led the world in composite pod technology for the last 20 years

Combination of the fundamentals of materials science and processing knowhow has created a unique capability

First order won with a major Asian prime (\$1M) and we are at various stages of discussion with major vehicle manufacturers in three continents



	Composite Pod Mass (Kg)	Estimated total mass (Kg)	Steel equivalent with 20 kg/m ² S2 glass spall liner (Kg)	Percentage weight saving over steel
Ultra-light	465	780	1915	60%

Morgan Advanced Materials

Primary Materials Centre of Excellence

Primary Materials Centre of Excellence

- Established for Fibre, Composites and Defence and MMS
- Gives opportunity to increase the effectiveness of R&D spend in accelerating profitable growth
 - Provides critical mass for efforts, ideas and interaction
 - Ownership of all new formulations and processes
 - Delivers materials and processes globally
 - Recognised externally and internally as the experts
- Will be extending this model to other key technology families

New horizons – university and customer collaboration

- Working with the world's leading universities
 - Imperial College - Centre for Advanced Structural Ceramics
 - Manchester - industrial supervisor on £3.5m grants on graphene research
 - University of South Carolina and Biomedical Engineering Society (BMES)
 - Asia - actively working at Nanjing, Wuhan, Shanghai and Auckland University
- Development relationships with customers in market-leading positions including
 - major diesel particulate filter manufacturer
 - leading aerospace company
 - leading power generation company
 - UK MoD
- Co-developments in place with key government laboratories and established projects and links at over 70 research centres

R+D strategy

- Continue to increase the Group's R+D spend both in absolute terms and as a percentage of sales
- Use our New Business Development Pipeline to identify the largest and most profitable growth opportunities
- Strike the right balance between 'customer pull' and 'technology push' depending on our market position
- Roll out more global Primary Materials Centres of Excellence to establish a critical mass for innovation in our key technology families
- Further develop our partnering and co-development with the world's leading universities and market-leading global customers

Delivering “One Morgan” and Europe: driving increased returns

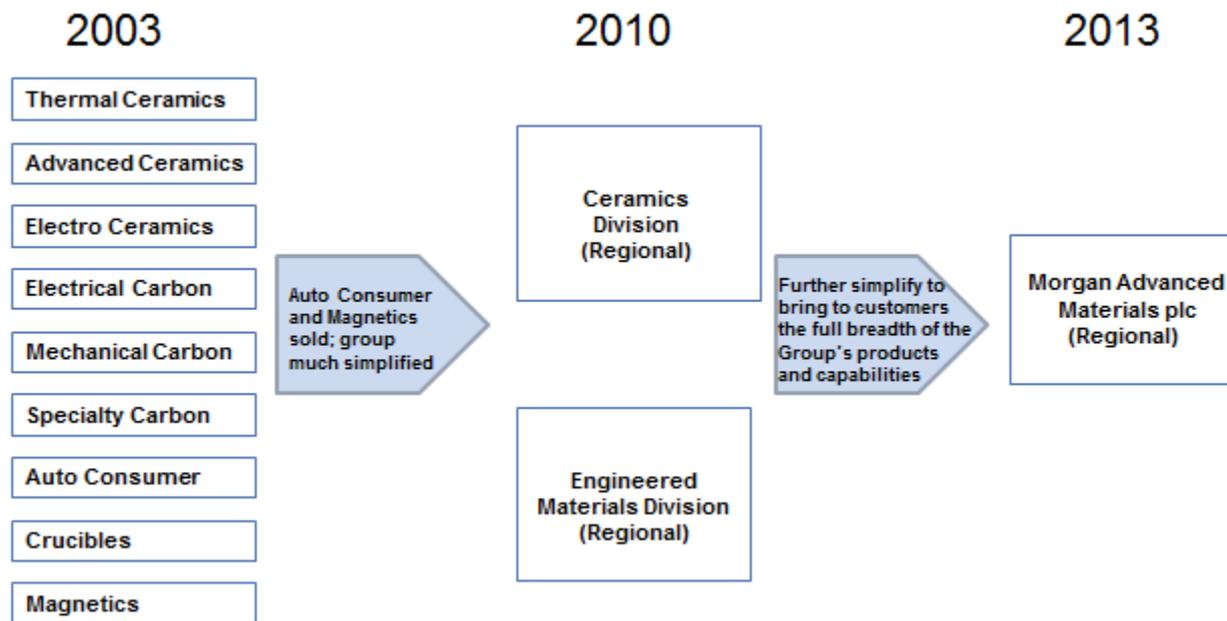
Dr Andrew Hosty
Chief Operating Officer

“One Morgan” being delivered to plan

- To deliver the Group strategy of focusing on higher growth, higher margin markets
- Drive sales by offering world-leading customers performance advantages using Morgan’s technologies
- Leveraging our global presence to deliver growth opportunities
- Further delayering the organisation has generated additional opportunities to reshape the portfolio
- One Morgan approach to business, EHS, NBDP, Operational Excellence, regional and global benchmarking

“One Morgan” is going well

- Focus on differentiated products into chosen markets leveraging all our technologies
- Further delayers the organisational structure to increase global connectivity and pace of change



- On plan to deliver target annualised savings of £6-8m in 2014, close to half of which is coming through in 2013 full year results

“One Morgan”: creating additional opportunities for growth

- Bringing the full depth and breadth of our advanced material technology to our customers
- “Synergy selling” - leveraging the full breadth and depth of the Morgan portfolio
- Customer technology workshops
- Cross-regional technology transfers
- Organisational responsiveness and pace of change

Europe

Driving increased returns

Dr Andrew Hosty
Chief Operating Officer

Europe: driving increased returns



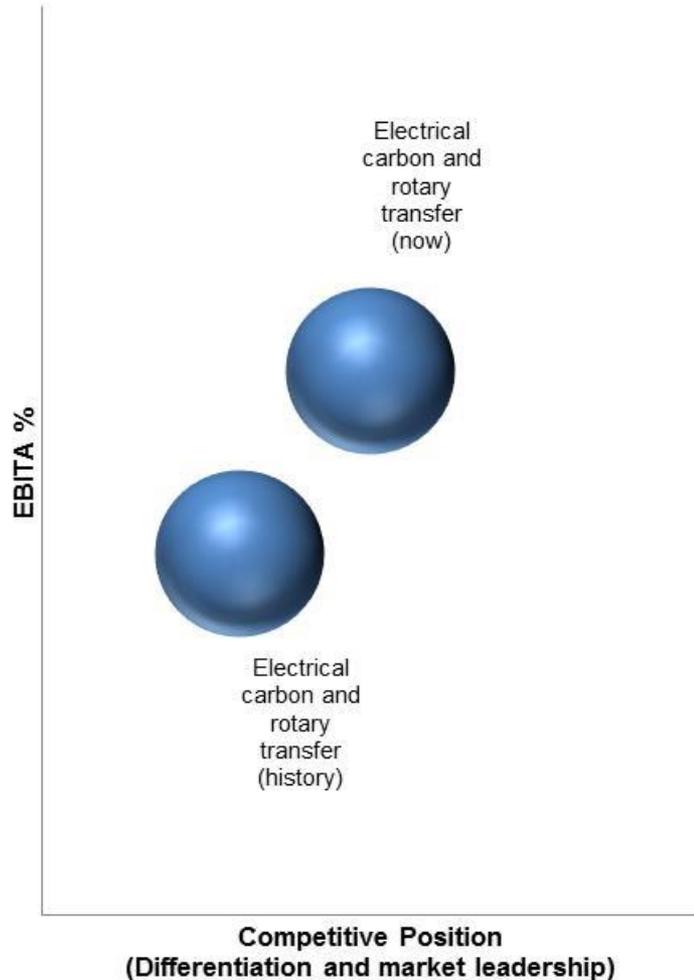
- Our synergy selling has identified £12m of new sales opportunities
- Consolidation of back offices
- Introduction of Ceramics products to Hungary using the electrical carbon presence
- Leveraging purchasing power of higher spend and sharing of suppliers
- Roll out of common business processes NBDP, Share of Wallet

Europe 2013 H1

Sales £180.4 million

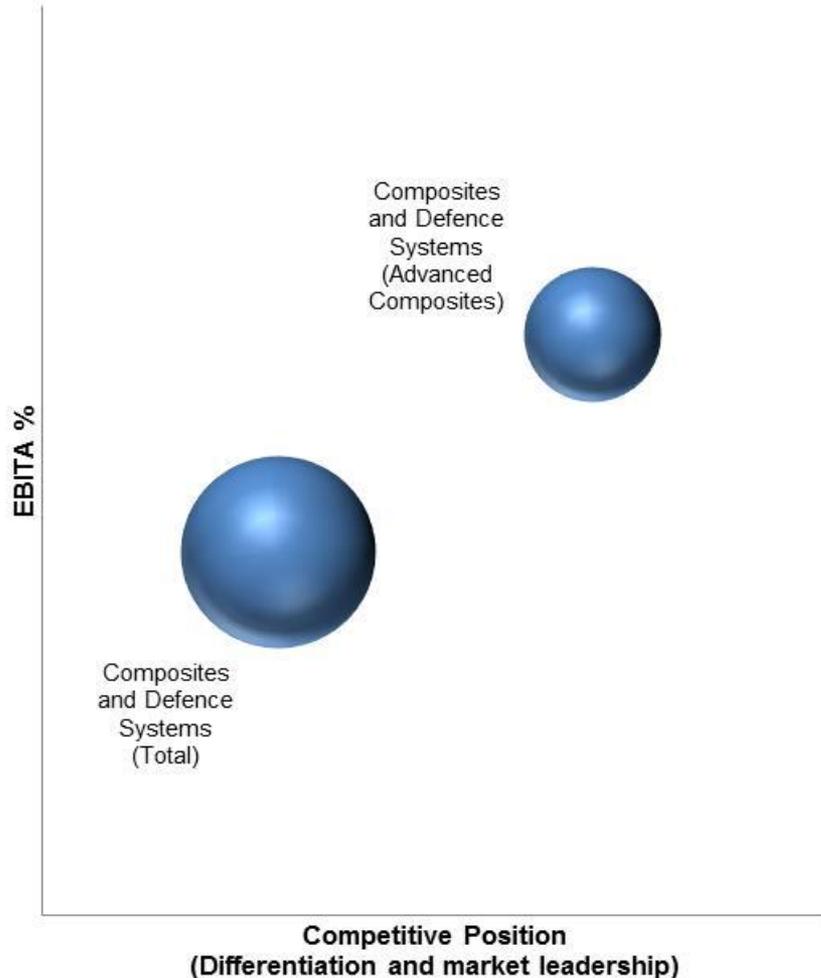
EBITA £20.2 million, 11.2%

Major improvement in electrical carbon profitability and further progress expected



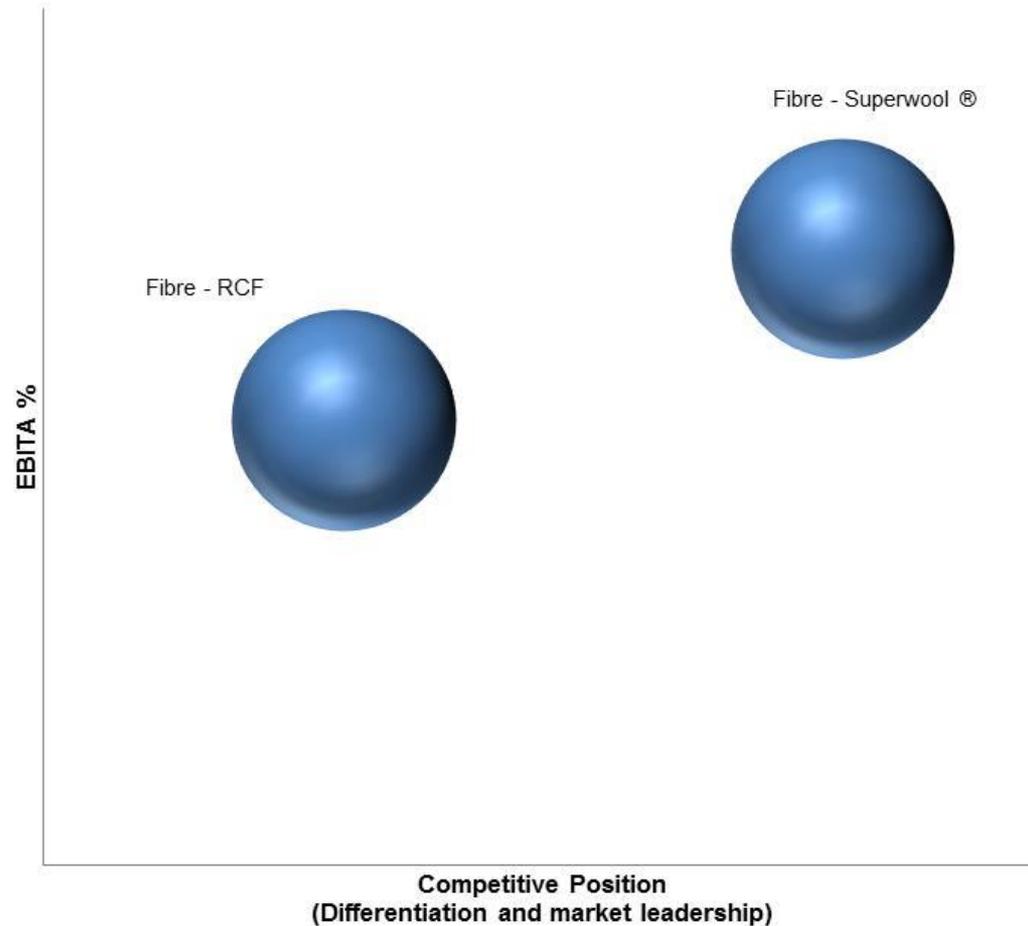
- Improving sales mix on back of new business wins and new product innovations e.g. rotary devices on ships
- Closure of manufacturing operations in Netherlands, moved to Hungary
- Continued overhead reductions through improved organisation structure and back office consolidation

Composites and Defence Systems – leveraging world leading technology in to new markets



- Significant sales growth from in-theatre surge requirements for MoD (2007:£46m, 2009:£180m); some opportunistic sales emerged to meet urgent customer needs
- Heart of the business remains advanced materials - exiting lower margin, undifferentiated spares and logistics
- Investment in technology yielding differentiated breakthrough, world-leading products
- Key focus, while maintaining technology leadership with MoD, is building overseas business both for defence and commercial composite applications

Europe lead the move from RCF to Superwool[®] fibre



- 90% of our fibre production in Western Europe is now Superwool
- 57% sales tonnage in Europe is Superwool (2013 YTD)
- RCF likely to be an “authorised material” from 2015/2016

European priorities

- Accelerate reshaping of European portfolio focusing on differentiated businesses
- Deliver growth opportunities
- Capitalise on any market recovery

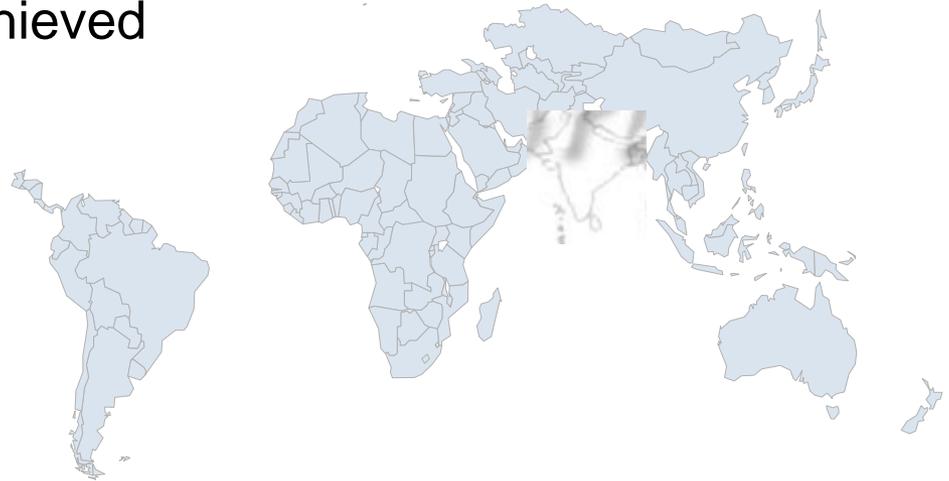
Asia/Rest of World

Differentiating for profitable growth

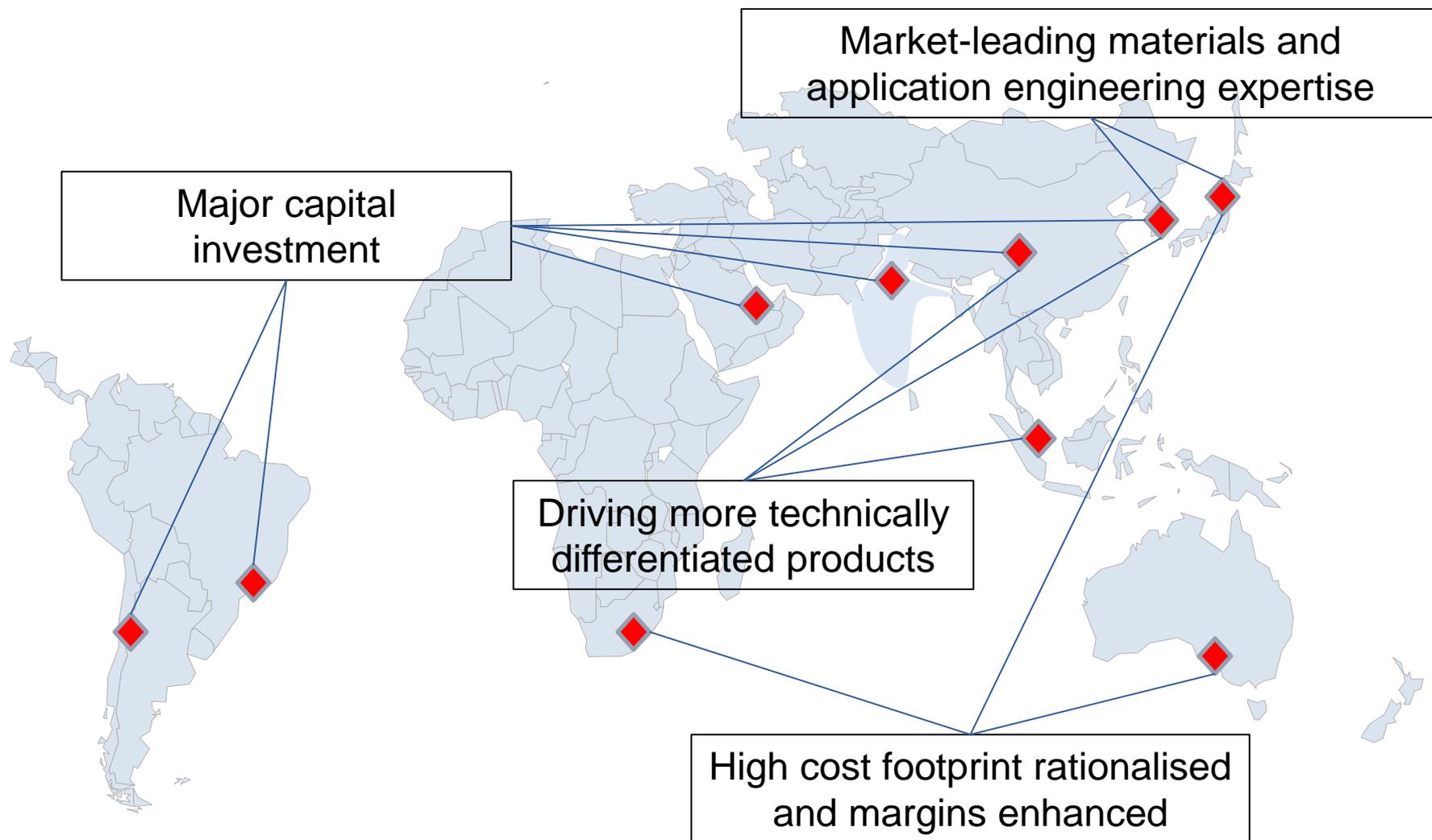
Ian Robb
President, Asia/Rest of World

Asia/Rest of World – differentiating for profitable growth

- Building differentiation and competitive advantage in attractive markets
 - Accelerating under the “One Morgan” structure
 - Attractive growth prospects in the medium and long term
 - Customers and markets moving towards more sophisticated, differentiated and higher-value applications
 - China and SE Asia, Japan and Korea account for 60% future sales
 - Reshaping portfolio of operations to match profitable growth opportunities
 - Asian Superwool® availability achieved
-
- Asia/Rest of World 2013 H1
 - Sales £121.8 million
 - EBITA £13.1 million, 10.8%



Asia/Rest of World Key highlights



Quick win from “One Morgan” e.g. Australia now managed as single business

- Consolidate financial and admin functions
- Closed fibre manufacturing, now trading
 - EBITA increased
 - Sell land, reduce footprint
 - Utilise Asian fibre capacity (Korea/China)
- Reduced electrical carbon footprint
 - Brisbane, New Zealand and Sydney
 - Introduced global sourcing (Mexico)
 - Profitability enhanced to mid-teens
- Driving technical Nilcra™ solutions in Asian mining and environmental applications



Submarine exhaust cover



AWD 2nd Vessel sales of Structoguard and FireMaster



Nilcra™ Zirconia Ball Valve

Reshaping the portfolio - flexibility, footprint utilisation, strategic investment and divestment

- Portfolio reshaping is faster and more decisive in 2013; continuing over the next 12-24 months
- Energy and labour are major costs to our portfolio
 - Divest/close facilities where we cannot improve operational excellence or guarantee energy stability
 - Invest in automation as labour costs rise
 - Invest in capacity to meet regional demand
- Planned footprint reshaping to accelerate change

Capital investment continuing for Superwool® fibre installations and expansion projects

- Completed Superwool conversion and capacity investment in China, Korea, Brazil and India
- Current projects include new greenfield ceramics plant in Dalian, China
- New projects include construction of a Superwool fibre plant in Abu Dhabi UAE for completion Qtr 1 2015



Jingmen, China



Dalian, China



Abu Dhabi, UAE

Commanding price premium versus competitor offerings, through differentiation and value selling

- The world's No.1 special shipbuilders in Korea choose Morgan's FireMaster® Marine Plus™
- Morgan offers application engineering expertise and value propositions
- Weight/space saving >50% vs mineral wool
- Fuel savings/better stability, higher payload
- Water repellent grade developed with customer
- “Copy with Pride” - Morgan innovations rolled out globally



FireMaster Marine Plus used for bulk head



FireMaster Marine Plus is water repellent

Emerging markets remain attractive to investment in technically differentiated products and processes

- Developing medical devices, advanced electronics, aerospace and piezo flow metering
 - Customers and markets moving to more sophisticated, differentiated and higher-value applications
 - Ceramic core production for end markets of IGT and aerospace
 - Pyrolytic Boron Nitride crucibles and boats processing gallium arsenide for LED and OLED technologies



Medical feed-through devices



Ceramic cores used in IGT and aerospace



PBN investments to meet LED demand

North America

Moving beyond mid-teen margins

John Stang
President, North America

Growing a mid teen margin business



North America

2013 H1

Sales £183.9 million

EBITA £27.3 million, 14.8%

- Thermal EBITA margins now driven into high teens
 - Robust emission control market for converted fibre business
 - Continued growth of Superwool®
- Electrical carbon margins improving through cost reductions and market share gains e.g. differentiated products in replacement business for wind market
- Attractive growth prospects for technical ceramics and braze alloys in aerospace, energy and medical markets

Key Priorities – driving the business forward



- One Morgan model
- Synergy selling
- Expanding New Business Development Pipeline / new product technology
- Focus on high value added growth markets (aerospace / energy)
- Accelerate Superwool® roll out and conversion
- Leveraging talent flexibility

Moving beyond a mid-teen margin business

“One Morgan” - synergy selling



- Internal Morgan product tradeshow
- Training workshops
- Introduction to synergy selling programme
- 80 commercial leaders from around the world



Superwool® - accelerating the impact

- Superwool migration progressing well and accelerating
 - c.36% of total fibre sales in 2013 in the region will be Superwool
- Conversion of fibre lines is significantly increasing our Superwool capacity
 - 2012 - 34% of fibre capacity Superwool capable
 - 2013 - 48%
 - 2014 - 66%



Growth opportunity in vehicle emission controls, gaining share in a growing market (£30m)

- Morgan well positioned to take advantage of strong market growth and more stringent emission control regulations
- Continued investment in equipment that enhances the performance of our materials
- New materials introduced that improve application performance and address regional regulatory legislation
- Partnered with global market leaders providing them with products and next-generation materials to support their growth projections



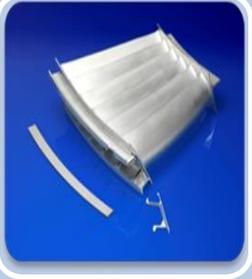
Superwool paper



End cone insulation

Growth opportunity: increasing number of aerospace solutions (£50m)

Enabling improved safety, reliability, and performance of aircraft and aerospace systems for over 60 years.

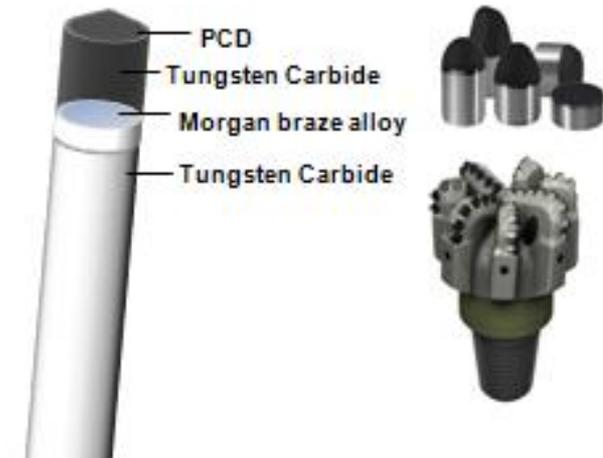
					
<p>Thermal management Solutions</p> <p>High temperature insulation</p> <p>Fire protection</p> <p>Heat shields</p>	<p>Material joining solutions</p> <p>High temperature braze alloys</p> <p>Active braze technology</p> <p>Diffusion bond inhibitor</p>	<p>Sensor and avionics solutions</p> <p>Hermetically sealed sensors</p> <p>Piezoelectric sensors</p> <p>Component assemblies</p>	<p>Friction wear and sealing solutions</p> <p>Dynamic seals</p> <p>Bearings</p> <p>Protective DLC coatings</p> <p>Carbon brushes</p>	<p>MRO and repair solutions</p> <p>Diffusion braze repair</p> <p>High temperature braze alloy</p> <p>Aftermarket turbine cores</p>	<p>Investment casting solutions</p> <p>Fused cores</p> <p>Mold insulation</p> <p>Crucibles</p> <p>Graphite tooling</p>

Growth opportunity: energy/chemical processing industry (£70m)

- Fired heaters
- Secondary ammonia reformers
- Sulphur recovery unit
- Fluid catalytic cracking unit



- Cutters for deep hole drilling
- Expanded gas exploration
- Requirement for longer-life



Priorities: moving beyond mid-teen margins

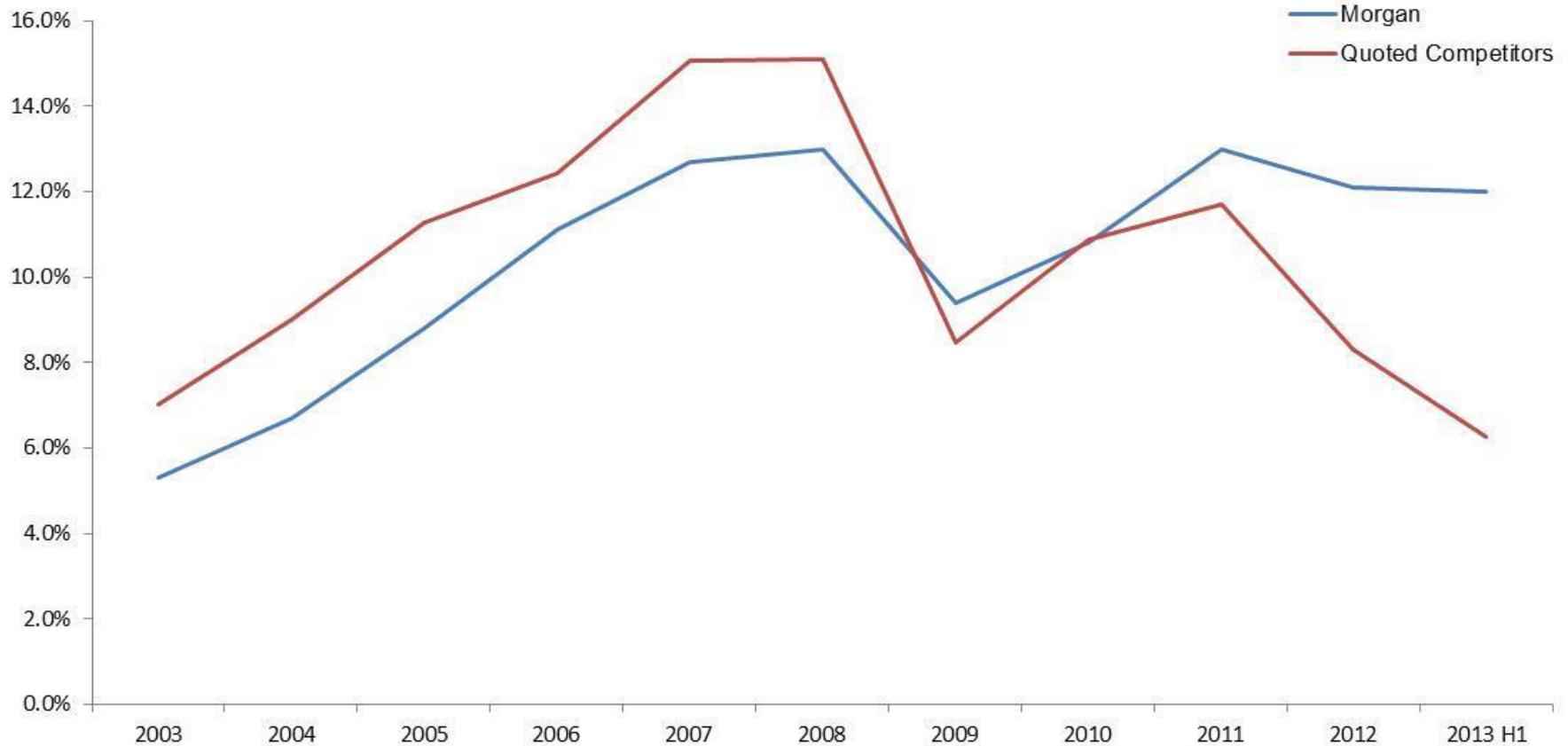
- Continue to leverage “One Morgan” opportunities for growth by driving new business pipeline
- Focus on high value growth markets e.g. aerospace, healthcare, emission control
- Accelerate new product developments
- Execute capital plan on Superwool[®] expansion
- Expand market segment sales synergies

Financial transformation of the Group

Kevin Dangerfield
Chief Financial Officer

The margin story continues to improve through industry cycle

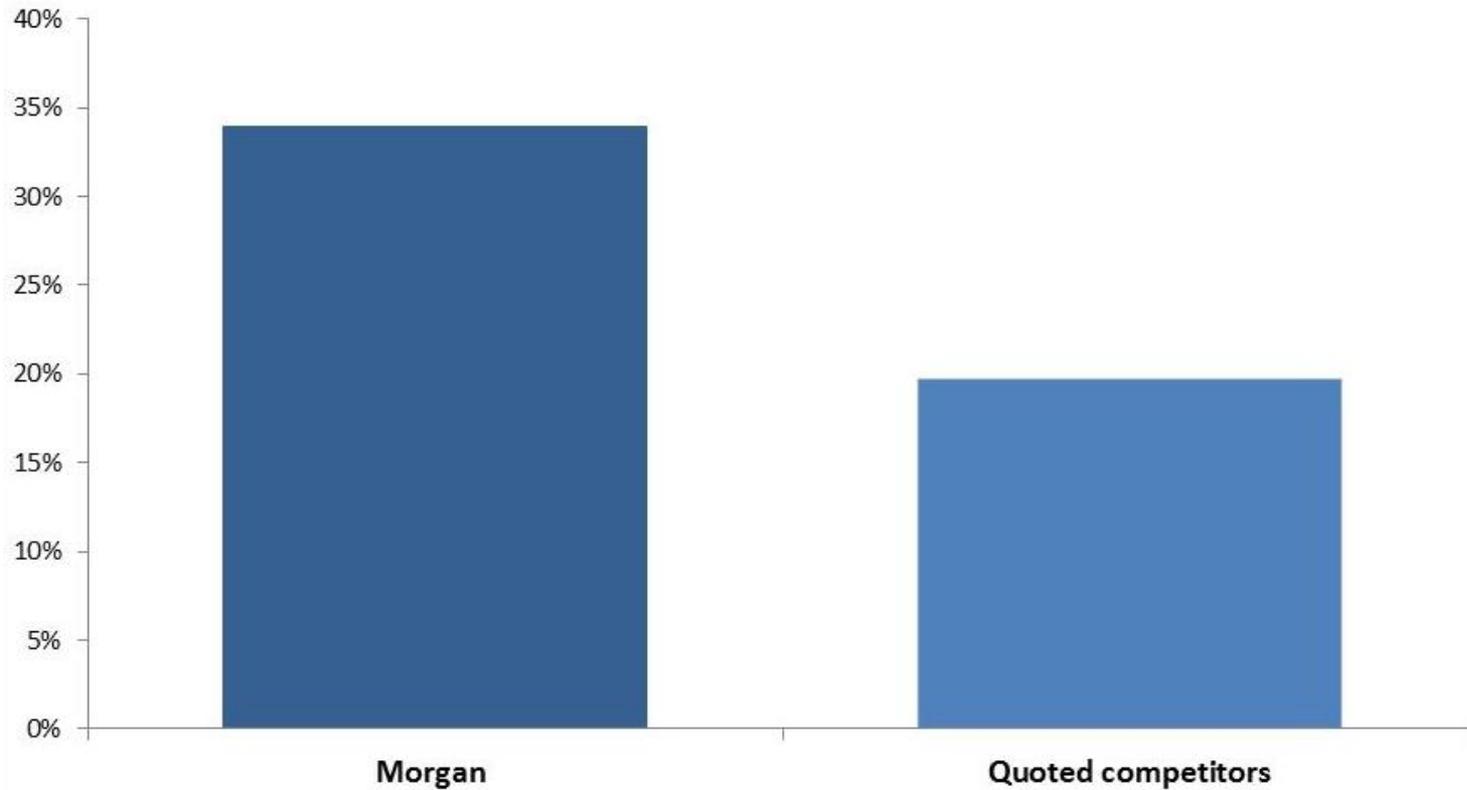
Morgan and quoted competitors margins
EBITA before one offs



Quoted competitors are SGL Carbon, Mersen and Vesuvius

Far better operational leverage on growth

**Drop through of revenue growth to EBITA
(average of 2009-2010 and 2010-2011)**



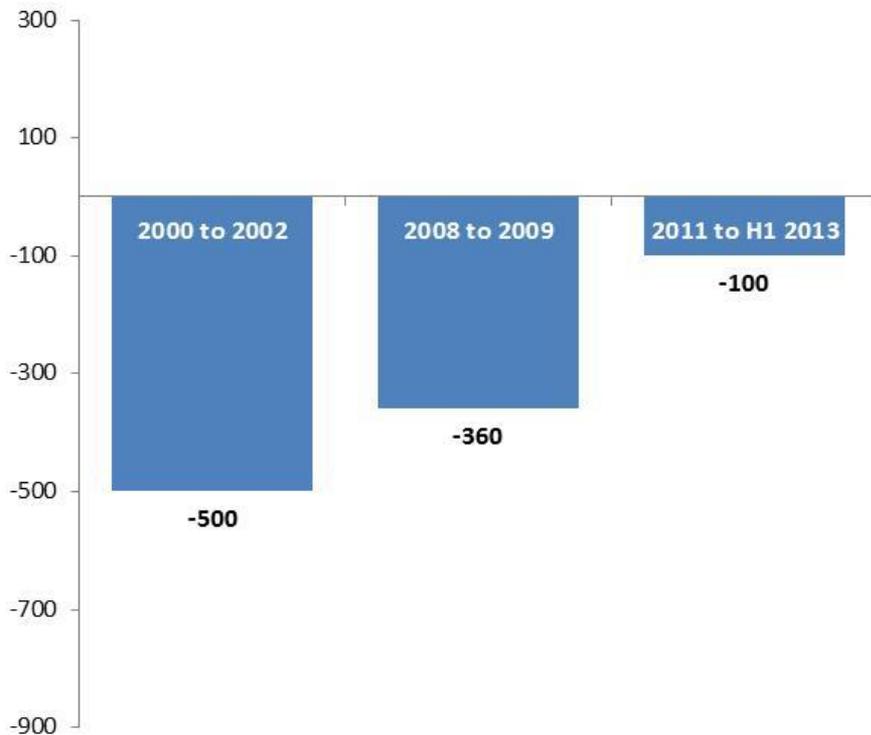
Quoted competitors are SGL Carbon, Mersen and Vesuvius

Significantly improved resilience of profit margins in our industry downcycles

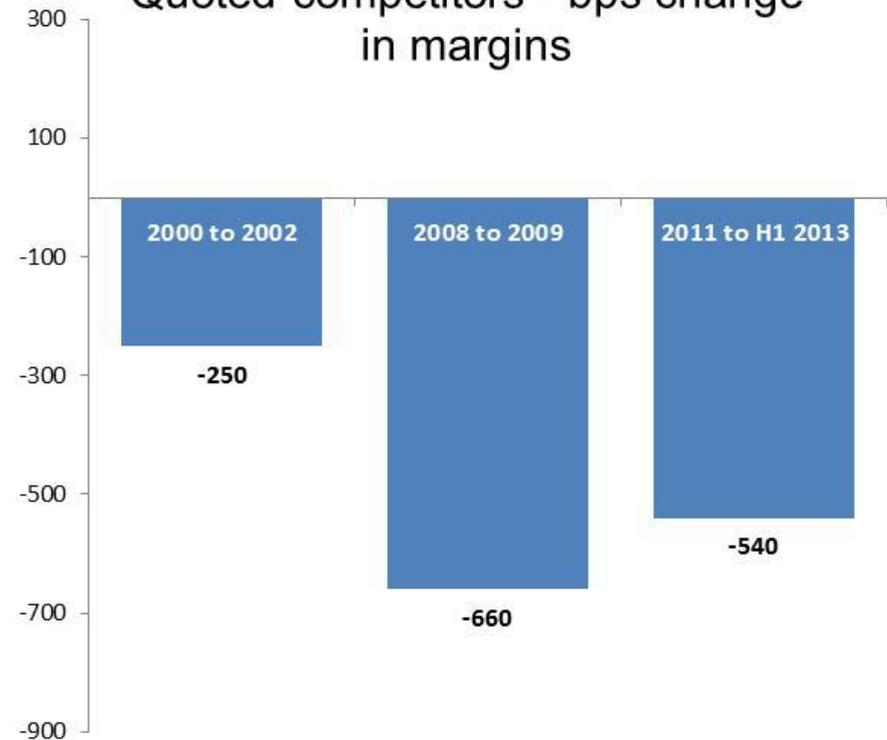
Improving resilience to industry downcycles

..... differentiates us from our quoted competitors

Morgan - bps change in margins

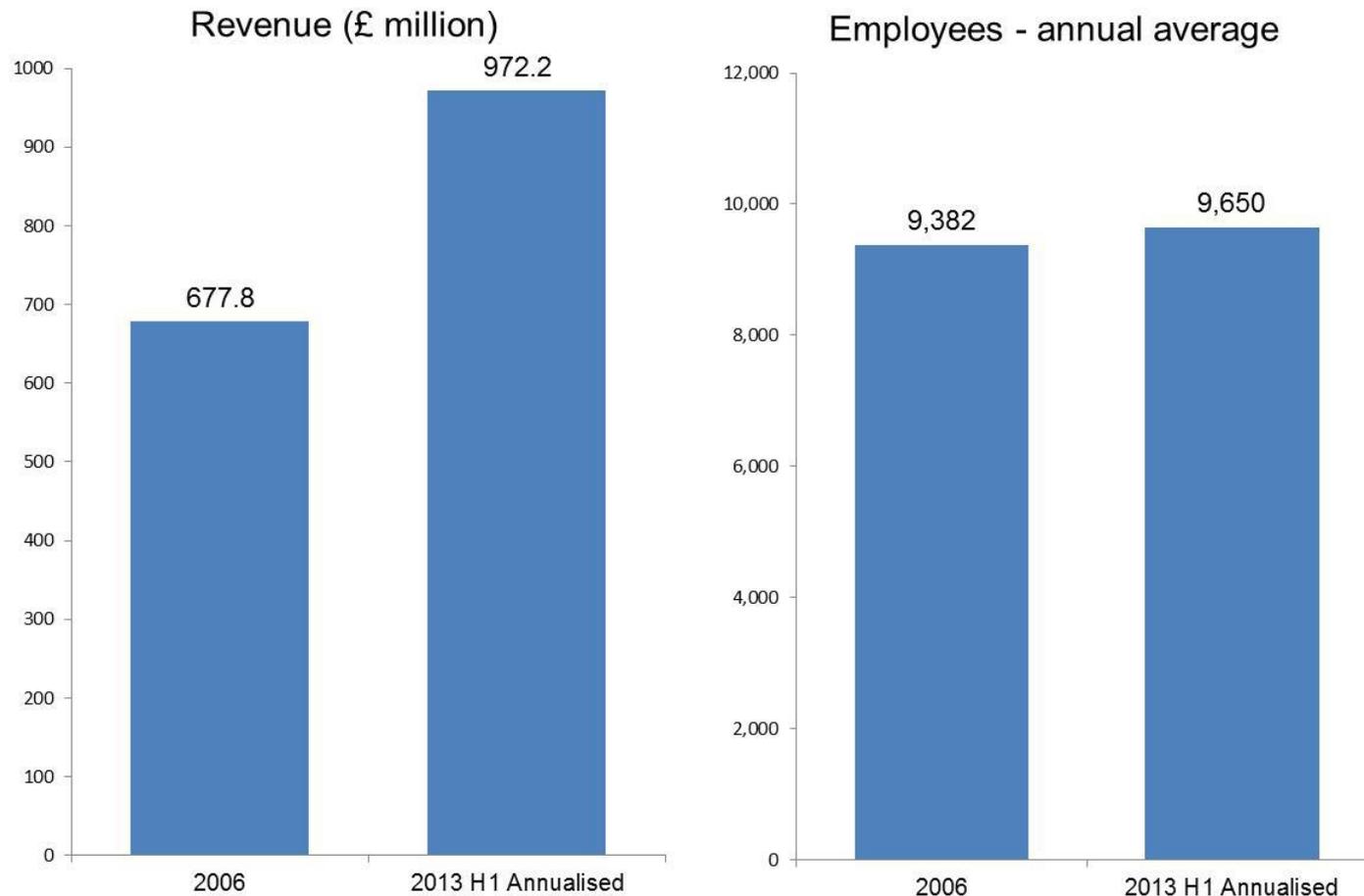


Quoted competitors - bps change in margins



Quoted competitors are SGL Carbon, Mersen and Vesuvius

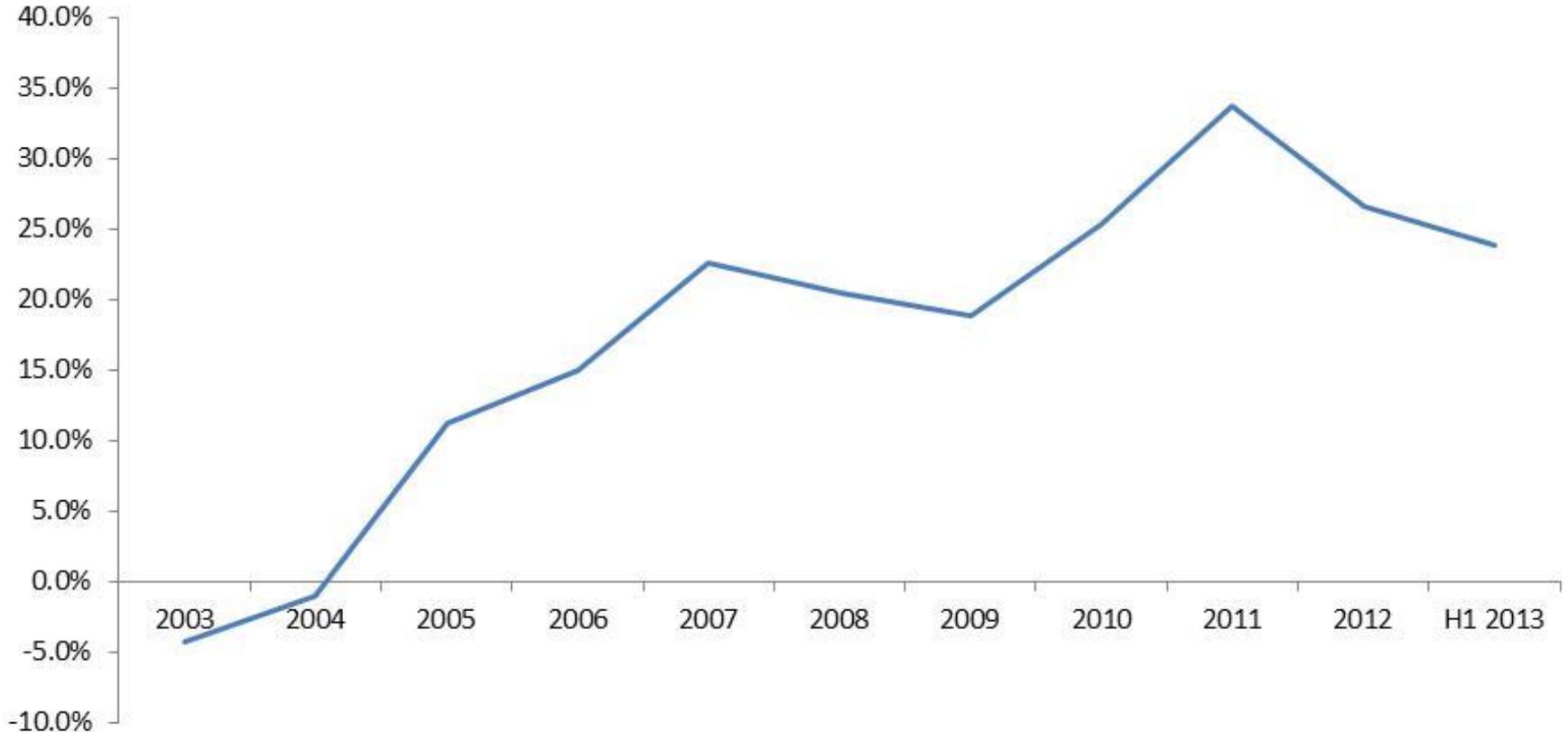
Significant sales growth with minimal additional headcount, with a highly flexible labour force



- >40% increase in revenue with <3% increase in people
- > 80% of headcount now in lower cost and/or flexible labour locations

ROCE – important measure of quality of business; key performance indicator, part of 3 year incentive plans

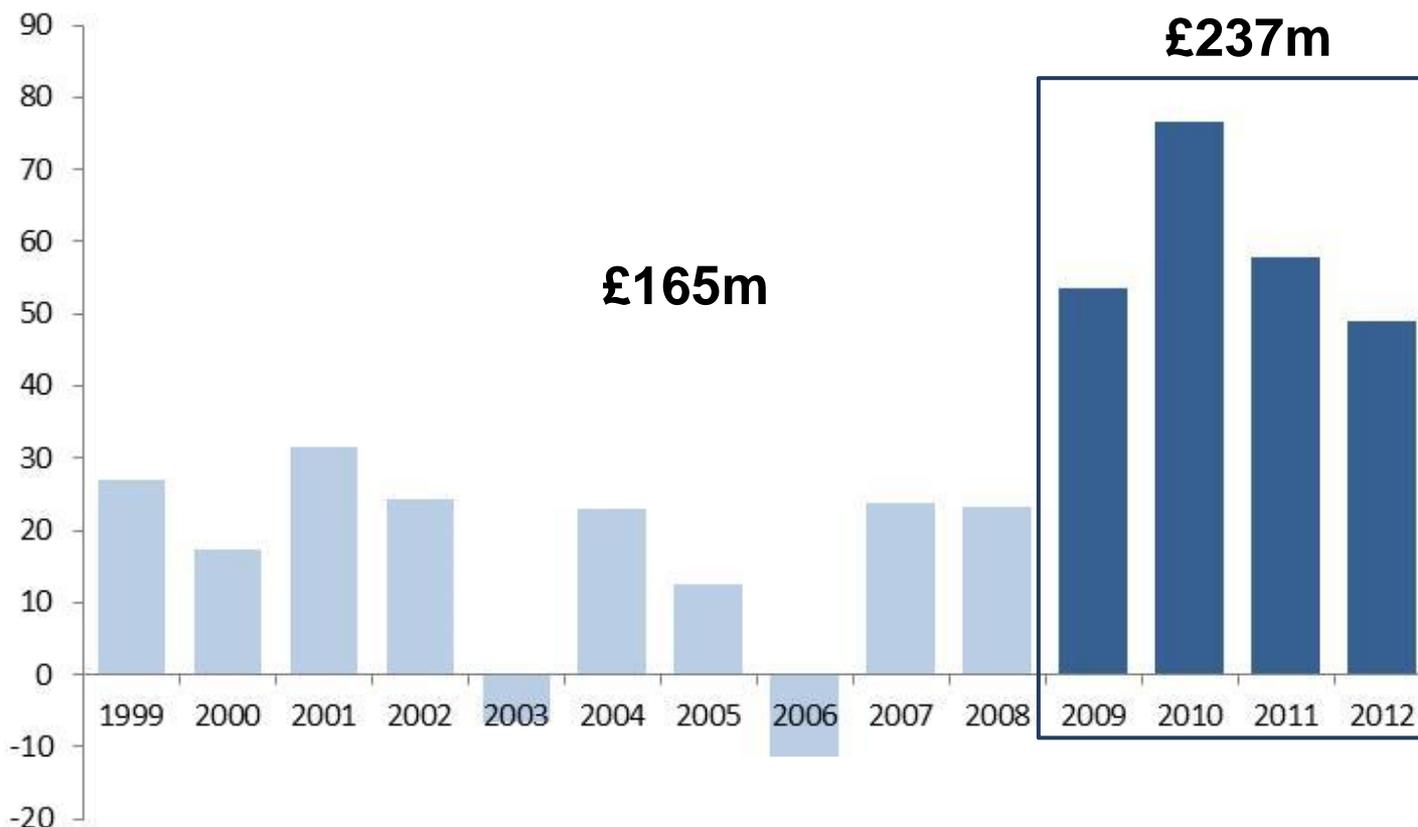
Operating ROCE %



Operating ROCE is defined as underlying operating profit divided by the sum of working capital (excluding pension liability and provisions) and the net book value of tangible assets. Goodwill and intangible assets are excluded.

Strong cash generation

Group Free Cash Flow before Dividends

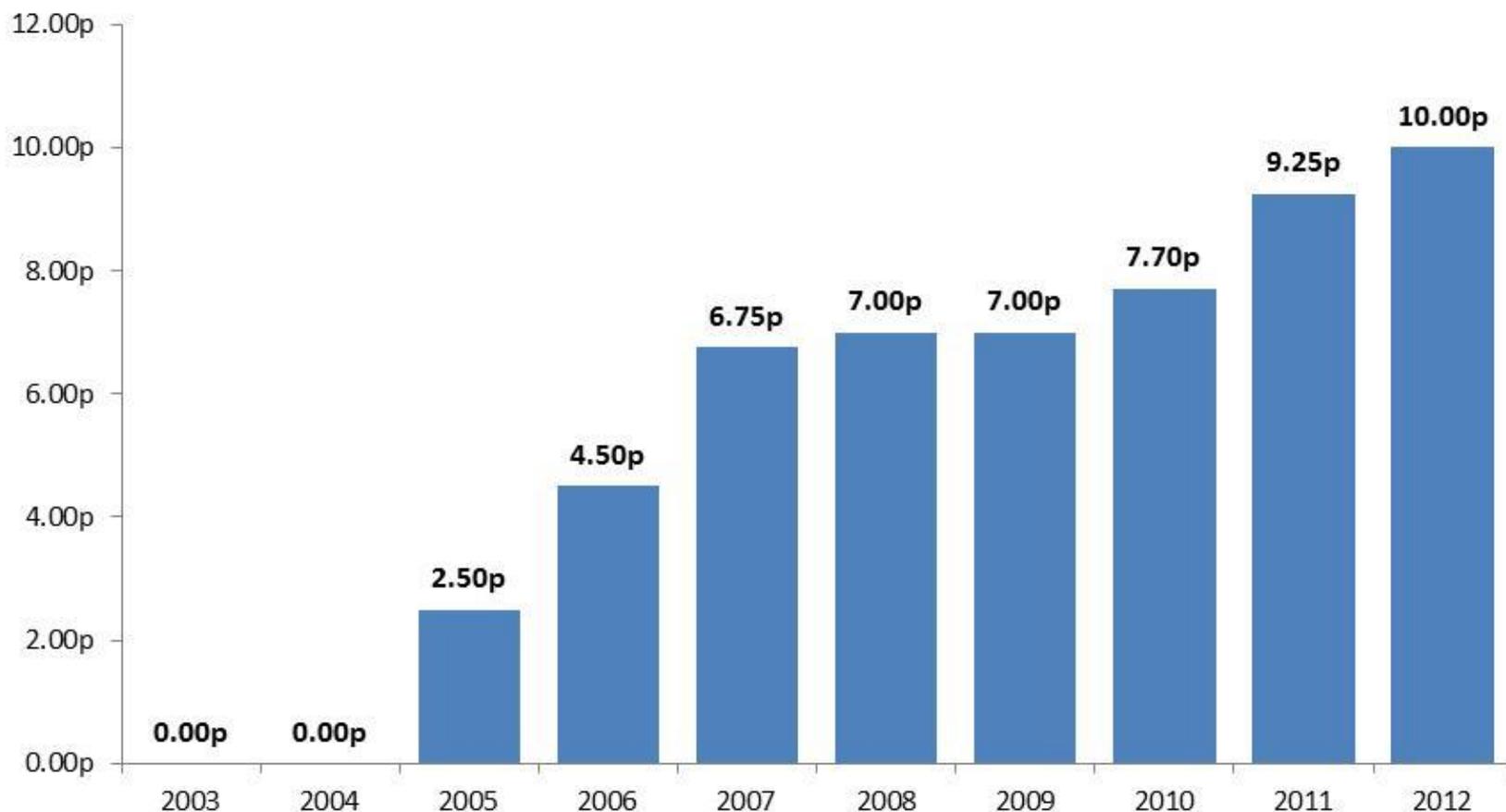


c.50% more free cash flow produced in last 4 years than in previous decade, with greater investment in our business

*Free cash flow is operating cash flow less capital expenditure and interest and tax payments

Resilient operating results and strong cash generation support progressive dividend increases

Dividends



Net Debt – low net debt and significant facility head room via banks and US\$/€ PP

- Net debt to EBITDA ratio c. 1.2 times (consensus) 2013 year end
- Free cash flow after paying dividends c.£25m
- Generating cash for further investment/pay down debt/progressive dividend increases
- Group no longer draws down on its £150m bank facility = generating cash

Summary

- Continued focus on and improvement in resilience of margins through cycle
- Improved operational flexibility of business, better leverage on revenue growth and resilience in downturns
- ROCE and cash flow improving
- Robust balance sheet – low net debt providing flexibility for investment in growth, organic and acquisition
- Sound financials providing improving returns to our shareholders

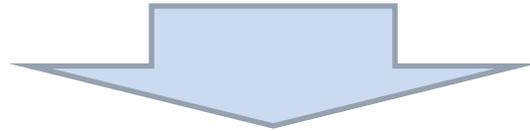
Conclusion and Q&A

Mark Robertshaw

Chief Executive Officer

Summary - The quality of the Group continues to improve

- Much stronger competitive position and differentiation
- Increasing investment in R&D and innovation creating world-leading technology position
- Simplification and streamlining of organisation structure increasing global connectivity and pace of change



- Improving quality of performance – higher and more resilient margins and fundamental improvement in cash generation levels
- Increasingly well positioned for future profitable growth and margin enhancement

Summary – looking forward

- Our strategy remains to build sustainable competitive advantage in attractive markets ...
- ... with truly differentiated products and services underpinned by world-leading technology
- The continued simplification and streamlining of the Group's structure to the "One Morgan" model has re-set our ambition and our ability to go further, faster in our portfolio transformation
- Our goal is for all our businesses and technologies to have the potential to deliver mid-teen operating profit margins

Morgan Advanced Materials Capital Markets Presentation 21st November 2013