

MAKING A
MATERIAL
DIFFERENCE

JAMES CROPPER



EST.1845

WHO WE ARE

BONDED BY A VISION FOR A BETTER FUTURE



James Cropper is a market leader in advanced materials and paper & packaging. The Group's advanced materials products incorporate pioneering non-wovens and electrochemical coatings for its customers globally, including components in fuel cells and hydrogen electrolysis. In paper & packaging, the products include bespoke coloured and embossed papers for luxury brands, specialist high end art papers and innovative moulded fibre packaging for drinks and cosmetics, replacing single use plastics.

JAMES CROPPER

PIONEERING MATERIALS TO SAFEGUARD OUR FUTURE

OUR PURPOSE

FORWARD-THINKING, RESPONSIBLE, CARING

OUR VALUES

ADVANCED MATERIALS

James Cropper Advanced Materials works at the edge of material science, creating future focused solutions across a broad portfolio of products. From ultra-fine glass non-wovens found on most commercial aircraft, to electrochemical coatings creating green hydrogen at the heart of PEM electrolyzers. James Cropper specialises in providing innovative solutions for current and next-generation technologies.



PAPER & PACKAGING

With over 178 years of experience in paper, James Cropper Paper & Packaging combines generations of craft with cutting edge material science to create brand new solutions for customers. Pioneering sustainability, colour science, and moulded fibre packaging, James Cropper is a leader in meticulously crafting unique paper products for luxury brands around the world.



POSITIONED FOR GROWTH

Our strategy is to focus on specific market sectors where we have, or can develop, a sustainable competitive advantage.

We plan to grow intentionally, by focusing on strengthening our product portfolio in growth markets and leveraging our extensive technical capabilities, manufacturing sites, and distribution networks through strategic investment in people, working capital and equipment.

We have defined and introduced six strategic priorities, building a solid foundation to drive accelerated growth.

1) Profitable growth through new customer acquisition

2) World class execution: investment in global systems and functions

3) Technology and Innovation: Centre for Innovation will include decarbonisation and waste fibres as well as exploring new ideas

4) Leaders in sustainability: recognising our responsibility to reduce and ultimately eliminate our emissions

5) Inspiring our people: building a culture of trust, cooperation and involvement

6) Build the brand: presenting a more meaningful and relevant face to our increasingly global customer base



WHY INVEST IN US?

As an organisation, we have simplified our operations to focus on growth through increased margin, operational efficiency and accelerated growth in advanced materials.

ALIGNED WITH LARGE AND GROWING END MARKETS TO DELIVER ACCELERATED GROWTH

The ongoing focus on sustainability and product differentiation drives demand for James Cropper's innovative, high-performing materials. Our addressable markets, comprising aerospace, automotive, defence, paper and luxury goods, and the hydrogen economy, are growing at 4 – 35% p.a.

STRONG RELATIONSHIPS WITH KEY MARKET COUNTERPARTS – POISED FOR MARKET GROWTH

Maintain strong relationships with customers in each market with high customer retention rates. In mature markets like aerospace, we supply products to the top manufacturers. In emerging markets, like hydrogen which is forecast for mass market adoption and major market growth in 2026-28, we have the building blocks in place through framework agreements with key counterparts and are pursuing new opportunities that could deliver a material financial benefit in the near-term.

FOCUS ON REVENUE GROWTH AND MARGIN EXPANSION

Capitalising on growth opportunities within core and emerging end-markets with an emphasis on higher margin advanced materials products, including hydrogen.

SIGNIFICANT TRACTION GAINED

POISED FOR ACCELERATED GROWTH



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SUSTAINABLE PRODUCT PORTFOLIO

ECOVEIL

ECOVEIL - DEVELOPED FOR THE COMPOSITE INDUSTRY, ECOVEIL FEATURES A RANGE OF SUSTAINABLE AND RECYCLED VEILS, INCLUDING RECYCLED CARBON FIBRE, JUTE, AND A BIO DERIVED POLYAMIDE VEIL

100%



COLOURFORM™ COMBINES THE COMPANY'S RENOWNED EXPERTISE IN FIBRE AND COLOUR TO CREATE 100% RENEWABLE AND FULLY RECYCLABLE MOULDED FIBRE PACKAGING.

700,000,000

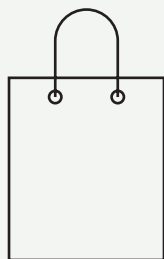


CUPCYCLING - CAPACITY TO UPCYCLE 700 MILLION COFFEE CUPS PER YEAR INTO LUXURY PAPER AND PACKAGING



END MARKETS FOR OUR PRODUCTS

PAPER & PACKAGING



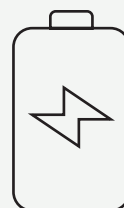
16,000,000 LUXURY RETAIL SHOPPING BAGS LAST YEAR

16,000,000

ADVANCED MATERIALS

20,000

INTEGRAL TO OVER 20,000 COMMERCIAL AIRCRAFT

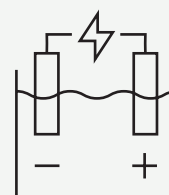


OPERATING IN OVER 60,000 FUEL CELLS

60,000

250k

250,000 COATED COMPONENTS GENERATING HYDROGEN IN PEM ELECTROLYSERS



*BASED ON CUSTOMER AND MANUFACTURING DATA AS FOR APRIL 2024



A CATALYST FOR A BETTER TOMORROW

A leading manufacturer of advanced materials for industry, with a portfolio of products ranging from 2g/m² carbon fibre veils to highly technical platinum coatings, James Cropper Advanced Materials is developing and manufacturing a wide range of materials that make a material difference, providing solutions for current and next generation technologies.

The Advanced Materials division services a number of tier 1 industry partners through our manufacturing sites in the United Kingdom and United States. Additionally, we have a vast network of distributors and agents that sell our products across North America, Europe, China, and Taiwan. We proactively work with strategic partners to create a portfolio of products that will deliver cutting edge solutions in both the near and long term.

ADVANCED MATERIALS MARKETS

Energy Solutions

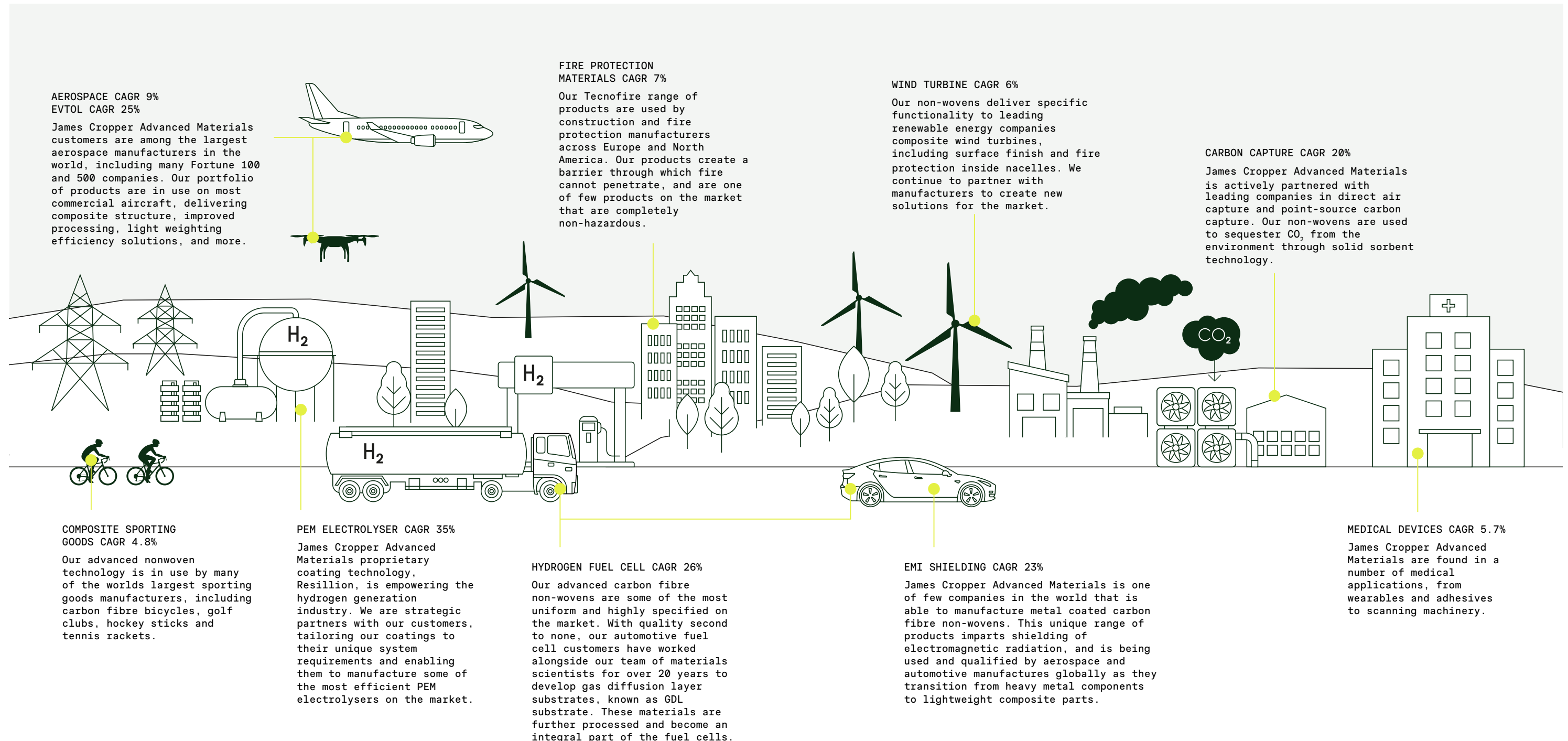
- Fuel Cell
- Electrolyser
- Batteries
- Wind Energy
- Carbon Capture

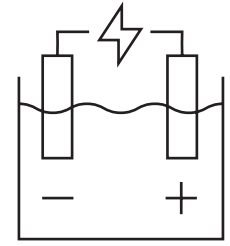
Composite Solutions

- Advanced Air Mobility
- Aerospace
- Automotive
- Construction
- Consumer Electronics
- Defence
- Industrial
- Marine
- Medical
- Sporting Goods

ADVANCED MATERIALS ECOSYSTEM

Our customers are innovators, multinationals, and conglomerates that are using James Cropper Advanced Materials to activate new technologies. These growing markets, technologies and products can be seen all around us. Cleaning the air we breath, integral to the planes passing over our heads, and enabling new energy technologies in the vehicles we drive.





PEM ELECTROLYSER

MARKET TREND

45%

REDUCTION OF EMISSIONS BY 2030

The Paris Climate Agreement has set a timeline for net zero emissions to be reduced by 45% by 2030 and reach net zero by 2050. This has led to a renewed focus on hydrogen energy as a possible solution to emissions reduction.

To meet emission reduction targets, many countries have committed billions of dollars in funding support to focus on delivering affordable clean hydrogen production, including the US Inflation Reduction Act (IRA), the UK's Green Industries Growth Accelerator (GIGA), and the European Union's Hydrogen Bank, IPCEI Hy2Tech and REPowerEU.

In the drive for net zero, PEM electrolysis is considered the optimal source of hydrogen generation due to its high efficiency, high operating density, and ability to operate at high and differential pressures. In a world of variable power from solar and wind sources, PEM electrolyser technology is well suited as compared to other electrolyser technologies.

Globally there are 11 GW of hydrogen electrolyser manufacturing capacity across PEM, SOEC, Alkaline and AEM, with a goal of reaching 170-365GW by 2030.

JAMES CROPPER'S PEM ELECTROLYSER SOLUTIONS

James Cropper has developed some of the most advanced coating solutions for PEM electrolysers.

Working closely with PEM Electrolyser OEMs, our coatings are applied to the Bi-Polar Plates, Uni-Polar Plates, Meshes, and Porous Transport Layers of the electrolyser. This coating protects the electrolyser components and extends its operating life by 60% as compared to uncoated components.

WHAT IS A PEM ELECTROLYSER?

Hydrogen electrolysers use electricity to split water into hydrogen and oxygen. They are critical for the production of low-emission hydrogen. PEM electrolysers technology delivers a number of advantages when compared to other electrolyser technologies.

- High current density
- High energy efficiency
- Dynamic operation
- High purity Hydrogen

With manufacturing sites strategically positioned to deliver coatings in the UK and US, we have capacity to deliver 3.2 GW of coated components per year. Additionally, we can scale and invest quickly as the market expands.

CAPACITY TO DELIVER

3.2 GW

OF COATED COMPONENTS PER YEAR

Lowering the cost of green hydrogen will ultimately enable PEM electrolyser technology to gain market share. Our team of electrochemists are actively creating new coating solutions which will deliver high efficiency to the electrolyser whilst lowering the overall cost of ownership

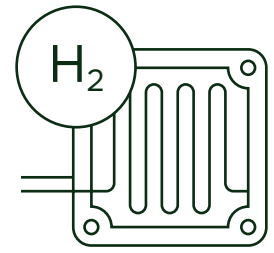
We are positioned to take advantage of considerable market growth and are collaborating with PEM electrolyser OEM's, developing scale up solutions to enable our customers to meet future demand.

+35%

PER ANNUM GROWTH IN GLOBAL PEM ELECTROLYSER MARKET FROM 2023-2035

\$280b

IN LOW-CARBON HYDROGEN SUBSIDIES IN 2023



HYDROGEN FUEL CELL

MARKET TREND

A drive for net zero by 2050, and reduced emissions is the key determinant for hydrogen vehicles. Globally, governments have set aggressive emission targets and hydrogen fuel cell vehicles are seen as a viable alternative to traditional gas-powered vehicles.

Hydrogen fuel cells are an attractive alternative due to faster refuelling when compared to battery power, offering a greater range, lower weight and thus increased payload capacity for HGVs, for example.

Globally, government policies are incentivising the adoption of hydrogen, including hydrogen fuel cells.

- US Inflation Reduction Act includes 30% investment tax credit for FCEV manufacturing projects.
- US businesses can claim \$7,500 Clean Vehicle Credit and 30% credit for commercial FCEVs.
- China aims to have 50,000 FCEVs on the road by 2025 and is offering subsidies to cities that promote hydrogen powered vehicles.

20%

HYDROGEN COULD CONTRIBUTE TO MORE THAN 20% OF ANNUAL GLOBAL EMISSIONS REDUCTIONS BY 2050.

JAMES CROPPER'S FUEL CELL SOLUTIONS

For over 20 years James Cropper has worked alongside leading manufacturers to develop and manufacture the highest quality GDL substrate. As testament, our products are currently in use in over 60,000 fuel cells around the globe. With continued government funding and drive to meet net zero targets, James Cropper Advanced Materials is actively working alongside customers to develop the next generation of fuel cell products and is well positioned to take advantage of continued growth in the market.

WHAT IS A HYDROGEN FUEL CELL?

Hydrogen fuel cells utilise the chemical energy of hydrogen to cleanly and efficiently produce electricity. Fuel cells have a variety of applications, they can provide power for systems as large as power stations and as small as laptop computers.

Fuel cells are comprised of a number of highly technical components. One of those components is known as the Gas Diffusion Layer (GDL). The GDL plays a critical role in the fuel cell, forming the basis of both anode and cathode, and is responsible for water management.

Growth will vary across the globe with more accelerated growth expected in China. James Cropper's strategic position and partnerships in the region will put us in a strong place to take advantage of fuel cell market growth across Asia and the rest of the world.

+26%

PER ANNUM GROWTH IN GLOBAL FUEL CELL MARKET ROM 2023-2030

Our team of materials scientists are actively working with customers and fuel cell manufacturers to deliver next generation GDL substrates.



Four manufacturing and converting sites globally