



The small company specialists

# COMPANY INFORMATION

## CMR Fuel Cells PLC (LSE:CMF)

Info sheet compiled March 2007

Company Eye Ranking

20/50

### EDITOR'S NOTE

CMR Fuel Cells Limited is a UK developer of fuel cell stacks for portable and small stationary power generation applications. The company intends to become a leading supplier of fuel cell technology and products, based on its simple but revolutionary stack architecture and through its relationships with other key organisations.

Fuel cells (FC) are electrochemical devices that convert fuel (e.g. hydrogen, methanol, methane) directly into

electricity at higher efficiency than internal combustion engines and have the potential for higher power storage capacity than lithium-ion batteries. Fuel cells have the potential to become the dominant technology for automotive engines, power stations and the power packs for portable electronics.

Whilst the area of operations is one of possibilities, the opinion of CMR by Company Eye is neutral.

### CHART; P/E RATIO



### FUNDAMENTALS

Company Name	CMR Fuel Cells Plc
Current Price	147.5 p.
Status	AIM
Market Cap	£29.95 m.
Price-To-Book Ratio	2.7
Shares in Issue	20,304,846 m.
Activities	fuel cell systems
Sector	Electrical Components & Equipment
Corporate advisor	RSM Robson Rhodes LLP
Registrar	Computershare Investor Services PLC

### HISTORY

CMR was spun out of Generics in October of 2003 and is developing a new and radical approach to fuel cell design which has the potential to accelerate the commercial penetration of fuel cells in a comprehensive range of power generation and power supply applications.

\* Winner 2005 Carbon Trust Overall Innovator of the year award

### KEY POINTS

\* Winner 2005 Carbon Trust Individual and Small Businesses award

\* Selected by the World Economic Forum as a Technology Pioneer for 2006

\* Selected by Harvard Business School as one of 25 companies 'most likely to change our world by 2010'

\* Selected as a Red Herring Top 100 Europe company - (previous Red Herring winners include Google and ebay)

### THE BUSINESS

CMR is a radical new fuel cell stack technology that has the promise of unlocking this enormous market potential. CMR's patented design architecture aims to make fuel cells 10 times smaller and more powerful and up to 80% cheaper than competing products, thereby overcoming the key hurdles delaying mass-market global sales.

CMR is developing fuel cell stacks for use in applications such as battery chargers, auxiliary power units, laptops, power tools, robotic devices, portable generators, and portable military applications.



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### ACTIVITIES

**15<sup>th</sup> June 2006** - CMR's engineering team has successfully developed a mixed-reactant cell which demonstrates consistent cell area power densities in excess of 25mW/cm<sup>2</sup> with a sub millimetre cell repeat distance, using a non-platinum methanol-tolerant cathode catalyst. Although this milestone represented a technically challenging performance development for CMR's development team it has been achieved ahead of schedule and the Company is now routinely delivering cells with these power densities at a voltage of 300mV.

**20<sup>th</sup> April 2006** - The collaboration will work to develop porous electrolyte membranes that eliminate the requirement for bulky, inactive components found in traditional fuel cells such as flow field plates and other balance of plant components. The use of porous membranes is a world first for the fuel cell industry and is protected by CMR's core intellectual property. By developing stacks in this way, CMR is seeking to exploit its patented 'mixed reactant flow-through' architecture to mass produce fuel cells capable of delivering the high

power densities required to produce a commercially viable power delivery system with the potential to replace traditional lithium ion batteries.

**19 May 2005** - CMR Fuel Cells Ltd, announced a technology break-through which is set to make mass-market fuel cells commercially viable for the first time. Through this latest advancement, OEMs and manufacturers will have the option to integrate cost effective, long running and energy efficient fuel cell solutions into a wide range of consumer electronic products.

The Cambridge based company has developed a working prototype of its unique, patented Compact Mixed Reactant (CMR) stack which is poised to deliver the low cost, long run-time power solutions that today's power hungry portable electronic products demand. CMR technology is scalable and targeted at a diverse range of electronic devices, from laptop computers, through power tools and back-up power supplies, right up to electric scooters and cars.

### LIST OF CLIENTS

**Conduit Ventures**, a leading energy technology venture capital firm specialising in fuel cells and related hydrogen technologies.

**Xaar plc** a leading supplier of industrial inkjet printheads, inks and peripheral equipment to commercial printing and industrial manufacturing markets.

**Solvay SA** is an International Pharmaceutical and Chemicals Group listed on the Euronext Stock Exchange and has annual sales of over Euro8.6billion, employs 30,000 people in 50 countries and has spent in excess of Euro1.1billion on Research and Development in the past two years.

### DEVELOPMENT HIGHLIGHTS

**27 March 2006** - CMR Fuel Cells plc, announce that one of its core patents has been granted in China.

The management considers that the Chinese patent system represents one of the most challenging in the world and thus the successful grant of this patent strengthens the Boards confidence of further successful grants in China and elsewhere.

**5 December 2005** - CMR Fuel Cells Ltd. Selected as New Class of Technology Pioneer for 2006 by World Economic Forum.

**25 April 2005** - CMR Fuel Cells wins Carbon Trust 2005

Innovator of the year award.

**22 April 2005** - CMR Fuel Cells selected for prestigious Red Herring's Top 100

**18 November 2004** - CMR Fuel Cells joins Fuel Cell Markets Ltd.

**27 August 2004** - CMR promising to provide fuel cells up to 90% smaller, lighter, and less expensive than current devices. CMR technology uses mixed reactants and hydrodynamic flow through porous cell structures to significantly reduce fuel-cell material requirements.

### EXPANSION

CMR has entered into a non-exclusive joint development collaboration with European chemicals major player, Solvay SA ('Solvay'). As a result Solvay New Business Development division will work to produce high performance porous membranes for use in CMR's unique high power density 'compact mixed-reactant' fuel cell stacks.

Solvay SA is an International Pharmaceutical and Chemicals Group listed on the Euronext Stock Exchange and has annual sales of over €8.6billion, employs 30,000 people in 50 countries and has spent in excess of €1.4billion on Research and Development in the past two years.



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Patents have been granted in Australia and China which protect CMR's technology and patent examination is

currently underway in the USA with European examination expected within the next twelve months.

### NEW GROWTH OPPORTUNITIES

Far eastern markets are expected to lead mass adoption of fuel cell technology, where consumers demand more features and functions from portable devices and conventional batteries do not have enough power capacity when these features are used. CMR is developing commercial relationships with a number of major electronics OEM's in the region and expects the grant of this core patent to strengthen its position in possible future

collaborative projects. It is the expectation of the management that in the longer term the Chinese market will represent a substantial commercial opportunity for the company's technology and that by building an initial commercial presence in the region, coupled by strong patent protection, CMR will be strongly positioned to enter into various application markets in the region as they emerge.

### TARGET MARKET

- The Company is looking to set up regional coverage in the US and Japan.
- Mid-term goal is to see consumer products being deployed using fuel cells which themselves use CMR technology.

- The Company is currently building relationships in the supply chain so that it can supply elements of their technology right up to complete fuel cell stacks to those that are going to integrate them and produce real power solutions for OEM products

### DIRECTORS

**John Halfpenny, Chief Executive Officer** of CMR Fuel Cells, is an experienced entrepreneur with a successful track record and significant experience in the consumer electronics sector. He founded and subsequently sold: Micrologic Solutions to ARM plc, Telephone Solutions Ltd, HII Ltd, and Enterprise Network Sciences Ltd. to various trade buyers. He was director of embedded software at ARM plc and CEO of Splashpower. He started his career with Texas Instruments in 1982. John has a Masters degree from Cambridge University in Engineering Science.

**Michael Evans, Engineering Director and co-founder** of CMR, Michael is a serial innovator with more than 12 years experience in mass consumer product design and development and project management at Generics Group, Britax and PDD. He co-founded Design Equity Ltd. Michael has a B.Sc.(hons) degree in Design for Manufacture at Loughborough University and MA in Industrial Design at DeMontford University.

**Michael Priestnall, Chief Technology Officer**, co-founder of CMR and previously head of Energy Consulting

at the Generics Group. Michael is a senior figure in the fuel cell industry, co-founding the Grove Fuel Cell Symposium in the late 1980's, representing the UK at the IEA on fuel cells, and heading up Cookson Group's ceramic fuel cell materials development program in the 1990's. Michael was a British Gas Research Fellow at Imperial College and has Masters & Bachelors degrees in Energy Engineering and Chemistry from Cranfield, Massachusetts and East Anglia Universities.

**Prof. Gordon Edge, Chairman of the Board.** Professor Edge is also Chairman of Generics Group and one of the leading business and technology figures in Britain. Gordon is a Chartered Engineer (CEng), a Member of the Institution of Electrical Engineers (MIEE), and a Fellow of the Royal Swedish Academy of Engineering Sciences (IVA). He is a member of the Advisory Board of Cambridge University, Department of Materials Science, The Cambridge University - MIT Institute and The Cambridge University Technology Transfer Group.

### GROWTH POTENTIAL AND RETURNS

CMR's unique architecture can be applied in a range of fuel cell applications including portable electronics, combined heat and power and automotive to deliver significant improvements in power density performances

using a range of chemistries. However, it is the intention of the Board to initially commercialise the Company's technology within the consumer



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electronics industry where there is sustained and growing demand for smaller, cheaper, longer running power solutions for portable electronics devices based on direct methanol fuel cells. This demand is

being driven by the increasing power requirements of portable electronics devices which have outgrown incremental improvements in the performances of traditional battery chemistries.

## SHAREHOLDINGS

	Number	%
Generics Group	2,234,540	11

	Number	%
Gordon Crawford (Chairman)	852273	4.2
John Halfpenny (Chief Executive)	82110	0.4

## FINANCIAL HISTORY

### Profit and loss account for year ended 31st Dec 2006

£000	Year ended 31st Dec 2006	Year ended 31st Dec 2005
Turnover	-	-
Share option costs	(726)	(387)
Other administrative expenses	(1,825)	(679)
Total Administrative expenses	(2,551)	(1,066)
Other operating income	-	93
Operating loss	(2,551)	(973)
Interest receivable	523	52
Loss on ordinary activities before taxation	(2,028)	(921)
Tax on profit on ordinary activities	-	-
Loss for financial year	(2,028)	(921)
Basic and diluted loss per share	(9.99)p	(6.64)p

### Balance Sheet as at 31st December 2006

£'000	As at 31st December 2006	As at 31st December 2005
Intangible assets	41	63
Tangible assets	539	47
Fixed assets	580	110
Debtors	167	95
Cash at bank and in hand	10,587	12,640
Current assets	10,754	12,735
Creditors: amounts falling due within one year	(163)	(372)
Net current assets	10,591	12,363
Net assets	11,171	12,473
Capital and reserves		
Called up share capital	2,030	2,030
Share premium account	9,776	9,776
Other reserve	1,335	1,335
Profit and loss account	(1,970)	(668)
Shareholders' funds	11,171	12,473

## ROLLING EPS



## P/E RATIO



## RISK FACTORS

Cost is a barrier for all types of fuel cells across all applications. Cost reductions must be realized in raw materials, manufacturing of fuel cell stacks and components, and purchased components. The amount of cost reductions required depends on

the type of fuel cell and application. Raw materials costs must be reduced by a combination of alternative (lower cost) materials, quantity pricing, and reduction in required amounts of expensive materials.



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Manufacturing cost reductions can be partly realized from classical learning curve gains. However, it will likely require introduction of new and innovative manufacturing technologies or designs requiring simpler manufacturing processes. Because of the nonstandard size and specialized requirements of components for fuel cell systems, costs are unusually high at low volumes.

The cost issue is particularly severe for transportation fuel cell systems.

This cost represents today's current fuel cell performance scaled to high volume manufacturing; actual cost to achieve parity with the performance, size and weight of a conventional vehicle is higher because current technology does not meet those requirements.

## OPORTUNITY FOR INVESTORS

CMR's revolutionary approach to designing and building fuel cells is expected to enable the production of fuel cells that are substantially cheaper and smaller than current fuel cells that are under development using conventional cell architectures.

CMR's patented technology is based around a revolutionary approach to fuel cell design in which, contrary to conventional methodologies, the fuel and air are mixed together prior to being passed through a

uniquely compact cell stack containing perforated membranes coated with selective catalysts. In doing this, CMR's technology eliminates the need for two separate flow paths through fuel cell stack which consequently leads to a large reduction in the number of component pieces needed in fuel cell design, lowering the cost and size which makes the architecture ideal for mass manufacture and widespread commercialisation.

## CONTACT

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United Kingdom

## RANKING

	Ranking out of 50 (50 being highest)
<b>Business model - competitive advantage</b>	
Competition	20
Customers	22
Low cost	19
Management	
- corporate governance	20
- quality	19
- shareholding	
Product	22
Sector	
<b>Financial evaluation</b>	
Early and profitable exit potential	18
Financial strength	
- cash flow	
- conservative accounting	
- need for funding	
Growth at a reasonable price	20
Risk	20
<b>Overall average rating</b>	<b>20</b>



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### FURTHER INFORMATION ABOUT THE RANKING

#### Competitive advantage

Companies are assessed according to their business model and how this translates into strong and sustainable competitive advantage. This can only be achieved with low cost activities and doing something different from the competition. This 'differentiation' must add value to the customer who is then prepared to pay a premium price. The differentiation is most obvious in the product but it can exist anywhere in the company's value chain of activities, such as

easy payment terms, convenient locations, superior management, and quality of suppliers. Companies that do not achieve competitive advantage because they have the same costs and/or do the same as the competition are marooned in a profitless zone. They helplessly try to compete with the one weapon left open to them, which is the disaster of cutting prices and typically leads to similar retaliation by competitors, with disastrous results.

### THE FOLLOWING ELABORATES ON THE RANKING CRITERIA

#### Competition

How intense is the competition and are there barriers to entry?

#### Customers

Is the company controlling its customers and therefore its revenue streams? Are customers glued to the company and providing valuable and reliable recurring revenue or are they one-off, or 'transactional', providing shaky revenue? The company should ideally have weak and numerous customers.

#### Low costs

Has the company achieved low cost activities thus allowing more of the top line revenue to trickle down to the profit line?

#### Management

Is there good corporate governance? What is the quality of management, as this is crucial to any business? Are the directors' shareholdings significant but not so large that they control the company?

#### Product

Is the product different from the competition and adds value to the customer? Are there threatening substitutes? Does it have a powerful brand?

#### Sector

Is the company in an attractive sector that is profitable and adds value?

Services tend to be more protected than products from international competition. Does the sector ride the tailwind of multi-year mega trends? Is the business well positioned in the current stage of the economic cycle? What is its resistance to a recession?

#### Profitable exit potential

What is the potential for selling the share profitably? This is more applicable to pre-flotation investments.

#### Financial strength

Does the company have strong cash flow, the lifeblood of any business? Is the accounting conservative or is there 'accounting for growth'? Does it need more funding? Is the profit margin healthy and at least equal to its sector? What has been the track record in the growth rate of profits?

#### Growth at a reasonable price

Does the share offer growth at a reasonable price? This is commonly measured using the PEG. This is the price earnings ratio (PE) divided by the forecast growth rate in earnings per share (EPS). The lower the PEG the better and under 1.0 is considered good for a blue chip company and under 0.6 for a small growth company.

#### Risk

What is the risk rating of the share due to factors such as new markets, its business model and strategies?

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