

Catalysts

Catalysts Division encompasses three global businesses: Environmental Catalysts and Technologies (ECT), Process Catalysts and Technologies (PCT) and Fuel Cells.

Environmental Catalysts and Technologies

ECT, Johnson Matthey's worldwide autocatalyst, heavy duty diesel (HDD) and stationary source emission control business, performed well despite disappointing car markets in Europe and the US. Our autocatalyst business in Asia benefited from strong growth in the Chinese vehicle market where light vehicle sales were 37% up on 2003 and we are increasing capacity at our Shanghai plant. Car sales in Europe were flat on last year, although sales of diesel vehicles continued to grow. Diesels now account for 46% of all cars sold in Europe and our leading diesel emission control technology has enabled us to increase our share of this growing market. In the US our business was down as our domestic customers lost market share and they reduced their demand for autocatalysts. Whilst oxidation catalysts remain the key current product for diesel cars there is increasing interest among car makers in the use of soot filter technology to control particulate emissions, an area where we are winning new business. During the year we gained a major share of a large HDD retrofit programme in Japan and sales of HDD emission control devices were also well ahead of last year in the US and Europe. New regulations in both Europe and the US will result in original equipment makers fitting exhaust pollution control technologies to new HDD vehicles from 2005. In recent years we have invested in significant resources to support them in their development activities and this is beginning to result in new business. Our R&D centre in Japan was established ten years ago to support Japanese automakers and their global

operations. This year we commissioned our first manufacturing capacity in Japan within our existing facility. During the year further expansion was carried out at our factory in South Africa and we completed a major upgrade of our European technology centre, including state of the art engine and vehicle testing facilities. This investment will allow us to continue to develop market leading technologies to meet forthcoming emission legislation.

Process Catalysts and Technologies

PCT performed well in 2003/04 with sales strongly ahead of last year, reflecting a full year's contribution from the former Syntex businesses. During the year we completed the reorganisation of PCT, fully integrating the former Syntex businesses and aligning all of its activities with its global markets to which we offer a full range of both base metal and platinum group metal (pgm) catalysts. In March 2004 we further enhanced our product portfolio with the acquisition of AMC, the market leading supplier of Sponge Nickel™ catalysts which are extensively used in the pharmaceutical and speciality chemicals industries and are often the first catalysts to be evaluated when designing a new chemical process. The former Syntex businesses have continued to perform in line with our expectations. The AMOG (ammonia, methanol, oil and gas) business achieved strong sales growth in the oil refineries market, although sales to the North American ammonia market were depressed by high natural gas feedstock prices. In gas to liquids (GTL) we have increased our commitment to the development of catalyst technology and have sold our first commercial quantities of Fischer Tropsch catalyst to a leader in the GTL market. The PCEO (polymers, chemical catalysts, and edible oils) business was adversely affected by the falling US dollar and



rising nickel prices but has continued to invest, expanding capacity to meet future growth plans. The pgm catalyst business also performed very well with particularly good growth in sales of heterogeneous catalysts. During the year we completed construction of a pgm catalyst manufacturing plant in India to serve rapidly growing demand in the region, particularly from the pharmaceutical industry. The pgm refining business, however, was down with activity throughout the year impacted by low palladium and rhodium prices. The Research Chemicals business once again achieved good growth. It continued to strengthen its distribution channels and during the year completed expansion of its North American facility.

Fuel Cells The Fuel Cells business made good progress during the year and is developing very much in line with our plans. Our dedicated membrane electrode assembly (MEA) manufacturing facility at Swindon, UK is providing a world class rapid prototyping and integrated MEA manufacturing service to our customers and preparations are in place to further expand capacity in time to meet growth in customer demand. The automobile industry continues to invest heavily in fuel cells and demonstration fleets continue to expand around the world. Johnson Matthey Fuel Cells has been awarded £3.2 million in funding by the UK Government for a three year programme to develop the next generation of MEAs for automotive applications.

Turnover **£1,143m**

£1,083m (2003)

Operating profit **£109.2m**

£95.3m (2003)

Catalysts Division

produced a good performance in 2003/04
with operating profits 15% up on prior year
at **£109.2 million**

Research & Development

ECT's R&D is focused on enhancing our ability to cost effectively meet promulgated emissions standards. This may result in offering a product that uses 10% less precious metal than our competition, it might mean that we can meet standards with a smaller catalytic converter or the depth of our understanding of emission control systems may enable a customer to solve an emissions problem without major re-engineering. Whatever the benefits of buying from Johnson Matthey, our commitment to investing in technology is clear. PCT's R&D targets the development of both novel catalysts and scaleable, well defined preparative methods. One programme for the development of highly selective catalysts and ligands for specialised fine chemical applications has led to a new range of immobilised precious metal homogeneous catalysts which demonstrate good chiral selectivity for a number of commercially important reactions. PCT has also initiated a major new R&D programme in the area of GTL catalyst technology for the manufacture of sulphur free diesel fuel from natural gas.

