

Press Information “MAHLE Expands Powertrain Capabilities”

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1. MAHLE Overview

The MAHLE Group with its Headquarter in Stuttgart/Germany is a leading global manufacturer of engine components and filter systems. With approximately 38,000 employees in 70 production plants worldwide, MAHLE achieved sales of more than 3.7 billion euros in 2004, positioning the company among the top 30 Tier 1 automotive suppliers globally.

The History

MAHLE was founded in Stuttgart/Germany in 1920. At that time MAHLE had a few employees only who performed engine tests. These employees already developed the first aluminium and magnesium pistons, when these materials were very rarely used in engine manufacturing.

MAHLE gathered its first experience abroad in the early 60s of the last century, with investments in France and Brazil. During the economic upswing of the 60s and 70s, the steady expansion of production plants, above all in Germany, followed. At that time MAHLE still believed to be able to also supply all international customers from Germany, using a highly-efficient and qualitatively very high-grade production. But in the second half of the 1970s, the change followed early enough. Along with an expansion of the product range, the first big and independent plants were built abroad. In addition to a further location in Brazil, the important step towards North America was taken. The large US market and the manufacturers headquartered there, demanded local production and supply. Two plants in Tennessee and Connecticut started production shortly in succession. But also in Europe, the other Western European countries were gradually approached. By 1980, we had another location in France, two production plants in Spain, and a starting filter production in Southern Austria. By this, the first brave steps to far away regions were taken. They formed the basis for a global production network

New European locations in Portugal and Poland were built, at the same time a rapid growth in North and South America took place. Four other plants in Mexico, the US, and Canada have complemented the production network of MAHLE for the NAFTA region.

And in Brazil, MAHLE has continued to expand its production in the last several years as well as multiplied its capacities and production locations.

The leap towards Asia, which we considered a particular challenge, took place in the last five years. Selective acquisitions and new own plants enable us today to access the markets in Japan, China, Korea, India, Thailand, and the Philippines. Even in a new plant in Australia, MAHLE produces complete system units and modules for the big car manufactures. Thus, MAHLE has a wide spread production network on four continents.

Recently, at the beginning of 2005, Cosworth Technology Ltd. with its subsidiaries was acquired and joins the MAHLE Group as of July 1st as MAHLE Powertrain,

MAHLE Structure

The MAHLE Group is structured into five Product Lines and six Profit Centers. The five Product Lines are:

- Piston Systems
- Cylinder Components
- Valve Train Systems
- Air Management Systems
- Liquid Management Systems.

The focus is placed entirely on the combustion engine. The Research and Development, sales and procurement activities are organised across the Product Lines and combined at corporate departments. Our sales activities are organised into globally responsible key accounts and are essentially divided into four sales management units and regional sales offices. The location of the customer's headquarters determines where the key account manager is based.

Due to the very specific customer and market structure, the following divisions are set up into global Profit Centers:

- Aftermarket
- Small Engine Components
- Large Engine Components
- Motorsports
- Industrial Filtration
- Engineering Services

Research and Development

MAHLE has six Research and Development Centers: in Stuttgart, Northampton, Detroit, Novi, São Paulo and Tokyo. End of this year the seventh will be opened in Shanghai. There are more than 2,000 engineers worldwide involved in fundamental research work and development of the combustion engine.

Sales

The sales increased from 2.4 billion euros in the year 2000 to 3,7 billion euros in 2004 which illustrates a 60 percent rise. This makes MAHLE one of the top 30 automotive suppliers world-wide – and No. 1 in the engine and powertrain segment.

Product Range

MAHLE specialises in: the basic engine with its core products pistons and powertrain components, the cylinder head with complete valve train, and related products focusing on media guidance, media processing and filtration. By media it is referred to air, oil and fuel, for example. With this product range MAHLE offers a much more comprehensive product portfolio than any other engine component manufacturer.

2. Rationale for Cosworth Technology Acquisition

MAHLE has been interested in acquiring the Cosworth Technology Group for the following reasons:

The 1st Tier suppliers are increasingly loaded with product development work. The customers expect more and more turnkey system solutions from their leading suppliers. Despite the rapid expansion of MAHLE's global R&D capacities, the need for further powertrain and engine engineering capacities became obvious.

MAHLE wanted to broaden its product range of engine hardware with engineering services. This step will create a unique business proposition for MAHLE in the long run – from engineering services to integrated powertrain/engine hardware.

The need to compliment metal hardware know-how with calibration/application know-how as well as expertise in engine electronics forms the future powertrain/engine system development.

Further acquisition reasons were Cosworth's existing manufacturing capabilities for cylinder head systems/modules and engine assembly for small/medium lot sizes as well as special complex castings. This compliments to MAHLE's Product Line Valve Train Systems. Now MAHLE can offer a complete cylinder head module – from engineering expertise to module supply.

3. Future Prospects

The business proposition for MAHLE and MAHLE Powertrain in particular:

Although the general business outlook for the automotive industry – at least in Europe and North America – remains stagnant or even depressed - MAHLE could gain significant potential customer interest with regard to the services and products that MAHLE Powertrain offers.

Becoming part of the world's leading powertrain/engine component/system supplier MAHLE, is a much better and independent starting point to offer its products than being part of a major OE Group. In the past it was nearly impossible to get engineering contracts from competitors, this hurdle is taken and the MAHLE global sales/engineering network has already established promising and exciting new customer contacts.

The name and brand of Cosworth is certainly a value of its own. The successful racing history and primarily the world-famous F1 DFV V8 engine of the 60/70/80 is a glamorous part of motor industry. However, the brand name Cosworth was never part of the Audi/MAHLE deal, because of the fact that Audi never owned the branding rights. Consequently, it was just a matter of time that a new name was necessary. Cosworth Technology will become MAHLE Powertrain as of July 1st and positive feedback from our world-wide customers confirms this step. MAHLE has a very strong and solid brand image in the entire automotive industry. Thereby, MAHLE Powertrain achieves a new level of independence. Also Cosworth Technology Management and most of the employees welcome the name change as they understand the old limitations and value the new opportunities.

4. UK Operation Today

In 1998, Vickers sold Cosworth, while Ford AG took the racing/motorsport branch, named Cosworth Racing and AUDI AG bought Cosworth Technology, mainly dealing with roadworthy high performance engines, engine electronics and diagnostics.

MAHLE Powertrain with its roughly 650 employees, has three locations in England:

- Northampton (Engineering)
- Wellingborough (Manufacturing)
- Worcester (Casting)

and one facility in Novi/Michigan (Engineering/Electronics) in USA.

MAHLE Powertrain is the only “Integrated Powertrain Supplier”, being able to deliver solutions from first concepts to completely developed and validated engines, including the production of the hardware, considerably enhanced through MAHLE’s product and production power, to the customer base. MAHLE Powertrain will support its customers in all fields of engineering, like development of engine modules, improvement of existing engines with regard to power output, NVH-characteristics, emissions etc. as well as a wide range of testing and diagnostic electronics. In addition MAHLE Powertrain offers a great deal of expertise in Powertrain Supply Solutions (PSS) – the adaptation of existing engines to other vehicles.

Achievements of the past years

- Derivates of Ford cars like the Focus ST170,
- Co-development and complete assembly of the last generation of Audi’s RS4 and RS6 engines
- Complete assembly of the Aston Martin V12 engine
- Design and building of a V12 demonstrator engine for GM (not realised)

5. Vision for Future Development

MAHLE Powertrain will enhance the product development capabilities of the MAHLE Group, especially with regard to engine systems and modules as well as electronics/mechatronics. It will actively support MAHLE's transfer from a component supplier to a developer and supplier of system solutions.

MAHLE Powertrain will benefit from MAHLE's global sales network and will have access to much wider customer base.

Together, MAHLE will move into new areas of advanced engineering such as new fuels, new combustion systems, new engine control solutions and will develop its capabilities in the field of modern light vehicle diesel technology.

6. Manufacturing Capabilities

MAHLE Powertrain facilities are based at its Wellingborough and Worcester locations in the UK providing solutions to an increasingly complex market for powertrain component machining, powertrain assembly and high quality, high accuracy durable aluminium castings.

Since the mid-80's these facilities have been supplying important products to many of the major OEM's including Audi with Audi Hungaria, Aston Martin Lagonda, Ford Motor Company, DaimlerChrysler's Mercedes-Benz, General Motors, Rolls-Royce, Bentley Motors, Perkins Shibaura and more.

The aluminium foundry operations at Worcester have recently been restructured. The former "Cos IV" facility produced castings for the higher volume markets and although the castings themselves overcame complex and challenging design requirements and exceeded quality expectations, but a sufficiently high utilisation of the foundry for it to be cost effective could not be achieved. MAHLE Powertrain's strategy now is to concentrate on the lower volume market where the process is ideally suited to the special niche products, where design solutions, material integrity and product performance are appropriately balanced with production costs. This will provide a value-for-money proposition to both the engineering and purchasing aspirations of customers.

The Product Development Centre at Worcester is currently producing V12 cylinder head and block castings for the Aston Martin DB9 and Vanquish engines as well as lower volume specialist castings for racing applications. Further capacity is being funded and developed for potential new products and customers consistent with our perception of a clear market demand for them.

At both facilities, a well-trained, experienced and flexible work-force can adapt to changing requirements. The Wellingborough machining and assembly plant has 120 employees and the majority are operators and technicians supported by experienced production, quality and logistics

engineers and staff. The Product Development Centre has a head count of 60.

To provide an appreciation of the current size of the manufacturing organisation the machining and assembly operations extends to 11,000 square metre on the Park Farm Estate:

- Aluminium machining, powertrain assembly and test occupies 4,500 square metre.
- 5,000 square metre is utilised for cast iron machining of cylinder heads and blocks for JCB.
- Logistics management centre and past model spares support operation on 1,750 square metre.
- Castings operation occupies 2,500 square metre most of which is given over to casting production with the remainder utilised for offices and technical support including metrology, inspection, x-ray and a process simulation suite.

MAHLE Powertrain is structured to provide flexible solutions in an increasingly complex and changeable global powertrain industry. The source of our success to-date is world-class manufacturing and global solutions that meet customer aspirations. Whatever the programme volume, life-cycle, or complexity, MAHLE Powertrain offers experience, options and concepts not always available within a customer's own environment or elsewhere in the supplier base.

In summary this provides:

- Fast and flexible processes
- Shorter production lead-times
- Flexible volume and prototype capability
- Economy of scale approach to meet product cost challenges and cost effective combination of capital investment and labour utilisation
- A cross functional team and continuous improvement approach
- Close co-operation with customers on facility and process development

Within the production areas at Wellingborough are a comprehensive range of flexible CNC machine tools, integrated pallet pool systems, tool management centres and in-process test and cleanliness equipment. These are generally arranged in modular product cells for cost-effective and flexible manufacture. Thus, MAHLE Powertrain can launch a new product quickly or meet an unplanned shortfall in a customer's capacity or provide a ramp-up production phase prior to a customer's own capacity coming on-stream.

The foundry offers its own unique expertise using its patented low pressure pumped process. The process was conceived in the late 70's and solved many of the problems generally experienced in castings. In particular, it provided a new dimension in component as-cast accuracy and eliminated many of the imperfections that were causing waste and poor durability characteristics.

The new process initially provided the motorsport with superior castings and over the years it has been developed for road engine applications where the technical advantages enhanced the high image trends in vehicle marketing. The cylinder heads for the Ford Cosworth engines and the Mercedes-Benz 190 series cylinder heads had castings made at the former Cosworth facilities. Opel, Lamborghini, Audi and General Motors have similarly benefited in the past.

Together with full logistics and global Tier 1 capability and accreditation to current quality and environmental standards, the resources and expertise within MAHLE Powertrain's manufacturing environment offers customers a unique combination of solutions:-

- Cylinder head and block machining;
- Head and block pre-assembly;
- Other sub-system machining and assembly;
- High quality durable aluminium castings
- Complete powertrain assembly