Research Report
ABOUT Automotive

AUTOMOTIVE

The global market for automotive turbochargers

Detailed information on company market shares, product installation forecasts and trends for passenger cars and commercial vehicles to 2010

2005 edition

by Matthew Beecham

ABOUT Publishing Group

autoResearchanalysts

The global market for automotive turbochargers

Detailed information on company market shares, product installation forecasts and trends for passenger cars and commercial vehicles to 2010

2005 edition

ABOUT Publishing Group
21 Noel Street
London W1F 8GP
United Kingdom

ABOUT Publishing Group
21 Noel Street
London
W1F 8GP
United Kingdom
T: +44(0)20 7434 1269
F: +44(0)20 7434 1545
Email: admin@aboutpublishing-auto.com
www.aboutpublishing-auto.com

Contents

List of tables

List of figures

The author

ABOUT Automotive

Our exclusive network of industry specialists ensures an unrivalled resource to bring you comprehensive coverage of the automotive components industry. Each report gathers individual perspectives from within the industry, and formulates ABOUT Automotive's own definitive forecasts, generally to the horizon of 2010.

All ABOUT Automotive authors have a proven track record, having written for leading management consultancies, financial institutions and publishers.

ABOUT Automotive reports are used by the major automotive suppliers, as well as the leading vehicle manufacturers.

Auto Research Analysts

Matthew Beecham is director of Auto Research Analysts, an automotive management consultancy specialising in component market research. Established in 1996, the group monitors key market events in the global automotive components industry, providing forward-looking analysis on product trends and fitment, strategic planning implications, critical success factors and vulnerabilities.

Matthew is the author of two best-selling Economist Intelligence Unit publications, The European automotive components market and World automotive components: Market prospects to 2005. He also writes for ABOUT Publishing Group. He is author of a number of well received global automotive components market research reports, including vehicle occupant restraints, heating, ventilation and air conditioning, interiors, turbochargers, steering systems, and lighting. Most of these are now in their second or third editions. He earned his PhD in automotive technology transfer at Cranfield University.

The author would like to thank all those component manufacturers and carmakers who helped in the compilation of this second edition report by providing information and advice.

Executive summary

62% of new passenger cars were equipped with turbochargers in Western Europe in 2004

The main benefits of turbochargers in both passenger car and commercial vehicle applications are increased power for a given engine size, improved fuel economy and significantly reduced emissions.

The main growth drivers for turbochargers include:

- Stricter emission regulations for Europe, North America and Asia;
- From 2005, South Korea will allow diesel engine-powered cars. Tax incentives in South Korea should also fuel diesel growth;
- In China, light duty truck growth is expected, plus adoption of Euro II standards and fuel consumption regulations to be increased 15% by 2010;
- In India, growth of turbo-diesel vehicle production will be prompted by favourable fuel price differentials, implementation of Euro III in 2005 plus the fact that Euro IV favours VNT technology;
- In Japan, manufacturers see strong overseas growth in diesel, gasoline boosting opportunity driven by CO_2 regulations beyond 2008;
- Continued growth of diesel engines in Europe for passenger cars;
- Tighter emission regulations relating to commercial diesels; and
- Engine downsizing for improved fuel consumption and emissions in gasoline engines.

We estimate that about 62% of new passenger cars were equipped with turbochargers in Western Europe in 2004, the highest concentration in the world. That figure could reach 70% by 2010 as new emission regulations requiring a 25% reduction in CO_2 take effect.

Whereas in Europe, fuel tax is a significant driver for engine downsizing, the issue in the US and Japan centred on meeting the requirements of increasingly stringent emissions standards, particularly around NO_x (Nitrogen Oxide) emissions and particulate matter.

Turbo manufacturers see no abatement in demand for their product

The push by vehicle makers toward engine downsizing to meet the auto industry's targets for lower carbon dioxide emissions by 2008 is spelling out good news for turbocharger suppliers. Although smaller engines are more fuel efficient, motorists still demand the same performance. A turbocharger fitted to a 1.8-litre engine can deliver the peak power of a 3-litre unit but use 15% less fuel. Consequently, turbo manufacturers see no abatement in demand for their product, particularly in Europe where the market for direct-injection diesel engines are powering more and more passenger cars.

Turbocharged gasoline engines will also play an increasingly important role in helping OEMs meet future fuel economy regulations. Although not as fuel-efficient as turbo-diesel engines, they offer many other advantages such as lower emissions, lower fuel consumption and high customer acceptance.

Overall, the current obsession with increasing fuel economy and the enforced reduction in emissions is proving a boon for manufacturers of turbochargers. The technology has developed significantly since the 1980s

Manufacturers have to work hard to convert the American market

when turbochargers had a 'hot-rod' image and were often unreliable. However, much of the developmental push has come from the European diesel engine market, and manufacturers have to work hard to convert the American market, which to date has shown little interest in buying more fuel-efficient vehicles. Technically, there remains the problem of turbo-lag, which creates an unpopular time-lag for performance drivers. Variable geometry turbines have helped to some extent, but the problem will not be solved unless engine-driven superchargers are used, or electrically powered 'e-boost' devices are used. The first e-boost devices are close to market however, and will be launched on vehicles later in 2005.

The global automotive turbocharger light vehicle OEM market is dominated by four key players, with Honeywell Turbo Technologies and BorgWarner leading the critical European marketplace. Trailing Honeywell and BorgWarner is Ishikawajima-Harima Heavy Industries (IHI) and Mitsubishi Heavy Industries.

The main battleground is Europe, where Honeywell Turbo Technologies dominates the turbocharger market with a 54% share of the passenger car diesel engine market, followed by BorgWarner with 37% and the two Japanese players, Mitsubishi and IHI with 5% and 4%, respectively.

Report coverage

This second edition report has been compiled following extensive research into the automotive turbocharger sector by Auto Research Analysts and ABOUT Automotive. It reviews the key market drivers for turbochargers for both the passenger car and commercial vehicle markets, providing some forward-looking analysis through 2010.

Chapter two sets out some product trends and fitment levels for turbochargers and superchargers in passenger cars in each major vehicle producing region through 2010. It also assigns market shares to the main turbocharger producers serving carmakers in each world regional market. In total, this report provides no less than 25 detailed market share pie charts, providing unrivalled market intelligence.

Chapter three sets out some recent innovations and examines the forces driving those technical advances.

Chapter four provides brief profiles of the major manufacturers of turbochargers, namely BorgWarner, Holset, Honeywell Turbo Technologies, Ishikawajima-Harima Heavy Industries and Mitsubishi Heavy Industries. It includes analysis of the major competitors in the turbocharger segment, including revenues and product service offerings.

Table 5: Market value of turbochargers to new commercial vehicles in Western Europe, Japan, North America, South America and Asia: 2000 - 2010 (€ millions)

	2001	2002	2003	2004	2005	2006	2007	[illegible]	[illegible]	2010
Western Europe	315.00	337.37	360.50	413.77	460.68	498.[illegible]	[illegible]	[illegible]	572	[illegible].05
North America	346.50	371.28	396.55	455.36	506.90	54[illegible]	[illegible]	603	[illegible].06	655.45
South America	63.00	67.47	72.10	82.83	9[illegible]	9[illegible]	9[illegible]	110.[illegible]	114.41	119.21
Japan	73.50	78.54	84.12	9[illegible]	107[illegible]	[illegible]32	[illegible]	127.85	133.69	139.29
Asia	252.00	269.89	[illegible].40	33[illegible]31	[illegible]69.[illegible]	3[illegible].79	400.86	439.03	457.65	476.84
Total	1,050.00	1,124.55	[illegible]	1,3[illegible].84	[illegible].23	1,661.64	1,707.10	1,829.29	1,906.87	1,986.84

Sources: Industry estimates, Auto Research Analysts.

Gasoline engine boosting gradually increases

While demand for diesel-engines has powered growth for turbochargers, interest in gasoline turbos is also gathering momentum. For gasoline turbocharging to be successful, vehicles must feel and drive like a larger naturally aspirated gasoline engine. The main thrust of development is focussed on the continuous improvement of the low engine speed performance of the turbocharger. Honeywell Turbo Technologies is working on two programmes for advanced gasoline-engine turbochargers that could be launched in 2006 and 2008, and claims this will be the next major area for growth.

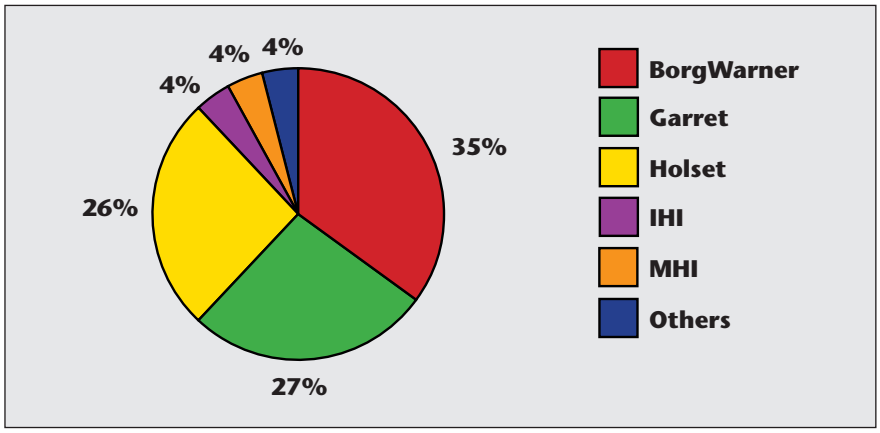
We estimate that just 10% of European gasoline-powered cars in 2004 have turbochargers. This could reach 22% by 2010. Honeywell began making turbochargers at a new plant in Romania in 2003 to keep up with European demand. In fact, Honeywell is predicting a 500% increase in demand for engine boosting systems in coming years as European manufacturers use smaller gasoline engines to meet emissions and fuel economy targets. Honeywell reckons that European carmakers will not meet their voluntary targets of 25% lower emissions by 2008 without help from booster technology. Smaller engines are inherently more efficient, but customers still demand performance, and a turbocharged 1.8-litre engine can match the peak power of a 3-litre unit but use 15% less fuel.

Table 6: Fitment of turbochargers to new gasoline-powered passenger cars in Western Europe: 2000 - 2010 (% C[illegible]ment)

	2000	2001	2002	2003	2004	2005	[illegible]	[illegible]0	2008	[illegible]009	2010
Western Europe	6	7	8	9	10		[illegible]4	16	18	[illegible]	22

Sources: In[illegible]y estimat[illegible]s[illegible]ch[illegible]ysts.

Figure 5: Global market shares for OE engine turbochargers for commercial diesel vehicle applications, 2004



	%
BorgWarner	5
Garret	
Holset	
IHI	4
MHI	4
C s	4
	100

Source: ustry estimates.

European market

Garrett dominates the turbocharger market with a 54% share

In Europe, Garrett also dominates the turbocharger market with a 54% share, up two percentage points over the year. Honeywell's manufacturing and assembly facility in Bucharest is currently ramping up quality and output on the back of a major development programme involving plant and people. The investment reflects the increasing interest in the Eastern European automotive industry.

Germany's BorgWarner ranks in second place, with a 37% share in 2004. Both IHI and MHI are also aiming to increase its European sales of turbochargers for use in cars.

MHI has invested millions of dollars in its manufacturing facilities in Kanagawa prefecture and its Dutch subsidiary, MHI Equipment Europe BV. The money has been directed at expanding the company's automated production lines, thereby boosting annual automotive turbocharger production capacity by 30% from 2.45 million units to 3.2 million units by May 2005.

IHI has entered into a joint venture with DaimlerChrysler in Germany to design, develop and produce turbochargers for car diesel engines. The move follows DaimlerChrysler's acquisition of a 49% stake in Ishikawajima's German subsidiary, IHI Turbo Germany, which has been transformed into the new joint venture. The new company, called IHI Charging Systems International, has assumed responsibility for turbo design and development. Manufacturing takes place at its plant in Italy.

AUTOMOTIVE

ORDER FORM
Fax back to: +44(0)20 7434 1545

1 Please complete your order details

Report	Quantity (PDF*)	Quantity (Print**)	Price	Total
The global market for automotive turbochargers for passenger cars and commercial vehicles: 2005 edition			£595**	

Customers in the UK add 17.5% VAT for PDF purchases

Total to pay

Postage is included
* Immediate electronic delivery
** Please add £25 for reports supplied in print

2 How would you like to pay?

☐ I enclose a cheque for £ payable to

ABOUT Publishing Limited
Customers can pay by cheque with either of the following methods: ● Sterling cheques drawn on a UK bank ● Cheques in US dollars, euros or in any freely convertible currency drawn on the country of origin at current exchange rates.

☐ Please charge £ to my

☐ MasterCard ☐ Visa

☐ Switch ☐ AmEx

Issue Number: (Switch)

Account Number

Signed

Valid from

Expiry date

☐ Please send me a proforma invoice
(Report(s) will be sent on receipt of payment)

3 Please complete your personal details

(Please attach your business card or complete the following in capitals)

Name (Mr/Mrs/Ms/Dr)

Job title

Company name

Address

City

Zip/postcode

Country

Nature of business

Tel

Fax

E-mail*

(required for electronic delivery of reports)

The above prices do not include VAT. Customers in EU member countries may be liable to pay VAT if their Registration Number is not supplied. Please enter your EU Registration Number (VAT/TVA/BTW/MOMS/MWST/IVA/FPA) below:

4 Please send your order to

ABOUT Publishing Group Limited,
21 Noel Street, London, W1F 8GP, United Kingdom
T: +44(0)20 7434 1269 F: +44(0)20 7434 1545
e-mail: sales@aboutpublishing-auto.com www.aboutpublishing-auto.com

ABOUT Publishing Limited. Registered in England No. 4344194. Registered office: 21 Noel Street, London, W1F 8GP.

ABOUT AUTOMOTIVE
ABOUT STYLE
ABOUT FOOD
ABOUT DRINK
ABOUT AUTO
ABOUT ST
ABOUT
ABOUT
AB
ABOUT
Publishing Group

AUTOMOTIVE

ABOUT Publishing Group

21 Noel Street
London
W1F 8GP
United Kingdom
T: +44(0)20 7434 1269
F: +44(0)20 7434 1545
Email: admin@aboutpublishing-auto.com

www.aboutpublishing-auto.com