

Research Report
ABOUT Automotive

Global market for heating, ventilation and air conditioning systems

2006 edition

by Alex Graham



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The author

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About the author

Alex Graham has worked in the automotive supplier industry since 1996, and specializes in research and analysis on components and new technologies. Alex is a full member of the Guild of Motoring Writers.

After three years as a writer and editor with a well-known industry newsletter, Alex now conducts automotive research and analysis on a freelance basis. For several years, Alex has been contributing regular features in the industry's leading publications, and has unparalleled contacts within the auto supplier community in Europe, North America and Japan.

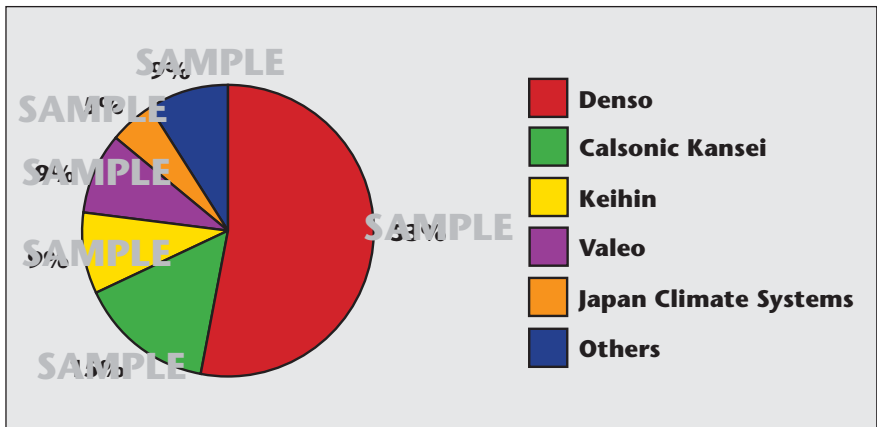
Alex graduated with honours in Russian from St. Catherine's college, Oxford University.

Behr is aiming to capture a 10% share

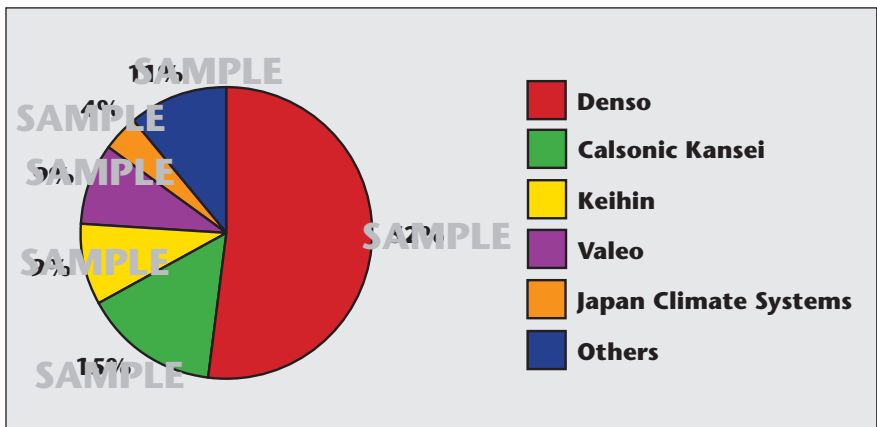
Valeo Zexel Climate Control Systems had planned to gain share over the next few years. But Valeo’s acquisition of the entire venture, and its incorporation into Valeo’s product “domains” may mean that other avenues are being explored. Behr and Sanden have a joint venture focused on production of condensers, heater cores and HVAC modules, which began production on its first contracts in 2004. This latest move underscores Behr’s stated aim to achieve entry into the Japanese auto market with the aid of strategic alliances as well as improve the company’s access to Japanese transplants in Europe and North America. Behr is aiming to capture a 10% share of the Japanese air conditioning market by 2005.

Figure 6: Shares of the Japanese OE HVAC unit market, 2003/2005 (% of volume)

Shares of the Japanese OE HVAC unit market, 2003



Shares of the Japanese OE HVAC unit market, 2005



	2003	2005
Denso	33	37
Calsonic Kansei	15	15
Keihin	9	9
Valeo	9	9
Japan Climate Systems	5	5
Others	5	11
Total	100	100

Sources: ABOUT Automotive; industry estimates.

Chapter 3 Technical review

Air conditioning: How it works

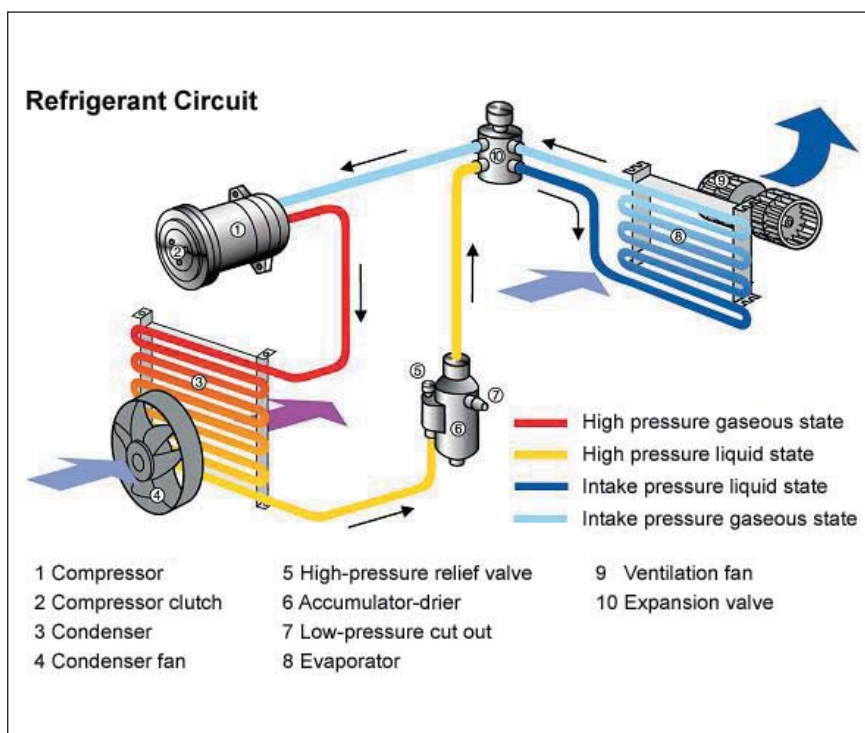
The operation of an air conditioning system is fairly straightforward

As the heater unit alone is not capable of providing a comfortable environment at all times, in temperatures above 20°C the air must be cooled using an air conditioning unit to achieve the required temperature. An air conditioner is a compressor-driven refrigeration unit.

The operation of an automotive air conditioning system is fairly straightforward, with three heat exchangers – a heater core, evaporator and condenser – operating on two pressure levels, which are controlled by a compressor and an expansion valve. As Hella’s diagram illustrates (figure 6), the air conditioning system is a combination of the car’s heater and refrigerant circuit. Hoses forming a closed system connect the individual components in the refrigerant circuit to one another. The refrigerant circulates in the system driven by the compressor.

The circuit itself is divided into two sections. The section between the compressor and expansion valve is called the high-pressure side, (yellow/red). The area between the expansion valve and the compressor is the low-pressure side (blue).

Figure 7: Coolant circuit of an air conditioning system



Source: Hella.

Given that the US market is already a mature one, Behr's high-technology products will help it steal business from competitors. Behr reckons its products are more advanced than most of its North American rivals, because they are designed to the requirements of the more demanding European market.

In Asia, Behr's Japanese joint ventures, with Sanden and Toyo, are up and running and are entering production with their first volume contracts. However, the progress Behr has made in China seems to be of greater significance. Its component operations supply to VW Shanghai and Dongfeng Motors. VW is currently market leader for passenger cars in the Chinese market, while Dongfeng is second only to DaimlerChrysler in the global truck market. Furthermore, BMW and Mercedes-Benz are Behr's key customers. As these prestige brands expand their presence in China, Behr should be well positioned to grow its business with these carmakers.

Due to its existing strong relationships with the premium German carmakers, Behr, along with Denso, is probably best positioned for the switch to CO₂ HVAC. As discussed above, the company says it could enter series production now with the new technology. However cost and weight remain primary concerns with regards to high volume industrialisation. The company's relatively small presence outside Europe may actually prove to be a hidden benefit, as it will not be excessively burdened with the need to maintain parallel infrastructures in different regions on a large scale.

Table 10: Behr key contracts

OEM/Brand	Model Name
BMW	5 Series
BMW	7 Series
Chrysler	300
Citröen	C4
DaimlerChrysler	Maybach
Mercedes-Benz	CLS-Class
Mercedes-Benz	S-Class
Mercedes-Benz	SLR McLaren
Opel/Vauxhall	Zafira
Volkswagen	Phaeton (BHTC)
Volkswagen	Touareg (BHTC)

Source: ABOUT Automotive

Behr-Hella Thermocontrol

Hella KG Hueck & Co., Lippstadt, and Behr GmbH & Co., Stuttgart, founded the joint venture Behr-Hella Thermocontrol GmbH (BHTC) with its main office in Stuttgart in 1999. The company's purpose is to offer customers full system development for vehicle air conditioning and engine cooling, with Behr's expertise in heat exchange systems complementing Hella's electronics know-how. In addition, BHTC develops and manufactures the components belonging to the system. Total sales in 2004 were €218 million, up 12% over 2003. BHTC has around 650 employees on the payroll.

BHTC produces electronic control and operating devices for vehicle air conditioning and is Europe's market leader for so-called fully automated devices. Other elements of the product range are output controllers for heating and air conditioning blowers and additional electric heaters, climate sensors and adjusters for intelligent engine-cooling systems. In addition, the company offers development services for components and the compatible software solutions.

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