

Global market review of truck manufacturing – forecasts to 2011

2007 edition



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Table of contents

Single-user licence edition	ii
Copyright statement	ii
Incredible ROI for your budget – single and multi-user licences.....	ii
just-auto.com membership.....	iii
Table of contents	iv
List of tables	vi
Chapter 1 Introduction	1
Chapter 2 Global overview	3
Chapter 3 Manufacturers	5
DaimlerChrysler	5
Volvo	7
PACCAR	9
Navistar International	10
MAN	11
Iveco.....	13
Tata.....	15
Scania	16
Isuzu.....	17
Hino.....	18
Ashok Leyland.....	19
Chinese manufacturers	19
Other manufacturers	20
Chapter 4 Markets	22
The North American Free Trade Agreement	22
Europe.....	25
Japan	29
India	31
China.....	35
Central Asia/MENA	37
Latin America	39
Russia/Eastern Europe	41
Chapter 5 Global emissions limits for heavy trucks	43
Emissions standards	44
Europe.....	45
The United States	46
Japan	48
Other markets	48

Chapter 6 Diesel development	50
Future diesel developments.....	51
The future for emissions regulation: Are we pursuing the wrong course?	53
Diesel/electric hybrids.....	54
Alternative fuels.....	56
 Chapter 7 Conclusions	 58

List of tables

Table 1: Daimler Chrysler +x tonne total sales, 2002-2006 (units).....	5
Table 2: AB Volvo +x tonne total sales, 2002-2006 (units).....	7
Table 3: PACCAR +x tonne total sales, 2002-2006 (units).....	9
Table 4: Navistar +x tonne total sales, 2002-2006 (units).....	10
Table 5: MAN +x tonne total sales, 2002-2006 (units).....	11
Table 6: Iveco +x tonne total sales, 2002-2006 (units).....	13
Table 7: Tata +x tonne total sales, 2002-2006 (units).....	15
Table 8: Scania +x tonne total sales, 2002-2006 (units).....	16
Table 9: Hino +x tonne total sales, 2002-2006 (units).....	18
Table 10: Ashok Leyland +x tonne total sales, 2002-2006 (units).....	19
Table 11: NAFTA markets + x tonne production volume, 2002-2011 (units).....	22
Table 12: European markets + x tonne total sales, 2002-2011 (units).....	25
Table 13: Japanese heavy-duty truck total sales, 2002-2011 (units).....	29
Table 14: Indian heavy-duty truck total sales, 2002-2011 (units).....	31
Table 15: Chinese total heavy-duty truck sales, 2002-2011 (units).....	35
Table 16: Latin American +x tonne total sales, 2002-2011 (units).....	39
Table 17: Russian/Eastern European estimated +x tonne total truck sales, 2002-2011 (units).....	41
Table 18: Emissions regulations – European Statutory Cycle (ESC) test, 2005 and 2008 (g/kWh)45	
Table 19: Emissions regulations – European Transient Cycle (ETC) test, 2005 and 2008 (g/kWh)	45
Table 20: US heavy-duty diesel emissions standards, 1998-2007 and on (g/bhp-hr).....	46
Table 21: US heavy-duty diesel emissions standards options, 2004 and 2007 on (g/bhp-hr).....	47
Table 22: Japanese heavy-duty diesel emissions standards, 2003 and 2005 (g/kWh).....	48

Chapter 1 Introduction

Most of what we own, what we use and what we aspire to will spend at least some time travelling by truck.

Truck manufacturing is a relatively small sector within the automotive industry, and increasingly one that is driven by business pragmatism rather than consumer choice. Tough competition brings narrow margins, which ensure that truck manufacturing is not a highly profitable business. If there is money to be made, it is in the aftermarket, but, increasingly, trucks in Europe are sold almost as a loss-leader.

The long-term trend in heavy trucks has been for gross vehicle weights (GVW) – the total weight of the vehicle plus its load – to increase gradually over the past xx years. This means that over time, the overall number of heavy trucks on the roads of the developed nations has fallen. In this respect, it has been a triumph of efficiency but, inevitably, has added to the financial pressures on manufacturers, which have seen sales decline as a result.

Increasing awareness of an end to cheap oil is likely to increase this trend. While much of the current environmental debate surrounds the nature of the greenhouse, there is a growing realisation that an alternative fuel source will become a necessity before the end of the 21st century.

However, it is controls on vehicle emissions, which have progressively tightened in developed countries, that are the key drivers within modern truck design. Indeed, one OEM places such legislative compliance as accounting for xx% of its R&D budget.

Trucks around the world are almost exclusively diesel-powered, and diesel engines have attracted particular attention for their exhaust emissions. As some of the largest diesel-powered vehicles, trucks have been an obvious target for environmentalists.

Outside the developed markets of Western Europe, the US and Japan, the awakening economies of Asia and China will ensure that the global demand for transport will not slacken. As consumers in those countries enjoy greater

Chapter 2 Global overview

When just-auto last reported on the global truck market in October 2004 the point was made that it is European and North American manufacturers that dominate. To some extent, this is still the case. OEMs based in the Triad – the North American Free Trade Agreement area (hereafter referred to as NAFTA), Europe or Japan – are without doubt the technological leaders of the industry, but four of the world's largest manufacturers are based in Asia. These OEMs account for more than xx% of global truck production, leaving little doubt where the greatest expansion is likely to be in the medium term. The US remains the largest market in the world for commercial vehicles.

From a global perspective, there has been considerable consolidation in the sector over the past ten years, concentrating ownership into fewer hands. Although it is convenient to discuss manufacturers by geographical location, it is becoming decreasingly relevant to do so as ownership of brands extends across the globe. While we shall consider regional issues – such as emissions standards and markets – later, to provide an initial overview it is simpler to consider the major players across the globe, the brands that they own and where they manufacture vehicles. Before doing so, it would be helpful to put the global position into some context. Commercial vehicles differ considerably in the major markets, and a brief outline of the differences between them, and the reasons why they exist, forms a useful starting point.

Previously, trucks manufactured in the two leading markets, Europe and the US, differed considerably, even though many manufacturers produce vehicles on both sides of the Atlantic and brand ownership extends across the Atlantic in both directions. The most noticeable difference among heavy trucks is the basic appearance of tractor units that pull trailers. In North America, the engine is usually located in front of the cab, with a “*sleeper box*” providing sleeping accommodation to the rear of the cab on long haul trucks.

In Europe, the engine is usually beneath the cab floor with sleeping accommodation incorporated in the cab immediately behind the driver and passenger seat. Sleeping accommodation tends to be far smaller than in a North American truck.

Chapter 3 Manufacturers

DaimlerChrysler

Table 1: Daimler Chrysler +6 tonne total sales, 2002-2006 (units)

	2002	2003	2004	2005	2006
Sales	xxxxxxx	xxxxxxx	xxxxxxx	xxxxxxx	xxxxxxx

Source: DaimlerChrysler

The largest manufacturer of trucks over xx tonnes GVW, DaimlerChrysler is a dominant player in the European, NAFTA and Japanese truck markets, through its Mercedes-Benz, Freightliner Group and Mitsubishi-Fuso brands. DaimlerChrysler is also a reckonable player in the light CV and bus markets. In 2006, the company sold xxxxxx heavy trucks.

Mercedes-Benz truck products are sold in the majority of the global markets, the key exclusions being NAFTA and Japan. Its European CV range splits into five categories: the Atego medium weight truck, the Axor heavy range and the Actros flagship heavy truck, and the the Econic range: a specialist product designed for refuse collection and task-specific urban deliveries. The Unimog range of specialist and all terrain vehicles completes the European picture.

Mercedes-Benz CV production is centred on Germany, with all major components produced in German plants. Truck and Unimog assembly also takes place at Aksaray in Turkey.

A plant at São Bernardo do Campo, Brazil produces the medium-duty Accelo, a heavy-duty Atego and an Axor tractor unit for the Latin American markets, while a CKD facility based at East London, South Africa assembles for the African sector.

For North America, DaimlerChrysler's brands include one of the noted US top-selling CV manufacturers, Freightliner Trucks, which was acquired by Mercedes-Benz in 1981, with models spanning the Class xxx truck categories.

Chapter 4 Markets

The North American Free Trade Agreement

Table 11: NAFTA markets + x tonne production volume, 2002-2011 (units)

	2002	2003	2004	2005	2006
Production	xxxxxxx	xxxxxxx	xxxxxxx	xxxxxxx	xxxxxxx

	2007	2008	2009	2010	2011
Production	xxxxxxx	xxxxxxx	xxxxxxx	xxxxxxx	xxxxxxx

Source: just-auto

The North American truck market is changing. Traditionally a place in which truck OEMs have functioned as assemblers, and in which Tier 1 suppliers have wielded a disproportionate amount of influence, consolidation within the global truck industry has seen the NAFTA region forced to adapt to changing times.

Twenty years ago, a North American Class 8 truck was close to being a bespoke product. Truck buyers could – and did – specify drivelines in minute detail, and the assemblers did just that – produce trucks to order.

Today the landscape is very different. Globally focused OEMs pursue scale, and offering buyer choice to the extent that had previously been seen is diametrically opposed to this aim. As such, the balance of power has shifted away from the Tier 1s, and is now vested with the OEMs which, with the exception of PACCAR and Navistar, are European-owned.

On one level, the NAFTA market is changing. However, the other feature that has characterised truck production within the region for the last xx years – market cyclicity – is not. North America is still bedevilled by a boom-bust truck purchase cycle, and key to succeeding there is capacity management. As assemblers, the OEMs merely had to turn off the supply tap. As vertically

Chapter 5 Global emissions limits for heavy trucks

As this report becomes available, Europe is in a transition period, while the Euro IV emissions limits take full effect on new vehicles. In the US, the EPA 2007 limits are also just around the corner. From a vehicle manufacturer's perspective, the current round of emissions limits is a done deal, and the focus is firmly on the next round and beyond.

just-auto won't dwell on the latest limits for long, as they have been the subject of much debate in commercial vehicle circles over the past few years because of the impact that they will have on vehicle manufacturers and operators. Some discussion is necessary, though, for several reasons. First, the limits currently coming into force represent a milestone – the first time that commercial vehicle manufacturers have had to adopt exhaust gas after-treatment to reach the mandated limits. It is also the first time that there has been a divergence of opinion on how the limits should be reached, resulting in European truck manufacturers broadly pursuing one technical solution, while those in North America have chosen another.

In short, the Europeans generally favour selective catalytic reduction (SCR) exhaust gas after-treatment technology. This relies on controlling the formation of particulate matter (PM) in cylinder and using SCR to reduce nitrogen oxides (NOx) emissions to nitrogen and water. To do so requires a urea additive that is injected into the exhaust stream ahead of the catalytic converter. The additive tank requires replenishing when the vehicle is refuelled to ensure continuing emissions compliance. In theory, the cost of the additive is offset by improved fuel consumption compared with earlier emissions standards. Estimates for Euro IV-compliant vehicles suggest that fuel consumption should be some xxx% lower than for a comparable Euro III-compliant vehicle.

There are exceptions to the European SCR take-up rule. First, lighter trucks – those below xxx-tonnes GVW that offer far lower fuel consumption – tend to use the alternative emissions control strategy. Enhanced exhaust gas recirculation (EGR) relies on reducing NOx formation in cylinder and using exhaust gas after-treatment to reduce particulate matter emissions. In this

Chapter 6 Diesel development

While diesel power continues to make in-roads into the car market, it is the dominant power source for trucks globally, a situation that looks unlikely to change. No other internal combustion engine offers the power and torque desirable for a commercial vehicle powertrain, combined with relatively low fuel consumption. Here, this report will concern itself with the technologies that are being adopted for heavy diesels.

Diesel engine development has moved forward very rapidly in the past ten years. Like many other technological developments, this is because the rapid pace of electronic developments and materials technology has made possible things that could not be done before. It may have been practically possible to raise the pressure at which fuel was injected into a diesel engine xx or xx years ago. But that was only half the story. Raising the pressure meant that fuel would mix with the air in an engine better, but precise injection timing opens up many more possibilities. It would not be possible for the current tight exhaust emissions limits to have been set without the precise control that electronics systems can bring to a diesel engine.

There is now much more synergy between light and heavy diesel systems than there was before. There is the same mix of high-pressure fuel systems – either common-rail or electronic unit injectors (EUI) – but unlike light diesels, the pendulum has not swung in favour of common rail systems to the same degree. This is mainly because EUI systems do not present the same packaging problems on heavy diesels as on their light-duty counterparts. What is a tight fit on a small diesel engine is not so great a problem on an engine that is two or three times the size.

Common rail offers more potential control for the multiple injections that may be required for future emissions standards, but that is not to say that EUI technology has run out of steam.

What's more, if manufacturers have been obliged to adopt exhaust gas after-treatment to reach the emissions limits, it has reduced the need for fuel system developments to continue at the same pace. Higher injection pressures come at a financial cost, and cost containment is king.

Chapter 7 Conclusions

Much has been said previously concerning engine developments, emissions protocols and likely consolidation between the OEMs. These three elements – while still most noteworthy – look set to take a back seat as a truly globalised truck industry emerges.

We believe that there are two shifts beginning to occur within the marketplace; one actual, and one rather more esoteric, and which are both related. As the emerging markets begin to do just that – to emerge – then so will their domestic OEMs bring far more competition to many non-Triad markets. And, increasingly within the Triad markets, we observe a shift away from brand as the main measure of value. Put simply, trucks are bought by people who write cheques; and, in doing so, it is as much the number upon that cheque as the badge upon the grille that is important.

The issue of the impact of emerging OEMs is one that is likely to provoke debate. On the one hand, Triad-centric manufacturers are technology leaders. On the other, those from outside the Triad have a marked cost advantage. As such, the future comes down to a battle between cost and technology. We would observe that the latter is cheaper than the former. As such, with non-Triad truck sales outpacing those from within NAFTA, Europe and Japan, the question as to who is best placed to sell volume globally is that which is now of key interest.

The argument in favour of Triad-built product is, we believe, becoming increasingly specious. EU social costs are huge relative to those in, for example, India. That the market is now – more than ever before – driven by cost would seem to preclude anything by way of consumer patriotism.

Does this mean that we can expect to see new market entrants into the Triad? just-auto feels that this is unlikely in the medium term, but probable in the long term. In part, this is due to cost, but, from a philosophical perspective, we see the nature of road transport changing. Increasingly, trucking is less about the call of the open road, and more about meeting delivery schedules within an overall supply chain. Does brand awareness belong in such a model? Probably not at a xx% price premium.