



pro **Active**

The official industry newsletter of Lotus Engineering

*Issue 14
May/June 2006*

*Driving Dynamics in
the US*



*China won't rush to
world markets*



Welcome

As the new Marketing Manager here at Lotus Engineering, I'd like to take the opportunity to say Hello, introduce myself, and this next issue of *proActive*.

In this issue we look at global OEMs' efforts to sell cars in diverse markets whilst meeting customers needs. Automotive writer Susan Brown explores the ideal of the global platform and how automakers approaches to achieve this have evolved.

It can be difficult to understand the multitude of factors that influence the suitability of a car to its market. One important aspect, close to Lotus Engineering's heart, is driving dynamics, collectively how we refer to those attributes such as ride comfort, handling, performance feel and ergonomics that affect the experience of driving. Paul Harvey, head of Chassis Engineering, discusses the challenges the OEM's face to get this aspect of the product right as they take their platforms to the emerging markets of China and India.

A contrasting view of the ever changing driving dynamics environment in the US is provided by Sunil Lall from our Detroit engineering center and we introduce the Advanced Vehicle Research Center in North Carolina. This exciting new facility, with which Lotus is pleased to be involved, will provide high technology capability for many aspects of automotive engineering and development.

We hope you enjoy this issue. Your feedback for the publication is extremely important to us, and any comments you'd like to make or questions you'd like to ask should be emailed to proactive@lotuscars.co.uk

Peter Morgan, Marketing Manager, Lotus Engineering



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US: Lexus and Toyota dominate new J.D. Power quality survey

Lexus and Toyota models continue to dominate the J.D. Power US market initial quality rankings, taking 11 out of 19 segment awards in 2006.

Lexus models rank highest in every segment in which they compete and the flagship LS430 ties with the Porsche Cayman for having the fewest quality problems in the industry.

Despite a recent spate of high-profile recalls, JD Power said Toyota remains a quality benchmark, capturing five model level awards – for the Corolla, Solara, Camry, Highlander and Sequoia – more than any other non-luxury brand.

Porsche and Lexus lead the luxury brands, while Hyundai, Toyota and Honda set the pace among non-luxury brands. Averaging just 91 problems per 100 (PP100) vehicles, Porsche tops the overall nameplate rankings. Porsche's success can be partly attributed to the all-new Cayman, which tops the compact premium sporty car segment. Porsche is followed in the rankings by Lexus, Hyundai, Toyota and Jaguar, respectively.

Hyundai ranks among the top three nameplates in the study for the first time in the history of IQS. Highlights include a top ranking for the Tucson small SUV in the compact multi-activity vehicle (MAV) segment, and top-three segment performances for the redesigned Sonata and new Azera, as well as the Elantra and Tiburon.

Honda also maintains its position as a quality leader. Although Honda does not receive any awards outright, five Honda models rank among the top three of their respective segments.

Other nameplates receiving model awards in 2006 include Chevrolet, Chrysler, Ford, Kia, Mazda, Pontiac and Suzuki.

Assembly plants

Toyota receives a total of four assembly plant quality awards from J.D. Power for producing vehicles yielding the fewest defects, including the Platinum Plant Quality Award for its Iwate, Japan, plant, producer of the Lexus ES330.

The Iwate plant averages just 32 PP100. Plant awards are based solely on scores for defects.

Among North and South American plants, the General Motors Oshawa #2 plant in Ontario, Canada, which produces the Buick LaCrosse and Pontiac Grand Prix, receives the Gold Plant Quality Award for a second consecutive year. Toyota's Georgetown, Kentucky, plant, which produces the Avalon, Camry and Solara coupe/convertible, and DaimlerChrysler's Windsor, Ontario, Canada plant, which produces the Pacifica, Town & Country, Caravan and Grand Caravan, tie for the Silver Plant Quality Award.

In the Asia Pacific region, Toyota's Higashi-Fuji, Japan, plant, which produces the Lexus SC430, receives the Silver Plant Quality Award. Toyota's Kyushu, Japan, plant, which produces the Lexus IS250/IS350, Lexus RX 330/400h and Toyota Highlander/Highlander Hybrid, and American Honda's Saitama, Japan, plant, which produces the Acura RL, Acura TSX and Honda CR-V, tie for the Bronze Plant Quality Award. Magna Steyr, the Graz, Austria, plant that assembles under contract for traditional manufacturers, receives the Gold Plant Quality Award for Europe. Magna Steyr produces the BMW X3, Mercedes-Benz E-Class/Wagon and the Saab 9-3 Convertible. BMW's Dingolfing, Germany, plant, which produces the BMW 5, 6 and 7 Series, receives the Silver Plant Quality Award, and Porsche's Valmet, Finland, plant, which produces the Cayman and Boxster, receives the Bronze Plant Quality Award.

Design critical to quality perceptions

J.D. Power noted that the way in which technology is integrated into new vehicle design, particularly interior features and controls, is considered by consumers to be as important to quality as are defects and malfunctions.

The Initial Quality Study, which serves as the industry benchmark for new-vehicle quality measured at 90 days of ownership, was completely redesigned for 2006 to capture problems experienced by owners in two distinct categories – quality of design and quality of production (defects and malfunctions).



Lexus LS430 tied with Porsche Cayman to top latest J.D. Power initial quality survey

"New vehicles today are often packed with new technologies that unfortunately can be complicated and frustrating for the average consumer when their integration is not well executed," said J.D. Power research chief Joe Ivers.

"In the eyes of consumers, design flaws can have as much of an impact on their perceptions of quality as can a defect. Yet, many manufacturers have tended to address quality solely on the plant floor without considering design factors."

Based on both design quality and production quality considerations, the study finds that automakers can vary widely in their performance on these two components. Brands with the fewest defects and malfunctions include BMW, Chrysler, Hyundai, Lexus, Porsche and Toyota. Brands with the fewest design problems include GMC, Hyundai, Jaguar, Lexus, Nissan and Porsche.

“Without considering both quality factors, one might fail to recognise vehicles that are, in fact, excellent in certain ways,” said Ivers.

“For example, BMW vehicles have among the fewest defects and malfunctions, along with Toyota. But BMW approaches controls and displays in a way that creates some problems for customers, leading to more design-related problems overall than Toyota incurs. Automakers differ significantly in how they define quality and what parts of the organisation they hold accountable for it. Clearing both critical quality hurdles is an accomplishment experienced by only a limited number of brands.”

The 2006 Initial Quality Study is based on responses from 63,607 purchasers and lessees of new 2006 model-year cars and trucks surveyed after 90 days of ownership.

Rogério Louro

CHINA: Chery shows new minivan destined for US

Chinese automaker Chery has unveiled a new ‘crossover’ minivan model – destined eventually for the US market – at the Hangzhou motor show in China.

According to globalautoindex.com, the new car, which was originally unveiled at the 2004 Beijing motor show under the code name B14, is a six- or seven-seat minivan developed with help from Lotus Engineering and two Italian companies.

The V525 is the first member of Chery's new V5 family, and is powered by a 2,350cc locally-sourced Mitsubishi engine, developing 95kW at 5,500 rpm and 198Nm of torque at 3,000 rpm.

The car sits on a 2,800mm (110.2in) wheelbase. Key dimensions are: length 4,662mm, 1,820mm width and 1,590mm height (183.5 x 71.6 x 62.6in).

Standard equipment includes four airbags, ABS + EBD and traction control systems, electrically operated windows, GPS navigation and DVD player.

It will go on sale in China in June, and will be one of the first Chery models to be offered in North America though no firm date for the start of export sales has been announced.

Source: just-auto.com editorial team

CHINA: Dongfeng Nissan launches order book for Sylphy/Xuan Yi

Dongfeng Nissan has unveiled the Chinese-built Sylphy, which will go on sale in China on August 24th, where it will be called the Xuan Yi.

“The Sylphy will give Dongfeng Nissan a more complete product lineup and strengthen its competitiveness in the growing Chinese market,” said Ren Yong, vice president of Dongfeng Motor Co., Ltd., and deputy managing director of Dongfeng Nissan Passenger Vehicle Company.

Dongfeng Nissan's other models are the Sunny, Bluebird, Teana, Tiida sedan and Tiida hatchback.

“The Sylphy will give Dongfeng Nissan a more complete product lineup and strengthen its competitiveness in the growing Chinese market”

The Sylphy is equipped with Nissan's all-new MR 2.0 litre and Xtronic CVT (continuously variable transmission).

The Sylphy will be built at Huadu plant in Guangzhou province.

Dongfeng Nissan is aiming for Sylphy sales of 20,000 units this year and has started taking orders for the car from this week.

In the first five months of 2006, Dongfeng Nissan Passenger Vehicle sold a total of 83,675 vehicles, up 67% compared with the same period a year ago.

Dongfeng Nissan Passenger Vehicle Company is a unit of Dongfeng Motor Co., Ltd., Nissan's joint venture in China. Dongfeng has set a sales target of 200,000 units for 2006. Last year total sales amounted to 157,000 units.

Source: just-auto.com editorial team

Dynamic change: driving development in Asia

It can be hard to keep up with the pace of change in the emerging markets of South East Asia and India, which present a totally different set of challenges to those of the rest of the world. All aspects of vehicle engineering, manufacture, retailing and ownership are advancing. Looking only at introducing new products, OEMs are finding they can no longer ignore the influence of driving dynamics on a vehicle's success. So what are the challenges and how is the industry and the market place reacting?

Targets for vehicles' driving dynamics are constantly changing as the market becomes more and more mature. They are also extremely diverse in terms of geographical requirements due to the sheer size of the countries involved. There is the full spectrum of climatic challenges with temperatures in excess of 45°C and below -30°C. Then there are the road conditions. The general impression in the west is that these are third world countries with few proper roads and all are of poor quality and badly maintained. This cannot be further from the truth especially in China but also in India. It is true that road maintenance is haphazard and can leave roads worse than before the maintenance but in general the good roads are extremely good although it is very easy to find the other extremes.

China has undergone a development of its road network not seen since the Germans developed the first Autobahn network. Here you can travel on some of the finest motorways often with the advantage that they are nearly deserted (by both other users and the police), so average speeds are very high. They are best avoided at night due to the levels of commercial vehicles that travel by night and the poor lighting standards of these vehicles. These trucks also prefer travelling in the fast lane to avoid the mix of pedestrians, cyclists and agricultural vehicles that occupy the slow lane and add to the challenges of driving in the dark. And then there are the animals. In China and more so in India roads have become the easy way to get around for animals as well as vehicles. In India this is compounded by the fact that animals take precedence. It is illegal to hit a cow and ill advised to hit an elephant. This can provide some interesting experiences when one comes upon an unlit 40 ton truck crawling in the fast lane at 30mph in total darkness because the inside lane is occupied by an animal, a tractor, a couple of unlit motorcycles and a group of pedestrians. Suddenly the customer becomes very conscious of braking stability and the ability to drive around accidents rather than being part of one. So even if the driver is not aware of the importance of Driving Dynamics they are vital to him any time he is in the vehicle.

As speeds have increased there has been a conscious effort by manufacturers to improve their vehicles and the most focus has been on how the car feels and how the customer feels about



All change for Asian Driving Dynamics

the vehicle. Government legislation is also driving much of the older and totally unacceptable forms of transport off the roads to be replaced by more modern vehicles. This legislation is slowly driving the industry towards meeting international standards such as EU and Federal type targets to prove that the Chinese industry is right up to date but also to open the whole world up to China exporting cars to other markets.

Driving skills are also improving, but this is a much slower process in these developing markets. This slow improvement is acceptable because 90% of driving is still in cities and towns where average speeds are still quite low and most driving is within the capability of both vehicle and driver... just. However there will always be occasions where the road does open up, speeds increase and customers will still expect that the car can support all that he wants to do.

For the immature buyer the ownership of a vehicle is such a step up from reliance on public transport or bicycle that the targets set for the vehicle are extremely basic. Initial targets are all around cost of purchase, cost of ownership and reliability. If the vehicle functions at a fairly basic level then the customer is likely to be satisfied. With the vast numbers of first time owners still available this is likely to remain a key factor and allow car makers to offer basic product with poor levels of performance and customer appeal. However there are already strong signs that the market is becoming far more conscious and discerning and the manufacturers are sitting up and taking notice. While there is still a long way to go before the customers have specific expectations regarding Driving Dynamics there are signs of progress.

Certainly bad cars will quickly get a poor reputation and in an ever more competitive market this is forcing manufacturers to improve their offerings. But what makes a car bad?

Feature

The answer is quite complicated because at first glance the market appears to be full of modern vehicles just as you would see on roads in Europe or Japan. But this is also the key because this is often exactly what they are. They are cars that were developed for the specific markets of Europe and Japan and often have not been retuned or developed in any way to meet the challenges of China, India and the other emerging markets.

This was OK while all of the OEMs took the same approach but some have realised the opportunity and have started to develop models specifically for these markets.

In China VW recognised the value of addressing specific Chinese market needs by increasing the wheelbase of a number of its models to improve rear seat package. This is key as this is often where the owner sits. This also provides a very good impression for taxi passengers, vital as this is often the only interaction most Chinese get with a car so it is an important first message. VW also made sure that they offered notchback (sedan) models as the Chinese market is still resistant to hatchbacks, although they are starting to become more acceptable. So the Jetta, Santana and Passat have been the key models in China and only recently did VW feel brave enough to launch the Golf and Polo. VW benefited by having a range of engines that developed good low range torque which satisfy the Chinese driving style of up-changing at 1,500 rpm and getting into fifth as soon as possible because it is the most economical gear. In fact this also shows the naivety of the owners as so many up-change during overtaking in the belief that the higher gears are the faster gears... The Chinese market still does not fully understand modern multi-valve engines with higher performance but with less low end torque and these engines quickly get a reputation as not powerful enough. Lower gearing and big flywheels is still the best solution and VW still retain a lot of 8 valve engines in China.

Whilst this showed that VW recognised the market in terms of model ranges and packaging they did not actually tune or develop cars specifically for the Chinese market. Most model development is still done in Germany. Riding in the back of a number of VW products reveals that ride quality is not a strong point and in some models is actually uncomfortable particularly in the all important rear seats. The tendency of newer VW products, like many European cars, to be sensitive to road noise especially in the rear seats is also fully carried over to China and is a major issue due to the greater significance of rear seat refinement.

In contrast GM actually now tunes all of its new models specifically for the Chinese markets. Lotus Engineering is aware of this as the ride and handling and NVH development of a number of its new models was supported by Lotus. Many GM models went rapidly to the top of the sales charts in China with good customer satisfaction feedback, helping GM overtake VW as number one for market share.

The biggest demand for driving dynamics in China is to achieve good ride quality and comfort. Chinese customers predominantly want to be comfortable when they travel and the huge variety of

road surface conditions make this a huge challenge. OEMs who do not recognise this and do not tune or develop their vehicles specifically for these tough demands risk adverse customer response.

The customer is very different from Europe and Japan so cars tuned for drivers or driver enjoyment may not be well received as the driving skills are not able to exploit or even understand it. The car is also a symbol of success and rank so owners do not want to be apologising for poor ride quality, noise or vibration when they are carrying colleagues or business associates. To many Chinese the car is an extension of their business or life and as such if it needs to offer all of the qualities they expect and as most have no perception of what causes cars to be noisy or have poor ride then these should not be present. In fact their first thought is that something is wrong so they will be more likely to take it back to the dealer to avoid any personal expense.



Red Chinese Taxi

There has been an interesting development in Beijing that also underlines this. Since Beijing was awarded the 2008 Olympics the local government has been trying to improve the infrastructure so that it is ready to showcase Beijing and China to the world. A key area is transport infrastructure. One of the first moves was to try to improve the quality of the aging Beijing taxi fleet. Anyone who had used the older fleet will know that this did not send a particularly good message. Taxis were a drab red colour with handpainted Chinese characters on the doors. Most were covered in dents and with much of the exterior trim missing. Inside was even worse with cramped rear seats and appalling ride quality compounded by even worse driving standards.

So legislation was passed to remove all older taxis. Initially VW was very happy as this left virtually the whole fleet as VW Jettas which were exempt from the ban as they were seen as upmarket when compared to the older Xiali TJ's (Suzuki derived) and Citroën Xsaras. This may have been true but many were still unrefined and poorly maintained. Travelling by taxi in Beijing was cheap but rarely comfortable or enjoyable.

Feature

But that was before Hyundai got involved. Hyundai offered to supply a huge fleet of Elantra and Sonata models. These were all painted in fresh, attractive colours far more upmarket than the drab red of the old fleet. They were also spacious and comfortable in the back and the ride was much better than the aging fleet of Jettas.



Sonata Taxi

The message to the public was clear. Hyundai is the upmarket VW. And the public went for it. Sales of Hyundai models went through the roof and VW were forced to fight back and rush a fleet of much newer Jettas into the taxi market to compete and mitigate the message.

The two main players in China are still VW and GM but they are now being challenged by the ever increasing number of joint venture companies that are bringing Japanese, Korean and European cars to the market. Japanese companies are all present and even starting to develop specific Chinese market offerings. The Koreans are very active and, as well as the taxi market, are grabbing a big share of the private market.

The European brands have a chequered history. PSA was very active in the early 90's with a range of value products especially from Citroën but Peugeot as a brand pulled out in the face of fierce competition from VW. However they are now back and their more modern products are doing well. Again they have recognised the Chinese market needs and sell their 307 only in notchback form. Citroën has achieved success with their Xsara and Xsara Picasso models. Ford is a relatively new player in China and making good progress.

Then there are the indigenous Chinese car companies. Many of these base their designs on existing vehicles from other companies which they then use as a basis for developing their own products. This brings a number of issues. The first problem comes from the age and history of the reference vehicle. If the vehicle is already several years old then it will have been designed for earlier standards and lack the capability and technology of more modern vehicles. Second these companies will not have access to the mature supplier base and will be using components with less developed capability. Third these companies have limited experience of the development process required to ensure that the customer gets a proven and developed car that can meet its needs.

These then are the key customers for Lotus Engineering and good relationships have developed with these companies since the first projects around 2001. One early customer was a minivan maker with little experience of developing its own cars. They were unsure of the risks of taking a new product into market so they asked Lotus Engineering to help them make sure that it would be properly developed and well received. This small car was launched about three years ago and quickly became respected for its ride and handling and NVH and is often used as a benchmark by other companies. Lotus has supported development of small SUVs and new mid range saloons for another customer as well as the development of GM models. All have quickly become well established in the market place with very good customer feedback.

An interesting development that further indicates the growing maturity of the market is that Lotus Engineering is also being asked to train these companies in the development process and the skills and technology needed. We have undertaken a number of driver training projects to bring the engineers' skills to a level where they can better assess the capability of vehicles. Lotus Engineering has sold a Suspension and Kinematics Measurement System to Chinese customers, which shows that they now recognise the need to objectively measure and understand a car so that it can be developed. Lotus is also doing specific training where its engineers join client programmes as advisors to guide both the development process and understand how the different disciplines work together and their engineers do the bulk of the work led by Lotus experts.

Things are not too different in India. The big players are the home grown Mahindra and Mahindra, Tata Motors and Hindustan Motors but the big multinational players such as GM and Ford are already very active and both are showing that they have learned lessons from China as they are already making specific vehicles for the Indian market. The customer is actually more mature in his knowledge of the car and has sufficiently developed driving skills to allow him to assess it. The taxi fleets are an amazing mix of aging and cherished older models and the roads and other traffic are definitely a bigger challenge.

So the similarities are great. All these countries have huge markets and huge ambitions to be major players. The vehicle companies have large numbers of very intelligent and well-educated engineers who all work very hard at learning how to make better vehicles. All they lack is experience. Lotus Engineering has a great opportunity to offer this experience and customers are gratefully accepting our help. Many now start to understand the importance of Driving Dynamics so the bar is rising and they have great ambitions to export their cars as well as supply their home markets.

Paul Harvey, Lotus Engineering



China won't rush to world markets

China's emerging domestic vehicle makers are beginning to voice ambitions for world markets. But large scale exports by Chinese makers are still some way off and their ambitions are tempered by certain realities and the knowledge that there is plenty of business to do at home anyway, writes Dave Leggett.

The uncertainty over MG Rover's future and its eventual demise last year was played out in the British media at every ghastly turn. Aside from the usual soap opera stuff that we have come to expect from a company with Rover's history, the sorry affair was notable for the prominence of Chinese firms among the prospective buyers.

China's market leading Shanghai Automotive (SAIC) – which was supposed to be doing a joint venture deal to effectively rescue ailing MG Rover – eventually lost out in the post-bankruptcy bid for remaining assets to a smaller company, Nanjing Automotive.

What on earth do these Chinese companies see in MG Rover anyway, many asked?

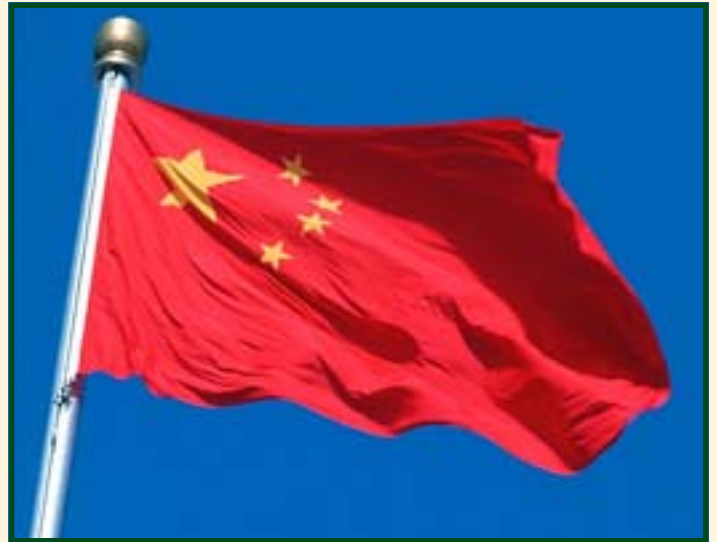
The answer lies in their nascent global ambitions – something that applies to SAIC in particular. While Western companies get justifiably excited about the huge demand opportunities in China, Chinese domestic makers have one eye firmly on future export earnings.

The Chinese are an ambitious lot and they were never going to be content with merely being the world's major supplier for kids' plastic toys or low-cost white and black goods. The aim is to – eventually – build vehicles that can find customers in world markets.

In Europe, acquiring MG Rover offered the possibility of a headstart to market penetration – products off the shelf, recognised brands and a distribution network to build on. But acquiring an existing manufacturer isn't the only way in. Breaking into markets around the world with vehicles sold through locally based distributors is another strategy for the Chinese and it is already happening.

The products may be based on old designs and platforms, but the Chinese domestic players are continually adapting and refining them, as well as able to produce them at very low-cost for the domestic market (where Western makers are struggling to compete, especially at the low-end). A new wave of models is being readied for export with export strategies apparently starting to take shape.

In the US, Chery Automotive has teamed up with a well-known maverick who once sold Yugo cars there in the 1980s, Malcom Bricklin, to form 'Visionary Vehicles' which has DAS lined up as its



Nascent global ambitions

distributor. Bricklin claims to have signed up thirty dealers already with more than 160 in the pipeline. Shipments of Chery cars from Wuhu to the US are scheduled to start in mid-2007 at the rate of 200,000 a year.

In a light vehicle market approaching 17m units, it's small beer perhaps (with the value-driven Korean brands mainly in the firing line initially) but as a new entrant to an already crowded and margin-starved marketplace, it's just one more headache to add to the list for Detroit.

What about Europe?

Perhaps the first point to make is that Europe is a more complex market entry proposition to the Chinese than North America. The national markets are very different in terms of market requirements and market segmentation; manufacturer shares vary widely; the cost of marketing and selling cars in fragmented Europe is much higher than in North America. And Europeans have historically tended to be more loyal to established brands than Americans have, a trait that is especially evident in upmarket segments (just look at the contrasting fortunes of Lexus in the US and in Europe).

Thus far, new-entrant activity by the Chinese makers to Europe has been limited. Chinese toes are being gently dipped in the water.

Only Jiangling Motors (a Chinese minnow) is actually selling a Chinese-made vehicle in Europe. Landwind Europe is selling its Opel Frontera-based SUV, the Landwind.

Peter Bijvelds, a Dutch car dealer and managing director of Landwind Europe, has pulled a coup in getting a group of major Opel dealers to sell the Landwind. His company, Landwind Europe, based in Brasschaat, Belgium, has a contract to sell the SUV model and other Jiangling products across Europe.

Feature

Some Opel dealers, experiencing declining sales and share over the past decade – most notably in Germany – say they're very happy to get an additional product to sell and have ample spare capacity. Changes to European Block Exemption rules also mean that Opel cannot object, provided the dealers do not use Opel infrastructure to sell the Landwind products.

Landwind volumes look low at the moment, though the pricing looks aggressive with the Landwind selling at around €15,000. Around a dozen German Opel dealer groups have been signed up, with sales targeted at 2,000 units in Germany for 2006.

Another Chinese maker, Geely, has appointed Lisbon-based auto retailer Sociedade Hispanica de Automoveis (SHA) to distribute its cars in Portugal and Spain. The Chinese manufacturer is said to be actively looking for partners in other European countries.

SAIC may be licking its wounds concerning what it has lost out on and what it is left with over MG Rover (legal tussle with Nanjing over who has rights to what's haping up), but SAIC has the wily ex-Ford, ex-Fiat (Maserati) Martin Leach as adviser. Other SAIC strategies could unfold soon. Distribution partners may be sought for selected markets where SAIC sees a good opportunity.

But how ready are the Chinese, really, for Europe? That's where a dose of realism is called for. The fanfare is perhaps a little premature. For example, at the Frankfurt Motor Show in September of last year, Geely's mere presence with five models on its stand appeared to announce some ambitions.

But the cars on show were not for sale in Europe and many journalists were pretty unimpressed with what they saw – models sold on the Chinese domestic market only and not even homologated for European sale. Indeed, there are murmurs in the industry that the Chinese makers could be years from fully complying with European regulations and standards in areas such as emissions and crash protection.



JMC Landwind

Chinese makers will not be attacking the European market in earnest before 2008 at the very earliest

Quality issues haven't gone away entirely, either. Chinese plants are much less automated than Western ones and are more labour intensive: people are more prone to make mistakes than machines.

Opportunities are clearly there on the distribution and dealer side to partner with Chinese domestic makers looking to export, but deals will be niche volume in character for the next few years.

How ready are they for Europe? Not very, but to be fair, and motor show stand impressions notwithstanding, they do not seem to be in a big hurry to attack Europe. The products aren't quite of international standard and they are not yet ready to go. To rush things could be fatal. *'Too much too soon'* risks a repeat of the mess the Koreans got into in the US in the 1980s when rapid sales growth was utterly undermined by poor quality, resulting in tattered brand reputations.

For all the brave talk of export markets, Europe is a very, very problematic place for a new entrant. And remember, there is plenty of volume opportunity to keep the Chinese occupied at home as motorisation takes hold in China.

Will they come? Almost certainly, yes: that's a political given. But it won't be a sudden ground-shifting wave. More a steady drip, at least for now and the next few years, unless a seismic M&A event happens (like SAIC buying Fiat Auto). Don't rule something like that out, but my feeling is that the Chinese makers will not be attacking the European market in earnest before 2008 at the very earliest. From 2010 onwards it really gets interesting.

Source: just-auto.com editorial team



Late entrant Ford cements a strategy for playing catch-up in China

When car companies started scrambling to gain a foothold in China, one company seemed slow off the blocks. Ford has taken a low-key approach – so low-key that some analysts feared the blue oval had missed the boat, writes Mark Bursa.

But slowly and surely, Ford is playing catch-up in China. It has established successful local joint ventures and is gaining ground on its early-adopter rivals. Ford brand sales in China rose 46% last year to 82,225 vehicles, helped by strong imports and significant price cuts – and the fact that local production is starting to kick in.

Ford's main car-making JV, Chang'An Ford Automobile in Chongqing, added assembly of the new Focus to the existing Mondeo and Fiesta last year – all are current models, not older versions. Chang'An Ford is a 50:50 joint venture, and locally assembled vehicles accounted for 61,013 units of the 2005 total. Recent improvements at the plant have boosted capacity to 150,000 units a year, and the venture expects to produce 120,000 cars in 2006.

Meanwhile sales at its other JV, a venture that builds the Ford Transit in partnership with Jiangling Motors, saw sales rise 48% from a year earlier to 18,000 units last year.

It's not just Ford brand vehicles that are gaining ground – total Ford group sales in China totalled more than 220,000 units last year. In fact, the group's top brand in China is Mazda, which in 2005 saw sales rise 51% year-on-year to 133,778 units. Both Ford and Mazda outstripped the total market increase of 26% last year. Catching up indeed, though still less than one-third of GM's total China sales last year.

In addition to its own JV in Changchun with First Automobile Works (FAW) making Mazda 6 sedans and wagons, Mazda has this month started producing the Mazda 3 model at the Chang'An Ford plant. In the longer term, Ford and Mazda will work more closely together. Building work is underway on a new JV Ford-Mazda engine plant, announced in April 2005. The plant, in the Jiangning Economic and Technological Development Zone in Nanjing, will have capacity for 350,000 engines for both Ford and Mazda, with production starting in 2007.

This indicates the scale of the Ford group's ambitions. In October 2003, Ford and Chang'An Automotive announced they would invest more than \$1 billion to expand their operations in China. A new Ford-Mazda plant is planned to be built next to the engine plant, with a capacity of 160,000 cars a year. This is scheduled



New strategy for China

to come on line in tandem with the engine line, and will swell Chang'An Ford's capacity to 360,000 units – an eighteen-fold increase on 2003's level.

Add in Mazda's projected growth with FAW – Mazda is targeting total Chinese sales of 300,000 in China by 2010 – and Ford group will have in excess of half a million units of capacity in China, putting it roughly where PSA will be in the same timeframe – and PSA has already been manufacturing in China for well over a decade.

Ford is also looking at the luxury sector – still relatively small in China, but growing. Lincoln, Land Rover, Volvo and Jaguar brand cars are all sold there, and Ford has just announced that the Volvo S40 sedan will also be built at Chang'an Ford in Chongqing – a logical move as the S40 is built on the same platform as the Ford Focus and Mazda 3. Volvo wants to build 10,000 S40s a year in 2007, at which level it says the venture will be profitable.

Is there a weakness in the Ford strategy? Possibly only the lack of a small car – something that would give Ford a crucial entry-level model to compete with GM's Chevrolet Matiz, and the burgeoning number of locally-developed cars made by the likes of Geely, Chery and Tianjin Xiali.

This problem is not exclusive to China – Ford is light on very-small-car technology, and in Europe is not developing its own replacement for the ageing Ka – instead it'll piggyback on Fiat's new 500, which is to be built in Poland. Could this venture be extended to China? That would depend on Fiat's approach – and Fiat is one of the few automakers that has got off to an even slower start in China than Ford.

In that respect, Johnny-come-lately Ford has the same problem in China as pioneering Volkswagen, which, despite a 20-year head start in China, has equally failed to come up with anything cheaper than a Polo. So maybe Ford's late entry isn't that much of a hindrance after all.

Source: Mark Bursa

Driving dynamics in the US

The US market, like much of the automotive world is converging in terms of build quality, durability, safety, convenience features, fuel efficiency, as well as service and dealer experience. In this environment features that define 'DNA' or 'signature' become increasingly more relevant. Interior and exterior styling and driving dynamics for example, become means to set apart one product offering from another and determinants of consumer choice. It is in relation to driving dynamics that Lotus Engineering is reviewing interesting changes in the US market place, and where OEMs can gain real product advantage.

What will be interpreted as good driving dynamics is influenced by factors specific to the market such as road systems and driving habits.



Chrysler 300C – strong visual cues, American

In the US, average journeys cover greater distances – it is not uncommon to commute 100 miles a day. Roads are wide and straight, and average freeway speeds seldom exceed 70-80mph of cruise-controlled consistency. Historically, with low fuel costs, larger vehicles have been preferred for this mode of journeying. Vehicles with large displacement high torque powertrains that are soft riding with slow responses have been the mainstay of US automobile consumers. The US market's affinity for SUVs has been a testament to this. Typically, the set-up is for comfort at the expense of handling responsiveness – increased compliance in the steering and suspension bushings. Ride and handling tuning tends to have an emphasis on two wheel bump events, with lower spring rates but higher anti-roll bar rates. Traditionally, US sports cars have been conceived as high horsepower and torque, with good drag strip capabilities. The ¼ mile time is the measure of the vehicle's sporting prowess.

The US automakers have been catering to this market. However the market is changing. The Asian brands have entered the marketplace and have not only re-produced the types of vehicle

that Detroit had a monopoly on, but on occasion bettered them. Just look at the consumer report surveys and the press reviews of the latest minivans, SUVs and pick-up trucks. Additionally smaller, lighter, fuel efficient, better handling vehicles are catching the consumers' attention, vehicles that the European and Asian OEMs have significant heritage and experience in producing. Consumers are demanding styling differentiation, fuel efficiency, and superior driving dynamics – without giving up some of the traditional US vehicle traits of easy power and isolation.

Detroit has not stood still. Each of the 'big 3' whilst seemingly caught off guard to the Asian brands increasing dominance in their market, is making a comeback. Vehicles like the Chrysler 300, which epitomise US styling, provide driver involvement and driving dynamics significantly superior to previous offerings. Technologies such as cylinder de-activation help achieve reasonable fuel economy despite large displacement powerful engines. The Ford Fusion and its sister variants major on driver enjoyment and driving dynamics and are gaining in the market. GM has steadily changed the image of its Cadillac brand to have vehicles that are dynamically competing with their European and Asian rivals.

The challenge of producing vehicles that deliver beyond the basic expectation of the consumer requires a philosophy shift. There is no doubt the US automobile market is extremely price sensitive. Detroit's OEMs have in recent months provided heavy incentives and discount on certain vehicles, but not all. The Chrysler 300 and its Dodge brand remain strong sellers without the help of significant financial incentives – the product is desirable and competitive within the market. Products that exceed customers' expectations have a history of achieving sales.



Cadillac CTS – American style, Euro handling

Consider the Honda Accord sedan and Toyota Camry that have dominated the market. The Asian manufacturers continue to strive for leadership in reliability, durability, creature comforts and safety. But both these vehicles have evolved over time to have increased driver involvement and improved driving dynamics and they remain at the head of the pack.

Feature



Toyota Camry – top selling sedan



Hyundai Azera – new breed of Asian cars taking the market by storm

So to meet the needs of the increasingly aware consumer, driving dynamics must be considered at the start of new vehicle development stage. These attributes and the structural integrity of the vehicle body structure are inextricably related. A vehicle with good structural qualities is inherently superior with respect to NVH and refinement. Downstream vehicle tuning for ride, handling and NVH is more easily achieved. Similarly suspension system configuration, kinematic and compliance characteristics are key aspects it is critical to set at the outset such is their influence on a vehicle's character with respect to its driving dynamics.

With these fundamentals in place, 'Market-focused tuning' becomes key to the acceptance of a vehicle to its target market. The 2000-2004 model year Ford Focus for instance, in Europe was sold as a C-segment vehicle considered in the market as a mid-sized car and tuned with a handling bias to appeal to critical European consumers. By contrast the same vehicle in the US is classed as a compact car, targeted at a different demographic, with the ride to handling compromise biased to a comfortable ride.

This type of local market tuning is prevalent across the majority of vehicles sold in multiple markets. Typically ride frequencies are tuned for the local market requirements by way of revised springs, bushings and anti-roll bar rates. The steering system effort level is another attribute frequently tuned to specific market requirements. Often automakers will also fit different tyres to further localise a vehicle.

There are exceptions to this 'market focused tuning'. Vehicles that are highly optimised for their driving dynamic characteristics – vehicles that have globally strong brand identities, that will not dilute their signature traits to appease specific market requirements – examples include cars from brands like Lotus, Ferrari and Porsche. These types of vehicle are considered to have all attributes optimised to suit their character, and any market tuning compromises the brand identity.

But the reality is that for most vehicles, getting the product character to meet specific market and consumer expectation is increasingly important. And driving dynamics is an area where if carmakers get it right, customers are becoming more receptive.



Lotus Elise – epitomises philosophy of performance through light weight

It is for support in meeting these challenges that manufacturers have consistently turned to Lotus Engineering in Europe and the Far East for many years. As driving dynamics becomes a greater factor in differentiating products and influencing the consumer buying decision in the US, so Lotus Engineering is increasingly being called upon here too. Its driving dynamics expertise and facilities are now established in Detroit and involvement in the exciting new venture that is the Advanced Vehicle Research Center in North Carolina will help keep Lotus Engineering at the forefront of this field. Making cars drive like people want them to drive has always been what Lotus does well and if American tastes are changing we are only too happy to be able to help give them the cars they now want.

Sunil Lall, Lotus Engineering Inc.

What is AVRC?

The Advanced Vehicle Research Center (AVRC) is an initiative by the State of North Carolina to attract automotive industry investment to the north eastern region (of North Carolina).

Initial State funding of \$7.5m is allocated for fiscal year 2006 with further \$22.5m earmarked for subsequent years. AVRC has also secured Federal funding of \$1.5m for alternative fuels research through the Department of Energy. Additional support from Tobacco Settlement Funds and Department of Education raises the total secured funding to more than \$10m.

AVRC mission

The mission of AVRC is to provide a modern automotive development facility for use in the design, testing and certification of conventional and advanced vehicle technologies, sub-systems and components. This facility will provide a safe, secure, and private environment while reducing the time and cost of product research and development

What is the Lotus connection with AVRC?

Lotus Engineering Inc. has been working closely with AVRC since 2004 and has since been selected as the engineering partner. In exchange, Lotus has donated the design of the world class 4.1 mile ride and handling track to be built at AVRC later this year.

Lotus will build an engineering presence on-site at the AVRC facility in order to execute advanced proof of concept work. Specifically, Lotus North Carolina Operations will focus on the conversion of new automotive technologies into feasible reality. These primary activities will be supplemented by support to AVRC users who may need engineering assistance.

What is the Lotus Engineering focus at AVRC?

- Driving Dynamics Excellence
- Advanced Combustion Research (Alternative fuels evaluation and optimization)
- Converting Technology Concepts into Relevant and Viable Automotive Reality
- Technology Integration
- Advanced Materials and Processes

When will AVRC be operational?

Site construction will start in late 2006 with an operational facility in place by mid 2007. The facility will include an engineering administration building, world class ride and handling track (wet and dry surfaces), multiple vehicle dynamics areas and hydrogen refueling. Future plans include advanced powertrain test facilities and vehicle chassis laboratory.

Simon Cobb, Lotus Engineering Inc.



AVRC, North Carolina

Global platforms: has the ideal of a truly global car proven unrealistic?

All global OEMs pursue platform or architecture strategies today, without exception, although what defines a platform/architecture strategy has changed significantly over the years and varies from one OEM to the next. Certainly the days when each new model had to be developed entirely from scratch, with a development time of several years, are over. Today by sharing development work, component sets (modules or systems), manufacturing processes, as well as knowledge and expertise, new models can be developed in a matter of months rather than years, with huge cost savings.

In the past, OEMs hankered after a car design that would meet global needs to achieve scale. The Ford Mondeo, for example, was designed as a model that would be appreciated by customers in both North America and Europe. Such a model to some extent remains the Holy Grail for European and North American suppliers, but it is also now unnecessary since with a platform strategy, economies of scale can be achieved with different car designs.

Two global OEMs, Toyota and Honda, have managed to develop global models that are highly successful in all three of the major automotive markets – North America, Europe and Japan, but in fact, under the skin, they still often differ considerably from one market to the next. For example, Honda uses a different platform for the European Civic to the US and Japanese versions.

The differences between models accommodate different consumer tastes as well as different technical demands, such as regional crash test requirements.

Volkswagen - an early adopter of platforms but differentiation is now key

Volkswagen was the first to fully exploit the potential of a platform strategy when it grouped models across each of its four major brands and allowed them to share technology extensively. While this brought fantastic technology to Seat and Skoda, the Volkswagen brand suffered as its customers were too aware of the commonality between models from the high value German brand and the Spanish and Czech brands with perceived lower brand qualities.

Volkswagen recognised that it had to concentrate on maintaining the different identities of each of its brands and focus on increasing commonality under the skin of the car, where they would not be noticed by the customer.



Volkswagen Touareg

Volkswagen therefore adapted its platform strategy into an architecture strategy, or what Volkswagen calls its 'Baustein' strategy. For example the Audi Q7 shares a platform with the Volkswagen Touareg, but only shares around 15% of components with the Touareg. However, it also shares interior and high end luxury components with the Audi A6. Volkswagen's strategy calls for components or modules to be shared across the group and across vehicles of different types and sizes. The platform is only one area of commonality.

The new Skoda Roomster MPV is another example of the 'Baustein' policy in practice. It borrows some platform components from the AO4 (Fabia) and some from the A5 (Octavia) to produce a unique niche vehicle, which has received favourable press reviews ahead of its launch in autumn 2006.

Global platforms behind Toyota's fast growth

According to data from PwC Automotive Institute, half of Toyota's 2005 global sales volume of 7.36m units was from three platforms, thanks to a rigorous application of platform technology, which has seen major models adapted to suit local market conditions.

Part of Toyota's success is that it has truly global platforms and even some global models, something that cannot be said of most of the European or North American OEMs. The Corolla is highly successful in each of the three major automotive regions, but although it has the same name it is slightly different in each market with the Japanese version being the narrowest and the US version the longest. In addition Toyota does not shy from developing local market derivatives, such as the Toyota Matrix for North America.

Because of the scale of its platform programme, Toyota is also able to launch latest technology in low cost markets such as China. The Corolla was launched there in 2002, and the latest generation Camry in May 2006 – not much later than the model was introduced in the rest of the world.

Feature

PSA tightly focused platform policy

PSA has a very strict platform policy with most of its car products grouped into three product families, code-named PF1, PF2 and PF3. When the group needs a model outside of these families it cooperates with another OEM, so, for example, it cooperates with Fiat on light commercial vehicles and MPVs, and with Toyota on small cars.

The PF1 platform is PSA's highest volume platform with 1.15m vehicles assembled in 2005.

PSA also has 51 named common systems that are shared across platforms. They include engines, transmissions, steering, climate control, seat frames, brake, radio, and navigation systems. These cross-platform systems represent around 30% of a vehicle's production cost.

The PF2 platform shows what cost savings can be achieved. The Peugeot 307 was developed at a cost of €1.1bn, of which €655m was attributed to developing the platform, and €442m was spent specifically on the 307 and its variants. The Citroën C4 then cost a similar amount to produce in addition, meaning that two models were produced for €1.5bn. The more models this expenditure can be spread over, the more cost savings can be achieved, hence the proliferation of new models on the market at the moment.



Peugeot 307

Ford C1 Technologies platform paves way for future cross-brand co-operation

The Ford C1 Technologies platform, also known as EUCD, shows that there is more to a 'platform' strategy than just the physical components of the cars themselves. Commonality has been achieved in the development and manufacturing processes, and this has led to significant cost savings.

The core engineering of the platform was led by Mazda, while much of the engineering work was conducted at Ford's engineering centre in Merkenich, Germany, and purchasing was led by Volvo.

Ford has achieved maximum differentiation between each of the models and brands, while maintaining commonality where it is not perceived by the customer. Fixed points on the C1 platform are the wheelbase, disk brake size and front and rear suspension design. Around 50% of components by value on each model are shared with at least one other C1 model.

One of the common features between models on Ford's C1 platform is the build sequence, which is the same for the Mazda3 and Mazda5 MPV in Japan, the Focus in Saarlouis, Germany, and the Volvo S40 sedan and V50 wagon in Ghent, Belgium.

Ford has also made successful use of available platforms and components to develop niche vehicles for emerging markets. The Fiesta-based EcoSport produced in Brazil is one of Latin America's best-selling cars, and the Ikon sedan based on the same platform has had success in India and other low-cost markets.

*Global OEMs
still need to save
costs and to have
the ability to
maximise volumes
of scale*

Honda Civic now based on two different platforms

Honda's new 2006 Civic for North America and Japan is based on the same platform as the previous generation model, called the Civic GCP (Global Compact Platform). On the one hand this shows that by investing heavily in a platform, Honda can make that platform last for more than one generation of a model. Most global OEMs now expect a platform/architecture to last more than one model cycle, although there are few examples of this having happened to date. On the other hand the fact that the new Civic uses the same platform as the previous generation, shows that a platform is more than just the sum of its technical design. Rather it is also the organisational and communication structures that go into developing and manufacturing all models on that platform.

Manufacturing considerations are perhaps more important for a definition of a Honda platform than for any other OEM. It prides itself on a highly flexible manufacturing system where production can be switched quickly and easily between models on the same assembly line, as well as between plants in different regions. Honda was one of the first to systematically standardise production in its plants on a global basis.

Feature

The Civic on the GCP platform is produced in Japan and the US, but the European Civic is smaller and is based on the GSP platform (Global Small Platform), shared with the Jazz, City, Fit and Mobilio.

Global car no longer an aspiration

A truly global car appears to no longer be desirable. Global OEMs still need to save costs and to have the ability to maximise volumes of scale, but that scale can come from a variety of different sources – shared platforms, shared components sets or modules, shared development work as well as common sourcing and manufacturing processes. Currently the largest platform is

the Volkswagen Golf or A5 platform, on which almost two million vehicles were built in 2005. This is a trend that is likely to continue and we can expect to see platforms from Renault-Nissan and Toyota to broach the two million mark in the next few years. According to PwC Automotive Institute data, in 2005 there were just 12 platforms or architectures with a production volume over a million units but 35 platforms with a volume in excess of 500,000 units. Again these are figures that are set to rise. These high volume platforms/architectures include products from virtually all the global OEMs and vehicles for a variety of markets, including low-cost emerging markets.

Source: Susan Brown

Top 10 rankings of global 'platforms', 2004-2005

2004		2005		
OEM and platform name	Volume	OEM and platform name	Volume	
1	Toyota TMP	1,424,036	Volkswagen A5	1,968,215
2	Toyota NCV	1,338,018	Toyota NCV	1,376,950
3	PSA T1/C3/AO	1,294,920	Toyota TMP	1,363,312
4	Adam Opel Gamma	1,180,484	Ford C1/P1	1,328,107
5	GM GMT800	1,147,262	Toyota NBC	1,176,085
6	Volkswagen A5	1,145,573	PSA PF1	1,152,618
7	Toyota NBC	1,069,443	Hyundai J3	1,149,069
8	Suzuki EC	1,068,253	Honda Civic	1,146,407
9	Honda Civic	1,059,110	GM GMT800	1,107,257
10	Ford BE1	1,043,010	Adam Opel Gamma	1,104,145

Source: PricewaterhouseCoopers Automotive Institute



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