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# Cars of the future

**Greener, Cleaner, Safer & Sexier**





**E**xactly a century after Henry Ford brought motoring to the masses with his Model T, *The Jetsons*-style flying cars are still a few pit-stops away. But there are big changes afoot in motoring.

As the globe warms and fuel demand soars, we're looking to greener cars powered by sustainable, economical fuels and fuel-efficient technologies as the way of the future.

Cars are already several shades greener. With drivers ever more concerned about pump prices and the environment, vehicle manufacturers are toiling to improve models' fuel efficiency, thus cutting CO<sub>2</sub> emissions without compromising on power or performance.

While neither diesel-engine nor hybrid cars are a silver bullet, both outperform petrol (gasoline) in the efficiency race and are bastions of the immediate motoring future. Think a small hybrid for nipping about town and a larger diesel vehicle for longer trips.

Given that diesel is 30 per cent more economical than petrol, it's not surprising diesel-vehicle purchases are multiplying. Forget the noisy, smoky vehicles of old: by employing technologies like high-pressure pilot-injection, sophisticated new diesel models improve performance a little and fuel economy a lot, farewell engine clatter, and flat-line the argument that diesel's higher carbon content equals

higher emissions. As more diesel passenger cars appear in New Zealand, mainstream acceptance of the fuel will grow. Meanwhile, manufacturers of petrol-powered cars will continue developing and employing fuel-efficient innovations like frugal engine-management systems.

In line with the carbon-conscious "downsize me" cry, small cars are growing in popularity worldwide including in New Zealand. Hybrids, which work best in stop-start traffic, will likely snare the small-car/commuter niche. What makes a hybrid a hybrid is it combines a fuel-powered engine with an electric motor, electric generator and batteries. The generator makes electricity both from the engine and, when you use the brakes, from recovering energy.

Internationally, hybrid sales are snowballing and in New Zealand the hybrid is shedding its enviro-fringe label. While there are a few on the Kiwi market, it will be 2010-2012 before most manufacturers roll out hybrid models Downunder. Fully electric cars that can be recharged overnight are also being developed.

As for biofuels, they comprise one per cent of global transport fuel with that share growing fast. Internationally, major biofuel ethanol is powering six-million-plus flexifuel vehicles (using petrol or a petrol/ethanol blend). But while biofuels are renewable and can be locally grown, most are produced from the food and water humankind needs; and though purportedly carbon-neutral, their cultivation-and-processing emissions must be weighed against a low energy yield. But companies are working on producing ethanol more cheaply and sustainably from waste or even algae. Expect to be filling up on biofuels soon: especially if the Biofuel Bill currently before Parliament – which would require gas stations to pump a percentage of biofuels (Gull's already doing it) – is passed.

Your standard gasoline engine requires no modifications to run on a 10 per cent-ethanol/gasoline blend.

But the most futuristic talk is about hydrogen: how hydrogen-burning fuel-cell vehicles will run on freely available, cheap fuel (made from either natural gas or electricity) and emit only water. But many experts say hydrogen is hot air rather than the holy grail as, being so light, it's too difficult to distribute, dispense and store (at -253°C). It's also much more energy efficient to use, say, the electricity directly in a battery car.

Over the next decade companies will



continue developing a viable hydrogen fuel. Diesel will increase its market share, and hybrids or purely electric vehicles will gradually enter the mainstream. But the most price-conscious consumers will continue buying increasingly fuel-efficient petrol-powered vehicles, and the fuel will contain up to 10 per cent ethanol. Predictions are that oil will be wholly replaced, but not for several decades and not by one thing.

Meanwhile, vehicle design innovation will zoom in on meeting environmentally friendly, lightweight goals, while maximising interior space to make even small cars feel roomy. Expect cars to start looking even more dissimilar as designers strive for a unique aesthetic, such as retro or even a flame-licked effect.

And manufacturers will keep one-upping each other to make the driving experience more comfortable, easy and fun, with everything from swivelling seats to hands-free parallel-parking systems. Expect to see more ergonomically designed, heated seats, video monitors which ease parking and backing, and double as entertainment screens, and GPS navigation technology which can also stream information about which carparks have empty spaces and where.

In the months and years ahead, expect electronic wizardry to keep improving driving performance, comfort, and safety; and to see many more hybrids and cars equipped for greener fuels. Here's our pick of futuristic models already winning over drivers.



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## BMW

"We're being told to rethink everything we use and consume to combat climate change, so it may come as a surprise that the 2008 World Green Car of the Year isn't a hybrid, electric or water-powered car," says BMW's corporate communication manager Piers Scott. In March, a 47-expert panel awarded that coveted title to the five-door diesel hatchback BMW 118d, which drinks just 4.7 litres per 100km with CO<sub>2</sub> emissions of 119 grams per kilometre (the New Zealand average is around 220 grams).

The BMW 118d owes these miserly figures to the latest innovations of the marque's EfficientDynamics sustainability strategy. Technologies, including lean-burn engines and recovering the energy a

car uses when braking, can significantly reduce the fuel consumption of every BMW. (EfficientDynamics's long-term strategy is rolling out the world-first hydrogen-powered production car, BMW's Hydrogen 7, onto the passenger-vehicle market.) Scott: "Green leadership isn't something you'd naturally associate with a luxury performance car brand, but our promise is cleaner, more efficient vehicles that are also more powerful."

The 118d hatchback drives as smoothly as you'd expect from a BMW: accelerating to 100km/h in nine seconds, while rear-wheel drive evenly distributes weight between front and rear, making for smooth steering, braking

and handling. And you'll do the distance in comfort, thanks to electronically adjustable lumbar support, heated seats, and presets to return to your favourite seat position.

To prevent loss of control, BMW "Run-flat" tyres have stiffened side-walls (you can drive on a punctured tyre for up to 100km) and the Stability Control system ensures optimal traction at all times. Further safety features include seat-belt pre-tensioners (to avoid injury from the seat-belt itself in event of an accident), and a child carseat can be fixed directly to the chassis.

Oh, and she's a looker, too: see how those convex and concave curves suddenly turn into sharp lines to create a flickering-flame effect.



## Volkswagen

Find parallel parking tricky or unsure whether you'll squeeze into that space? Parking panic's a thing of the past thanks to the ParkScan "assistant" in the new compact SUV, the Volkswagen Tiguan. Imagine you're cruising along looking for a park. When you hit the ParkScan button, a sensor scans the side of the road; when it finds a gap big enough, a message flashes up on the dashboard display screen.

You position the car in front of the gap, the screen flashes "select reverse", then as you accelerate, the steering wheel moves by itself and positions the car. A beep tells you to brake, then you straighten up. Seriously handy! And just one of dozens of features, including rain-sensing windscreen wipers, designed to make the driving experience almost effortless.

The Tiguan roared into the New Zealand market in March after collecting multiple international awards for performance, recyclability and safety. It's actually the safest

SUV internationally with the highest overall European New Car Assessment Programme (Euro NCAP) safety score. In an accident, a protection system triggers the airbags, seatbelt-force limiters and hazard warning lights and also unlocks doors, switches interior lights on and the fuel pump off.

And with a latest-generation TDI diesel engine and a filter-equipped exhaust system, it's the first car on the New Zealand market to comply with the strictest emissions rating, Euro V. With a track record of investigating fuel-frugal driving, Volkswagen affixes the BlueMotion badge to the most energy-efficient car in each model line (measured for the whole process from car design to fuel consumption to scrap).

In March the BlueMotion range took the environmental category of the 2008 Automobile Association Motoring Excellence Awards. Says Volkswagen marketing manager Jarrod Ho: "Our approach is being clean and green without sacrificing the fun."



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## Mitsubishi

A computer which reports the distance you can travel without running out of fuel, average speed and your average fuel economy is just one high-tech gadget of Mitsubishi's newly relaunched Lancer VRX (the top spec of the five-model range). It's longer and wider than previous Lancers, so relax back in the sports-styled seats and stretch those legs. The leather-bound steering wheel, handbrake lever and transmission selector add a touch of luxury as automatic climate control keeps you cool.

Meanwhile there's no need to take your eye off the road to change CDs (a steering-wheel button controls the six-CD MP3 audio system); no fiddling with phones thanks to a voice-activated, hands-free phone system; no fumbling for keys or locking them inside thanks to Mitsubishi's keyless operating system (you just press buttons on a key card); and no need to watch for raindrop stops and starts thanks to rain-sensing windscreen wipers.

And if you think advanced safety packages

are confined to seriously expensive cars, think again. The VRX boasts everything from stability and traction control to the reassurance of seven airbags – even one to cushion the driver's knees – while Mitsubishi's Reinforced Impact Safety Evolution (RISE) body construction ensures that impact force is directed away from the passengers.

Marrying power performance and environmental efforts is the VRX's new lightweight 2-litre Mivec engine – its instant response to speed shifts puts the model's fuel economy at just 7.7 litres per 100km.

"Fuel efficiency's the biggest driver of change in the industry and electric is the way we're going," says Mitsubishi marketing communications manager Daniel Cook. An industry leader in the production of electric vehicles, Mitsubishi is currently producing the fuel-consumption-slashing MIEV (in-wheel electric vehicle), where a lightweight motor and overnight-recharge batteries replace the engine.





## Suzuki

Want the space to stretch your legs while minimising environmental impact? Suzuki's 1.6-litre SX4 2WD hatchback, a standout from Suzuki's SX4 range, has the outstanding fuel efficiency of a compact car (6.7 litres per 100km and a low 165 grams per kilometre of CO<sub>2</sub>) as well as the generous interior space you'd expect from a larger vehicle, with room for a family of five. And its tall body design with high seat positioning makes slipping in and out of the vehicle a breeze – especially handy for older drivers.

Looking more like a mini off-roader, this hatchback's ideal for nipping around town and into those small parks – and rugged enough to handle the long haul. An all-wheel-drive option is available in the 2.0-litre, allowing selection between front-wheel drive, automatic 4WD, which engages drive to the rear wheels when required, and locked 4WD for very poor road conditions. Plus the SX4 is smoothly responsive right across the rev range, and super stable thanks to its wide track and extreme-outside-corner wheel positioning.

And there's no compromise on comfort. Sit back and enjoy the drive in ergonomically designed, height-adjustable seats, with the company of an eight-speaker MP3-compatible audio system and an information display itemising outside air temperature and fuel consumption. Top marks for safety too: you get dual front, side and curtain airbags, a rear fog lamp, height-adjustable headlights and a Euro NCAP four-star safety rating.

The SX4 range, which has expanded to 11 models including the newly introduced SX4 sedan, signals Suzuki's future design direction, says Suzuki New Zealand's Automobile sales manager Gary Collins. A leader in the compact-to-medium-sized vehicle market with the third-lowest emission levels of New Zealand distributors, Suzuki is progressively phasing in further engine technologies which maximise fuel efficiency.

Pictured: SX4 2.0 Limited Sporthatch





## Audi

A TV, a navigation system, an iPod interface and a top-of-the-range Bang and Olufsen sound system are just a few elective toys in Audi's A4 3.2 FSI Quattro sedan, which pulled up in New Zealand in April. Comments Audi marketing manager Rachel Jones: "Communication and entertainment gadgets are the sort you'd expect from a luxury-class vehicle" – as is its lithe, sporty look.

In this sedan the driver can take control. With Audi's optional drive select control system, you can flick from "dynamic" to "comfort" and back to automatic to electronically manipulate operation of the engine, automatic transmission, suspension damping, and steering. Audi's Dynamic Steering system varies the steering ratio and torque according to the speed driven, helps apply corrective steering and improves stability. And you'll do the distance in roomy, ergonomically designed seats, while there's separate air conditioning for three zones.

Along with its petrol and two diesel siblings, the Audi A4 3.2 FSI Quattro

testifies to Audi's commitment to "greenify" its vehicles. Employing latest-generation fuel-stratified-charge (direct-injection) technology which continuously dispenses the minimum optimal level of fuel, the sedan provides powerful performance with fuel consumption slashed by 13 per cent.

And thanks to extensive aluminium use, the sedan – in line with Audi's push to bring down vehicle weight and increase fuel efficiency – is also much lighter than previous models. Yet its robust, rigid "cell", airbags and seatbelt force limiters protect occupants better than ever.

Meanwhile, at January's World Economic Forum Annual Meeting 2008 in Switzerland, Audi's chauffeur fleet premiered its research innovation GTL (gas-to-liquid) fuel. Able to be fitted on any TDI (turbo-charged direct-injection) engine, the fuel, derived from natural gas, sees fuel consumption cut by 10 per cent, CO<sub>2</sub> emissions by 13 per cent, while carbon-monoxide emissions drop 93 per cent and sulphur-dioxide emissions are eliminated.





## Ford

In the opening scenes of the blockbuster *Casino Royale*, Agent 007 speeds away in a Ford Mondeo. If it befits Bond, this vehicle surely must have some serious speed and power. Yup. With a brawny 2.5-litre petrol engine, six-speed transmission and sports suspension, the German-engineered Mondeo XR5 – Ford's most technically advanced car yet – is also the first production version of Ford's "kinetic design" styling, the blueprint for sportier, sleeker, more dynamic-looking Fords.

In New Zealand showrooms from June 1, this multi-award-winning hatchback has more handy features than MacGyver's Swiss army knife. Hop in and sensors automatically detect the ignition key in your pocket or bag; you just push the starter button. Once you've relaxed back in your heated seat, there's no need to swivel sideways, thanks to control and display buttons located on the steering wheel. Climate control sets separate temperatures for driver and front passenger while a pollen filter ensures the allergy-tested interior remains irritant-free. And this is the first production car using

Ford's Easy Fuel system, which does away with the petrol cap. There's none to remove or lose; instead there's a no-mess open-and-shut system.

With a top-notch 5-star Euro NCAP safety rating, the Mondeo XR5 also boasts first-rate traction and stability control. On impact, front seatbelts take up any slack milliseconds before up to seven airbags are deployed; the steering column collapses away from the driver into the dashboard.

Belt-driven camshafts, the engine-management system, intercooler, turbocharger and knock sensors work together to give the Mondeo XR5 impressive fuel economy for a family car. Meanwhile, Ford is one of the world's largest corporate research-and-development investors, with a strong focus on environmentally friendly technologies. Says Ford New Zealand public relations manager Brie Elder: "Clean diesel models, hybrids, flexifuel vehicles and biofuel-capable models are all ways Ford is focused on an environmentally friendly future."





## Maserati

Futuristic luxury sportscar the Maserati GranTurismo does Italian sexy very well. It leads your eyes over its sculptured, streamlined body: from elongated headlights up to muscular front-wheel arches and the curved bonnet, over the cabin haunch, then down to the spoiler-lipped tail.

"The outstanding design of the GranTurismo, inside and out, is allied to the allure of true heritage and exclusivity," remarks Maserati's Australia-New Zealand general manager Edward Butler. Italian for "Grand Tourer", the GranTurismo has been eliciting envious glances on New Zealand roads since January.

A two-door performance coupe, it fits four adults comfortably – front seats slide

completely forward so you don't need to squeeze through to the rear. Relax back against generous cushioning in the Poltrona Frau-leather seats (your choice of 10 shades), pop your bag into one of the many compartments and your coffee into your cup holder.

With 20 GranTurismo prototypes undergoing hundreds of tests (including reliability, wear, braking, handling) in dozens of road conditions worldwide, you can be sure of top-notch safety and performance.

Powered by a grunty 4244cc V8 engine, the GranTurismo's six-speed hydraulic transmission adapts the type of gear change to driving style and conditions. Alloy wheels with a reduced drift angle increase

agility and responsiveness to steering manoeuvres.

As well as "passive safety" features like airbags and seatbelt force limiters, the GranTurismo employs an "active safety" system – enhancing a car's abilities to avoid impacts in the first place – with features including the Maserati Stability Program which activates to correct even small skids.

Maserati designs of recent models including the GranTurismo have already led to significant fuel savings. The marque's five-year plan, designed to reduce fuel consumption and CO<sub>2</sub> emissions, is based on fuel-frugal engine development, and embraces environmentally friendly, recyclable materials that will also significantly reduce future vehicle weight.