

BTN
TURBO

SUMMER
2008

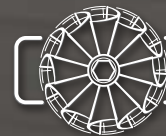
Revolution

Your source of news and views on the turbo industry



Drifting

*a sideways look at an
exciting new sport*



SPIN DOCTOR

Speed sensors give optimum performance

The Peugeot 308 HDi that averaged 90.75mpg

Hybrid vs diesel. Which is greener?

Welcome to Revolution 7

It's been a little while since the last issue of Revolution – because we've been so busy! Even as I write this, Mark Dickinson and Garry Podmore have just returned from the Garrett conference in Bucharest with three trophies: Outstanding Performance Awards for 2006 and 2007, and the Distributor of the Year Award for 2006. They are testament to the hard work put in by everyone at BTN Turbo – at least that's what we're all telling Mark and Garry!

This issue of Revolution looks at a number of initiatives and achievements by different manufacturers that are taking the motor industry into greener territory. A Peugeot 308 HDi has set new records for low fuel consumption; *Mark's remarks* point out that diesel can be more eco-friendly than a hybrid; we look at one man's experience of the new SEAT Ibiza Ecomotive; major fleets are considering alternative fuels, possibly including the coal or vegetable oil we discuss on the back page; and Audi have won Le Mans again, this time using Biofuel.

You can also learn all you need to know about turbochargers, including fault diagnosis and how to specify and fit replacements, from our new DVD – see page 6. If you would like a FREE copy, please drop me a line at rachelb@btnturbo.com or call me on **01895 466 666**. There's plenty more information, our complete catalogue and details of our '12 month no quibble' warranty on every commercial vehicle turbo, all at www.btnturbo.com.

R Birch

Rachel Birch
Editor



Peugeot 308 HDi sets new records for economy

Peugeot's 308 has secured a place in the 2009 Guinness Book of Records. A husband and wife team, John and Helen Taylor, drove a completely standard 308 HDi 110 hatchback on a 25 day, 9,000 mile journey around the coast of Australia.

During the record attempt, the pair broke two world records, achieving an unprecedented 1,192 miles on just 60 litres of diesel and recording an average fuel consumption of 90.75mpg.

The Peugeot 308 HDi 110 hatchback now holds the World Record for both the lowest average fuel consumption on a journey, a record previously held by the Peugeot 307 hatchback, and the record for the furthest distance travelled on a full tank of fuel.

The attempt was scrutineered to make sure that all of the Guinness World Records' policies and procedures were complied with. The car was standard, with nothing removed in order to save weight. In fact, Helen and John added weight by carrying two large suitcases containing clothes for the entire 25 day trip.



John Taylor said "We were very aware of the strong environmental credentials of the 308 before we set out. The Peugeot 308 is the perfect family car; it can comfortably seat five adults and the boot space proved itself too, swallowing up all our necessary luggage."

The Peugeot's powerplant features a variable turbine turbocharger with overboost, giving temporary extra power for swift acceleration, and a particulate emission filter, which means a driver can have fun whilst respecting the environment.

Mark's remarks

Industry comment from Mark Dickinson,
Managing Director of BTN Turbo



Are the hybrids really going to take over? Don't write off diesel.

We've heard a lot about cars with hybrid petrol-electric power, such as the Toyota Prius. But is this the way that motoring is going to go for all of us? I think not. The turbocharger has dramatically improved the performance, economy and emissions of both diesel and petrol engines and I'd like to explain why a turbo-boosted diesel engine is still the best option – and could be even more so if our cousins across the pond would accept diesel as a viable fuel.

Let me start with an example of diesel's prowess. About 50 years ago, Formula 1 constructors started to extract 100bhp per litre from their engines; now there's a turbodiesel that will do the same – the BMW 123d coupé has a 2-litre engine producing 204bhp that will reach close to 150mph, and *Autocar* got one to 60mph in 6.7sec. Yet it uses less fuel than the cheapest petrol-powered Ford Fiesta, and produces less CO₂. So why aren't we all driving one?

It's down to price. Although the advantage of diesel over petrol in most types of car is now beyond serious dispute, the price of pioneering the technology has been high, and car manufacturers have to pass the costs on to the customer. And remember that, while diesel is as common as petrol in Europe, in the US it is almost unheard of. For the diesel engine to gain the global audience it deserves, for volumes to increase and costs to come down, there needs to be a total change not just of attitude but of infrastructure on that side of the Atlantic.

Which brings me back to the Prius. In the virtual absence of diesel, it's typical of the cars that the environmentally-conscious American – including stars like Leonardo DiCaprio, Julia Roberts or Cameron Diaz – drives. While you're in the city it works brilliantly, often running on electricity alone, which is generated not by a coal-fired power station but recovered from the energy that would otherwise have been lost during braking.

The problem is that most of us don't do many miles in town – and away from urban areas, what you're left with is a 1.5-litre petrol engine lugging around a heavy battery pack.

Even so, a Prius is regarded as the most environmentally considerate car you can buy, and one of the most frugal. But let's compare it to a MINI Cooper-D. The MINI will out-accelerate the Prius, has a higher top speed and is more fun to drive.

What might surprise you is that while the Prius manages a commendable 67.3mpg on the out of town cycle, the MINI posts an almost incredible 80.7mpg. It is also substantially more economical on the Prius's chosen urban turf. And it matches the Toyota's CO₂ emissions to the gram. It's more than three grand cheaper, too.



Volkswagen has pushed the boundaries further still with its Polo BlueMotion. By fitting a more aerodynamic nose, lengthening its gearing and re-engineering its 1-litre turbodiesel engine, it has produced a car with double-digit CO₂ emissions. And that means no Vehicle Excise Duty and no Congestion Charge.

It's the same with larger cars. Compare the Mercedes-Benz E320 Bluetec with the Lexus GS 450H: the diesel Merc will deliver 28mpg in town and 38mpg on the open road. The Lexus gives 23mpg and 26mpg respectively. You need to fill the Merc every 700 miles but the Lexus has to stop for fuel after 400. And as for drivability, the hybrid is only one second quicker from 0 – 60mph: the diesel manages a very respectable 6.6 seconds.

So while there will be a market for hybrids, we shouldn't assume they're going to take over the world. The turbocharger means there's a lot of life left in diesel (and if the Americans do finally accept it, the lower costs will make it a more popular fuel all over the world). It is also forecast that the use of turbos in petrol cars will increase from the current 5% to more than 30% by 2012. Speaking as the world's largest independent turbo distributor, I say long may it continue!

Audi does it again at Le Mans – this time with Biofuel!

On 15th June 2008 the Audi R10 was once again victorious at the 24 Hours of Le Mans, making a hat-trick of wins for the diesel-engined car.

The R10 has always run on Shell V-Power Diesel race fuel, a particularly powerful and efficient synthetic fuel created from Natural Gas in a process called GTL (Gas To Liquids). Fuels with these components are already available at the pumps.

For this third appearance, however, a small amount of next generation Biofuel was mixed with the GTL components. BTL (Biomass To Liquids), as it is called, is extracted from Biowaste that is unfit for use in foodstuffs, such as waste wood.

Although they are manufactured from different raw materials, BTL and GTL are practically sulphur-free and odourless, combining efficient combustion with reduced exhaust emissions. The BTL process should give a reduction in the emission of CO₂ of almost 90% when compared with traditional diesel.

Michael Dick, Member of the Board of Management of AUDI AG with responsibility for Technical Development, said before the race, "It underlines our philosophy that we view Le Mans as a tough test field for new technologies which will be available at a later date in production cars for our customers."



Sliding sideways at 100mph and aiming to clip the apex of the corner



High speed synchronised drifting just feet apart adds to the fun

The most exciting new motorsport for years!

What kind of motorsport doesn't award victory to the fastest driver? Which sport has become one of the most spectacular to watch, over recent years? It's drifting – the powersliding sport that started in Japan in the nineties and is now gaining a strong following in Europe, Australia and the USA.

It's a high-skill, high-powered motorsport that calls for drivers to control a car while it slides sideways at high speed through a marked course. It is similar to rally driving, but is done on a closed course and judged on execution and style rather than who finishes the course fastest.

Drifting takes all the thrilling moments of traditional motorsports and packs them together into non-stop competition. The squeal



Toyota Soarer with Garrett GT Turbo produces 490bhp to keep the wheels spinning

and smoke of tortured tyres (typically, a set will last for eight minutes!); drivers' arms see-sawing as they fight to keep control whilst travelling sideways at 80 - 110mph; and the nail biting spectacle of two cars drifting side-by-side at high speed, only feet apart and sweeping from side to side together like synchronised swimmers; that's what's bringing the crowds out!

The first professional Drift Championship, organised by EDC, took place in 2006. This year there are rounds at Donington, Knockhill, Silverstone, Santa Pod and Poznan in Poland.

Each driver takes three solo runs and is scored for style, control, angle, speed, the duration of the drift and the 'show factor' through a series of corners whilst aiming to clip designated points or zones, usually located close to the apex of the corner. The top 16 competitors proceed to the twin battles and the parade, with drivers perched on the roof or hanging outside the cars, and doughnuts galore.

The technique was first used in the 1970s by drivers in the All Japan Touring Car Championship. Its principal proponent, Kunimitsu Takahashi, was famous for hitting the apex of a bend at high speed and then drifting through the corner, preserving a high exit speed. This earned him several championships and a legion of fans who enjoyed the spectacle of burning tyres.

Drifting became popular because it was an inexpensive way to get into motorsport: the cars weren't expensive and they didn't need much preparation. Midweight rear-wheel drive saloons and coupés are favourites, with the Nissan Silvia, Mazda RX7 and Nissan Skyline all popular competition models. Many of today's

drivers would drive to the track in their competition car, change the tyres and compete! However, as the sport has become more organised and competitive, the organisers demand safety features such as roll cages and seat harnesses, while the performers now seek to extract the maximum power from their vehicles.



One source of power is obviously a turbo: the more power a driver has on tap, the easier it is to get the rear wheels spinning. It also makes more power available when necessary to maintain and control the drift. However, the engine faces an unusual problem on a drift car: because the vehicle spends more time going sideways than forwards, cooling air doesn't come from the front. The answer is to fit a supersize radiator, oil coolers and a massive intercooler for the turbo.

You can find out more, and see videos of this all-action sport, at www.europeandriftchampionship.eu/welcome.html.

Green machine in the islands



The new SEAT Ibiza Ecomotive is one of the cleanest, most environmentally-efficient cars on the road today, with super-low emissions of just 99 g/km CO₂, making it one of only two conventional-engined cars to entirely avoid road tax. You would expect it to be in demand by Congestion Charge-dodging Londoners, but one of the first examples in the UK was snapped up by a canny Scot from the Outer Hebrides.

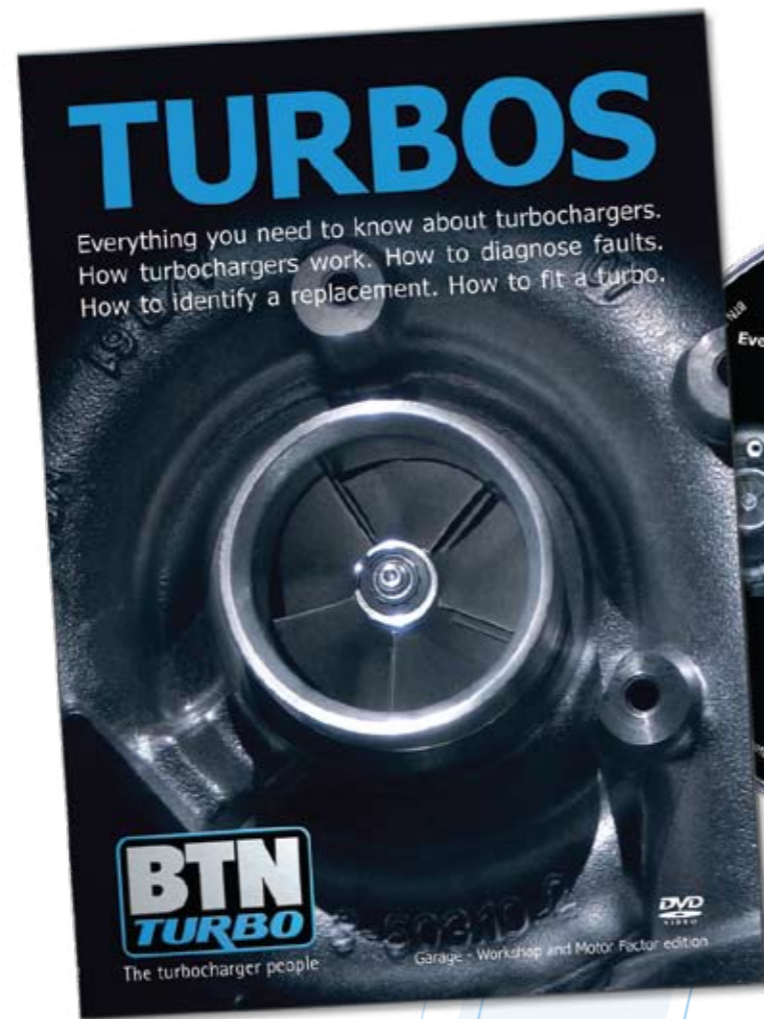
James Monro collected his Ibiza from Inverness and shipped it home to North Uist within hours of the new model's launch. It was the economy – up to 88.3mpg – that attracted him: fuel prices on the island, which measures just 13 miles by 18 miles, – are regularly among the highest in the country.

He is already delighted with its performance, averaging an impressive 66.6mpg on North Uist's winding roads, which require constant changing up and down the gears. He said: "I've been really impressed with the way it's performed. To get more than 66 miles to a gallon on the island's roads is quite an achievement, and the car doesn't feel any different to drive. In fact, it's a lot quicker and more responsive than my old diesel."

New software is added to the 1.4 TDI powerplant's ECU and there's a state-of-the-art Diesel Particulate Filter (DPF). Longer gear ratios make for both more relaxed cruising and improved economy.

This lightened Ibiza is also more slippery through the air, with a Cd figure of 0.30, compared with Cd 0.315 for the standard 1.4 TDI model, and special low rolling resistance 14" tyres from Dunlop help reduce road friction.

Everything you need to know about turbochargers – on our FREE DVD.



With over 30 years' experience in the turbo industry, and excellent relationships with the technical departments of all the turbocharger manufacturers, we've amassed a tremendous amount of knowledge. We're happy to share this information with you, to make it easier for you to diagnose faults and fit replacement units.

That's why we've produced a FREE DVD that will help you save time and get things right first time, so you can make the most of the profitable business of replacing turbos.

You will see:

How turbochargers work

We explain the fundamentals of turbocharging, including wastegates and variable turbine turbos, using cutaways, animated illustrations and clear, easy to understand descriptions.

How to diagnose faults

It's vital to identify the reason for a turbo failure before you fit a replacement. We look at the potential problems, reveal the three turbo killers and explain the telltale signs.

How to identify and order the right replacement

Save time, money and hassle by getting the right replacement turbo, first time. We tell you which details you should look for and how to order.

How to fit a turbo

Ensure a straightforward, trouble-free installation by following our step by step guide, with every key stage explained and demonstrated.

It's the DVD that every engineer, however experienced, should see. To receive your free copy, call Rachel Birch on **01895 466 666** or email her with your name and address at rachelb@btnturbo.com.

Fiat 500 scoops three awards

In winning the Car of the Year 2008 award, presented by a jury of 58 journalists from 22 European countries, the new Fiat 500 was not only the overall victor, but it also received votes from the largest number of jury members: 57 of the 58 included the car on their short lists, and 33 put it first.

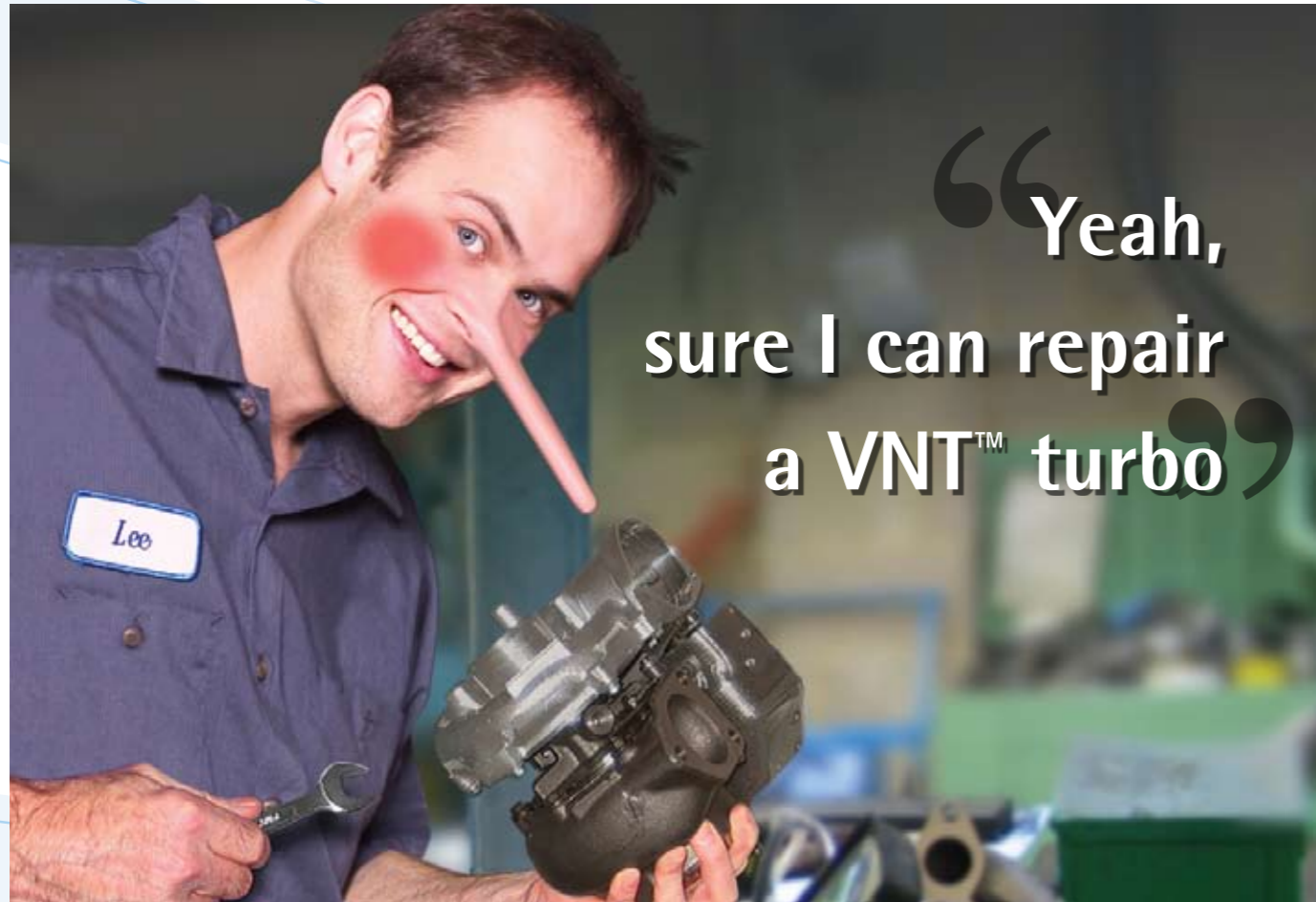
It also won the Small and Compact Vehicle category at this year's Auto 1 Awards, voted by the Auto 1 organisation's editors, experts and racing drivers, as well as millions of readers across Europe. Auto 1 Awards are presented by the Auto Bild Europe magazines group, which comprises 26 European-wide specialist car magazines including the UK's *Auto Express*.

Then it was crowned Best Small Car in the annual *What Diesel* Car of the Year awards, impressing the panel of judges with

its blend of style, quality and modern diesel engine technology. It's an important time to take a leading diesel award, with registrations of diesel cars now close to 50% of the new vehicle market.

The Fiat 500 marks the first time that a car of just 3.55 metres long has been awarded five Euro NCAP stars for crash safety. It is also the first car to be launched with an engine range (69bhp 1.2; 100bhp 1.4 16v; and 75bhp 1.3 MultiJet turbodiesel) that already reaches Euro 5 emissions limits, more than two years before these become law.





“Yeah, sure I can repair a VNT™ turbo”

Oh, no he can't. Nobody can.

BTN Turbo has been remanufacturing turbochargers for more than 30 years and, in that time, we've developed enormously - rather like Lee's nose. But even we can't repair variable turbine turbos*, as fitted to many newer vehicles. They are so complex it's only possible to meet their exacting standards and demanding tolerances at the point of manufacture. That's why both Garrett and BTN Turbo have a strict 'new for old' replacement policy.

BTN Turbo is the largest independent turbocharger distributor in the world. We have achieved this by looking after our customers, giving them reliable service and dependable advice, and not putting them at risk. Our 'new for old' policy means we provide you with a new turbo that is identical to the one originally fitted - with no strings attached. It's as plain as the nose on your face that it's the safest, most cost-effective and efficient solution.

This is no fairy story. Fit a genuine replacement turbo from BTN Turbo and everyone can live happily ever after.



*Learn about variable turbine technology at www.btnturbo.com/spin-doctor

Putting a face to the name...

As BTN Turbo continues to grow, so does the team. We've already introduced you to a lot of our sales, marketing and operational people. This month we thought we'd tell you about the team that looks after the financial side of the business, along with some new recruits you may have already met.

Our Financial Controller, Julie Swallow, joined us last autumn.



Julie Swallow

A qualified accountant, Julie has extensive accounting experience, mostly in the construction industry. With the credit crunch, she's chosen a good time to move to a stronger industry! She plays netball in her spare time, which perhaps explains why her waste paper basket is mounted on the wall, eight feet from the ground!

Her team includes Accounts Executive Daniel Lyall, who has been with BTN for 4½ years. He joined us straight from school and has since completed the AAT Level 2 NVQ Accounts course (he's studying for Level 3) and NVQ Levels 2 and 3 in Business and Administration. He loves live music and says he'd be a glam rocker but the office would not appreciate the outfits! Daniel loves BTN, enjoying the variety, the people, the positive outlook of the company and the career development opportunities.



Daniel Lyall

Maire Haughian is BTN's Credit Controller. Before joining us she had a varied career that included being a store detective, a court clerk, a passport issuer and a credit controller in an advertising agency, but she tired of travelling to London and jumped at the chance to work for BTN, closer to her home. Her hobbies revolve around her children's activities and she cites Michael Ball, Nicholas Cage and Dale Winton as her interests.



Maire Haughian

Georgia Janovsky is our Accounts Administrator. Until two years ago she worked as an administrator for an alloy wheel reconditioning company so she knew a bit about the vehicle aftermarket when she joined us. She's passionate about Moto GP in general and Valentino Rossi in particular. Additionally, she likes eating out, the cinema, yoga and walking her dog.

Earlier this year, we appointed two Customer Service Executives - Paul Kang and Hamzah Syed. Both are motorsport fanatics: Paul participates in car track days and Hamzah enjoys all racing, but particularly karting. So why didn't he win the BTN endurance race reported on the back page? You'll have to ask him.



Georgia Janovsky



Paul Kang

Paul previously ran his own business selling and refurbishing alloy wheels (not the same company that Georgia worked for!) but has quickly settled into the BTN 'family', which he appreciates because of its commitment to customers and staff.

Hamzah, who hails from Malaysia, lists so many other interests that it's a surprise he has time to come to work. Cars, sports, travelling, shopping, cooking, surfing the web, reading, socialising... you get the picture. He has worked in garages which gave him a passion for cars and turbos.



Hamzah Syed

You may soon get to know Paul and Hamzah as they deal directly with customers, not just processing orders but providing advice on product, service and basic technical information.

Last but not least, Damian Stone has joined BTN as Business Manager, responsible for developing and maintaining a broad commercial view of the market, managing our product portfolio, developing product and service propositions, leading the sales team and being the bridge between BTN and the customer. He is also responsible for marketing strategy and planning. Damian previously held a number of senior management positions with Oxford Instruments (best known for developing the MRI body scanner). He likes the enthusiasm and friendliness of BTN people and plays golf with a handicap of 18 on a good day!



Damian Stone



Speed sensor for optimal performance

Simulations undertaken by Honeywell on a 2-litre engine have shown that, with the help of a speed sensor, there is a 4% increase in engine power for every 10,000rpm increase in turbo speed, making the 2-litre engine perform like a 2.2-litre turbocharged engine that is not equipped with the speed sensor.

As all turbos have a speed limit, above which the turbo reliability may be compromised, today's passenger vehicle engines are calibrated to ensure that the turbo operates at all times below its maximum speed limit. Speed sensors, through direct communication of the instantaneous turbo speed to the Engine Control Unit, allow the rpm safety margin to be optimised, resulting in improved engine performance and longer turbo lifespan.

While turbo speed sensors have become a regular feature in commercial vehicle engines, their adoption by passenger cars is still in an early stage. As car engines become more advanced, incorporating speed sensors into turbocharged passenger vehicles becomes of increasing interest.

And the timing couldn't be better. "EGR (Exhaust Gas Recirculation) rates and rising power densities in passenger vehicles continue to raise the bar. As a result, turbos have moved closer to their maximum mechanical speeds," says Chris Greentree, Platform Manager for Commercial Vehicle Actuation and Sensors at Honeywell Turbo Technologies. "Turbo speed sensors allow car makers to produce maximum engine power without reducing the reliability of the turbocharger."

"Additionally, once you have a speed sensor on board, you can take advantage of the speed control to regulate boost control for enhanced accuracy and dynamic boost management."

Turbo speed sensor: how it works

Honeywell is a pioneer in introducing speed sensor technology for commercial vehicle applications. First beginning to appear in heavy-duty trucks more than seven years ago, speed sensors were initially installed into the turbocharger's centre housing to help balance the truck engine's power and improve the reliability of the turbo, since commercial vehicles are typically exposed to more severe conditions.



As the sensor technology evolved over the years, Honeywell engineers have succeeded in extracting additional performance gains through this technology.

"The purpose of the speed sensor is to measure the rotational speed of the turbocharger," explains Greentree. "As the blade of the compressor wheel passes by the nose of the sensor, it creates an electro-disturbance in the sensor's coil, which sends an electric signal back up the cable. That electro-disturbance is then processed and turned into a signal that is sent to the Engine Control Unit (ECU). This communication between the turbo and ECU allows the turbo performance to be perfectly matched to that of the engine without the drawback of either underperformance or turbocharger over-speed."

Reducing the scale for passenger cars

The challenge for Honeywell engineers was to overcome some technical hurdles as they converted this commercial vehicle technology for passenger vehicles.

The first objective was to find a material that is not cost prohibitive. Due to recent advances in plastic technology, a new type of plastic has been developed that is stable enough

to handle temperatures up to 230°C; a 50° increase over past component material. "This increase in temperature-resistant capability enables us to make speed sensors an affordable feature for passenger cars," says Greentree.

The next hurdle involved ensuring the precise tolerance of the miniscule gap between the sensor and the compressor wheel. "The clearance between the sensor and the wheel should be between 0.3 and 0.5mm on a passenger car - that's how much gap there is between the wheel spinning at 200,000rpm and the sensor sitting still," says Greentree. "Honeywell has gained the manufacturing ability to control this tolerance so that the sensor could fit inside this acceptable gap and function correctly."

The third challenge related to the much smaller size of the speed sensor for passenger vehicles. A typical sensor for a truck is 10mm in diameter at the tip, compared to about 6mm for a car. Since a smaller speed sensor means that weaker signals would be generated, a strong computer modelling capability was required to tease out valid signals from the 'noise'. "After extensive lab work, we have developed the right computer modelling programs to enable us to optimise the performance of the speed sensor," says Greentree.

Honeywell is currently working with several OEMs and expects to launch the first speed sensor passenger vehicle application later in the year.

Turbocharging and GDI – the perfect fit

Gasoline Direct Injection (GDI) is gaining momentum as a key technology, working in tandem with turbocharging to help achieve the goal of better fuel efficiency.

GDI is a variant of fuel injection employed in modern four-stroke petrol engines. The gasoline is injected directly into the combustion chamber of each cylinder using a high pressure injection pump and common fuel line, as opposed to conventional multi-point fuel injection that happens in the intake port.



GDI's cooling effect improves the knock resistance of the fuel, increasing the engine's ability to accept higher intake pressures. This makes GDI and turbocharging a perfect combination. "With GDI and turbocharging working together, we could see up to 20% improvement in fuel efficiency and a corresponding reduction of CO₂ emissions," says David Paja, Director of Marketing for Passenger Vehicles at Honeywell Turbo Technologies.

Since GDI offers the flexibility to adjust air and fuel independently and enables strong residual gas scavenging, the turbo needs to generate as little backpressure as possible. Twin scroll technology in particular provides significant benefits as it improves scavenging by forcing flow separation.

For gasoline engine downsizing, whether GDI or MPFI (port injection), the goal is to deliver transient performance and driveability in smaller engines that are comparable to a bigger displacement engine. Turbocharging could deliver further performance enhancement through inertia reduction and, more importantly, by improving low-speed turbo efficiency.

Honeywell is also developing variable geometry boosting to gasoline engines rather than transferring current diesel technology (which was pioneered by Honeywell) into gasoline. The requirements of gasoline engines in terms of rpm range, working temperatures (1050°C in gasoline as opposed to 830°C in diesel) and turbo efficiency at low end do not make the diesel variable geometry concept the most suitable solution for gasoline.

"We see great potential in variable turbine geometry technology for GDI gasoline engines," says Paja. "We believe that gasoline engines will follow the same evolutionary path as diesel, with boosting moving quickly from wastegate to variable geometry."

The clearance between the sensor and the wheel should be between 0.3 and 0.5mm - that's how much gap there is between the wheel spinning at 200,000rpm and the sensor sitting still.

BTN's endurance winners

To celebrate the winning of three Garrett awards (see 'Welcome', p2) and to put our teamwork to the test, sixteen BTN people took to the track in a karting endurance race. Eight teams of two had a ten-minute warm-up and then raced for 40 minutes, stopping only to change drivers. The winners were Business Development Executive Chris Haley and General Operator Tom Lakomski (pictured), who completed an astonishing 70 laps.



During the race, Office Administrator Debbie Green received a warning after crashing. Two minutes later she was escorted from the track and banned from driving after taking out half the track in a spectacular accident: apparently there was some confusion between the brake and accelerator...

Fleets show growing interest in alternative fuels

With rising fuel costs and increasing pressure to cut emissions, more fleet decision-makers are seriously considering moving away from diesels towards alternative-fuelled vehicles, according to research carried out by Lloyds TSB Autolease.

However, diesel still dominates their existing stock: 80% of Lloyds TSB Autolease's new company vehicle orders are still for diesel vehicles.

With the massive increase in the cost of diesel at the pumps and evidence from resellers that used car buyers are shunning diesel-powered vehicles in favour of smaller capacity petrol vehicles, there is concern that diesel vehicle residuals will suffer. However, there is still a tempting argument for diesel-powered company vehicles – the most obvious being the effect on tax, which is helping to drive the popularity of the fuel.

A new approach to green diesel

A ground-breaking refinement process from Honeywell's UOP is set to usher in a green diesel – as early as next year – that is cleaner-burning, perfectly suitable for engines using petroleum diesel and fully compatible with the existing distribution infrastructure.

The new fuel is the result of collaboration between UOP, a subsidiary of Honeywell, and Italian refiner Eni. The UOP/Eni Ecofining™ process injects hydrogen into a feedstock such as vegetable oil or grease, removes the oxygen and makes a hydrocarbon product, or green diesel fuel, with attributes similar to regular petroleum diesel.

Until now, biodiesel and ethanol have been the two most explored renewable fuel options. However, they are very dissimilar in molecular structure to conventional petroleum-based fuels. As a result, their mass production and distribution may prove very costly for a number of industries.

Compared with biodiesel, which is made by adding methanol to vegetable oils and greases, the Ecofining-produced green diesel fuel has very high cetane levels, little to no sulphur content and reduced NOx emissions. In addition, unlike renewable fuels that lack stability due to oxidation, the green diesel is completely stable. All these make it an excellent blending component for upgrading low quality fuels.



Put some nutty slack in your tank

Drivers could soon be filling up with fuel made from liquefied coal. According to *Fleet News*, the European Parliament has asked for a €60 million annual research fund to pay for research into gasifying and liquefying coal to develop green motor fuels, notably hydrogen.

The money will come from a budget excess left over from the EU European Coal and Steel Community, an international industrial cooperation organisation that was scrapped in 2002. It always spent money on researching improvements in coal and steel production, and now MEPs want this cash to develop greener ways of using coal.

A parliamentary report stressed coal "gasification and liquefaction like hydrogen can be used as motor fuels, helping to reduce CO₂ emissions".



The largest independent turbocharger distributor in the world.

We supply brand new turbos, and remanufacture using only genuine parts so that rebuilt units are to the same high standard and quality as the OE unit. All our diesel commercial turbos are covered by our 'No Quibble Warranty' for twelve months.

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