

Ford Performance Racing – Leading the field

Ford Performance Racing (FPR) delivered a highlight of last year's V8 Supercars season, when its driver Mark Winterbottom and co-driver Steven Richards won the Bathurst 1000 event in October. However, it is behind the scenes that one gets the full picture of what makes FPR a winning team. By Carole Goldsmith.



Seeing FPR's cars speeding around the track at an average of 250km/hour at V8 Supercar events is undeniably an exhilarating spectacle, but the speed, power and performance of the vehicles and engines all originate from the team's headquarters, located near Ford's Broadmeadows assembly site in north Melbourne. Among the many factors driving FPR's track performance are the team's wealth of engineering and design expertise, the individually built and tested vehicles, the precision manufacture of components, the meticulous testing and readjustment of the engines after each race, and the advanced vehicle safety features.

To see how the cars are built and kept at peak performance, AMT magazine was given a tour of FPR's operations by Peter Trevaskis, General Manager – Communications and Marketing. Trevaskis explained that FPR is backed by a range of supporting partners headed by Ford Australia and Pepsi Max. Last January, leading Australian motorsport personalities Rod Nash and Rusty French purchased Prodrive Racing Australia (trading as Ford Performance Racing) from British engineering firm Prodrive, which had run the team since it was created in 2003.

With ten years' experience in motorsport, including three years at FPR, Trevaskis certainly knows the industry, and his enthusiasm for the sport is contagious.

In the engine room

Starting the site tour in the engine preparation clean rooms and engine testing area, Justin Way, Engine Performance Manager, was busy testing one of the team's V8 engines, secured in the sound-proof, fireproof and temperature-controlled adjoining room. While revving the engine, Way observed its performance on the wall-length Prodrive computerised system to assess energy efficiency, speed, output, fuel consumption and other performance factors.

"We have 17 engines in total," said Trevaskis. "FPR handles the service development and testing of these engines for our vehicles and for other teams who lease our engines."

"Engines are removed from the vehicles after each race and they go through this rigorous testing," added Way. "Depending on the engine's performance, it will either be returned to the guys in the engine room for improvement and modification or it will be used in a future race, if it passes the tests."

Moving on to the general car preparation area, the skeletons of the four FPR vehicles used in the most recent V8 Supercars races had been jacked up and were being rebuilt for the following weekend's event. Trevaskis advised that the bonnet, roof, boot, lights and door on each of the vehicles comes from the Ford assembly line. Everything else is built on site, including the chassis, wheels, engine and other mechanical componentry. On-site fabrication of parts encompasses everything from the roll-cage safety system right down to the steering wheel.

"Safety is the top priority for FPR and the cars are designed to protect the driver," said Trevaskis. "The metal roll-cage as well, as the carbon plate seat and door, provides protection if an accident occurs. The driver wears a mandatory helmet and neck protection system as well as fireproof clothing. The fuel tank is now built within the roll-cage containment instead of being stored in the boot. This protects the fuel tank and makes it a lot safer."

The company's engineers create many of the FPR vehicles' components literally from scratch. The initial designs are transferred for manufacturing and tooling to the machine shop, where the team relies on a range of machines tooling supplied by the likes of Mori Seki and SEI Carbide.

"Our engineers can design components like these wheel nuts and brake parts, then work out what the components can do or can't do before they are made," said Trevaskis. "Producing individual parts in-house is cost-effective and allows us to reduce expenses."

"We also use external companies for specialist work, including Albins Off Road Gear, which specialises in the design and manufacture of drivetrain components, and B&S Precision Engineering, as contractors for surface grinding and electrical discharge machining."



Staff operating CNC Machinery at Albins Off Road Gear.

It is immediately noticeable how much pride and enthusiasm that FPR's near-70 employees take in their work – both on site and during race days. Trevaskis said the engineers, mechanics and other trades people all have background experience and training in motorsport.

When asked what makes specialist motorsport vehicles go faster than the average road car, Trevaskis replied: "The engine has a lot more power and the overall car is much lighter than a road car. Tyres can last around 60-100km and vehicles are serviced every 200-300km. A lighter composite is used for windows instead of the heavier glass used in road cars."

FPR produces four new vehicles a year costing around \$500,000 each with an average lifespan of 18 months. There have been many technical changes over the last 12 months, with the cars getting lighter, faster and safer. The team currently races a car based on the road-going Falcons, but according to Trevaskis, FPR may have the ability to switch to any number of vehicles in Ford's line-up, such as Mondeos, in the future.

"In reality, we are a halo on the Ford brand. Motor sport is an exciting industry to be in, generating a lot of jobs for suppliers and for teams on the track. The main aim for us in 2014, is continuous improvement in our vehicles and in our team's performance. We aim to win the V8 Supercar championships in 2014".

V8 Supercars – a global frontrunner

Cole Hitchcock is the General Manager Communications at V8 Supercars, and he is proud of its position in the global motorsport arena and the interest it generates worldwide.

"V8 Supercars is widely known as the best touring car championship in the world," said Hitchcock. "In terms of international motorsport excellence, there is Formula One, which is global, NASCAR in

the USA, and then we are arguably next in ranking, alongside categories such as the IndyCar series in USA and Canada as well as DTM (German Touring Car Masters)".

V8 Supercars is the premier Australasian motorsport category and is one of fastest growing sports in the country. Last year television coverage of the V8 championships was broadcast into 137 countries. Just under two million people attended the 15 events held across Australia and internationally in New Zealand and the USA.

"The V8 Supercars sport employs around 2000 people full-time, including teams and their support, plus the management arm has around 60 fulltime employees," added Hitchcock. "At a major event like Sydney, our final event for the year, there were 450 V8 Supercar fulltime and contracted staff involved, including TV and film crew, plus thousands of officials and volunteers."

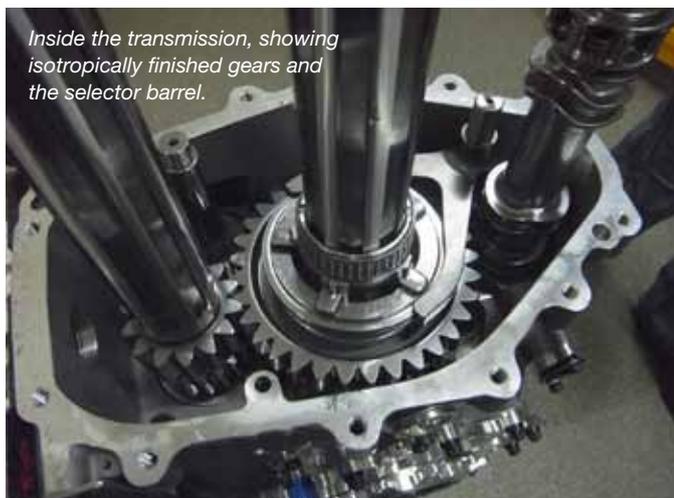
An interesting aspect of the V8 Supercars championship is the way all the teams have a stake in the success of the event, as Hitchcock explained: "Our teams own a percentage of the sport and they all receive a dividend from the profits. Teams have major sponsors, partners and in some cases, manufacturer support, plus their own business income which allows them to go racing".

V8 Supercars has undergone something of a revolution in the last year with the advent of the new Car of the Future (COtF) regulations, which made their debut in 2013. The COtF project introduced a new generation of cars that would be cheaper to build and repair, making them safer, lighter and stronger. In addition, the new rules saw an increase in the number of V8 Supercars events, across multiple countries.

Another key driver of the COtF project was to allow other manufacturers to enter. As a result, the Ford-versus-Holden battleground in V8 Supercars of the past 17 years has been radically expanded, with new teams entering the competition with cars from Nissan, Mercedes Benz and Volvo.

Hitchcock welcomes these newcomers: "For any newcomers to the sport, it does take some time to win. The current leading team - Red Bull Australia (a Holden team) - took three years to reach the top level in the V8 Supercars events. We have no doubt that the new players will rise to the top over time. As it stands, Nissan won a race in its first year and had several top ten finishes. Erebus Motorsport V8 with their Mercedes Benz E63 AMG also achieved some top ten results. That's an outstanding first year from both teams."

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Inside the transmission, showing isotropically finished gears and the selector barrel.



The V8 Supercar Transmission: an Albins ST6 transaxle.



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Suppliers roaring ahead

When AMT magazine spoke to Steve McDonald, Director and owner of Albins Off Road Gear, he had just hired seven new employees to cope with the company's increasing motor sport business. Based in Ballarat, regional Victoria, Albins designs and manufactures drivetrain components, and is in the first year of a five-year contract with V8 Supercars supplying transmissions to all the teams' vehicles. Albins also provides other drive-line components to the teams, such as tail shafts, centre-bearing assemblies and spline couplings for connecting motors to gearboxes.

When asked about the demands of working as a supplier to FPR and other motorsports teams, McDonald said: "They are all very professional and have high demands for on-time delivery, high-quality R&D, and continuous improvement. The benefits of dealing with companies like FPR are many, including the technical development and the fantastic publicity. Technically, the guys there monitor the application of our transmission closely and give us accurate and detailed feedback. Without that feedback it would be much more difficult to develop the equipment for their vehicles."

Around 80% of Albins' business is in motorsport, with V8 Supercars representing around 15%. Around 60% of its products are exported, mainly to customers in the off-road racing business. The company has distributors across the USA, in Canada, the UK, South Africa, the UAE and Japan. In the Dakar off-road rally in South America last month, 12 vehicles were running with Albins transmissions. The company also supplies transmissions and other drive-train components to circuit racing teams.

"Australia has a very good reputation in the motorsport industry and it is a great industry to be involved in," said McDonald. "Our employee numbers have almost doubled from 30 to 54 in the last 12 months. I think it is easier to get employees to work in motorsport, as it is an industry built on pride and passion. The biggest issue we have is to keep up with the Australian and global motor sport demand for our products."

Based in Mentone in south-east Melbourne, B&S Precision Engineering supplies FPR with high-end components including spindles, torsion bars and suspension components for V8 engines.

The company also does R&D of custom component designs. Customers develop designs and if B&S sees a potential fault or an opportunity for improvement, it will offer suggestions to make it better.

"As a supplier to the motorsport industry, you need to provide a quick response and be correct, first time and on time," says B&S General Manager and owner Richard Bauer. "The FPR designers, engineers and other employees are great communicators and that keeps the business moving."

B&S, which employs 17 people, also services other high-performing racing industries like marine sports and manufacturers of drift cars. It also provides machining services to Albins Off Road Gear and to other motorsport industry suppliers.

"The overall benefits to our company of being part of motorsport and these other fast moving industries, is that it keeps the work in Australia," added Bauer. "Our company motto is: 'Like it here - then make it here'." **AMT**

www.fpr.com.au
www.v8supercars.com.au
www.albinsgear.com.au
www.bseng.com.au



Some of the components produced by B&S Precision Engineering