

ISSUE 109: AUGUST 2012

DIESEL TORQUE

OFFICIAL MAGAZINE OF THE ASSOCIATION OF AUSTRALASIAN DIESEL SPECIALISTS INC. (AADS)



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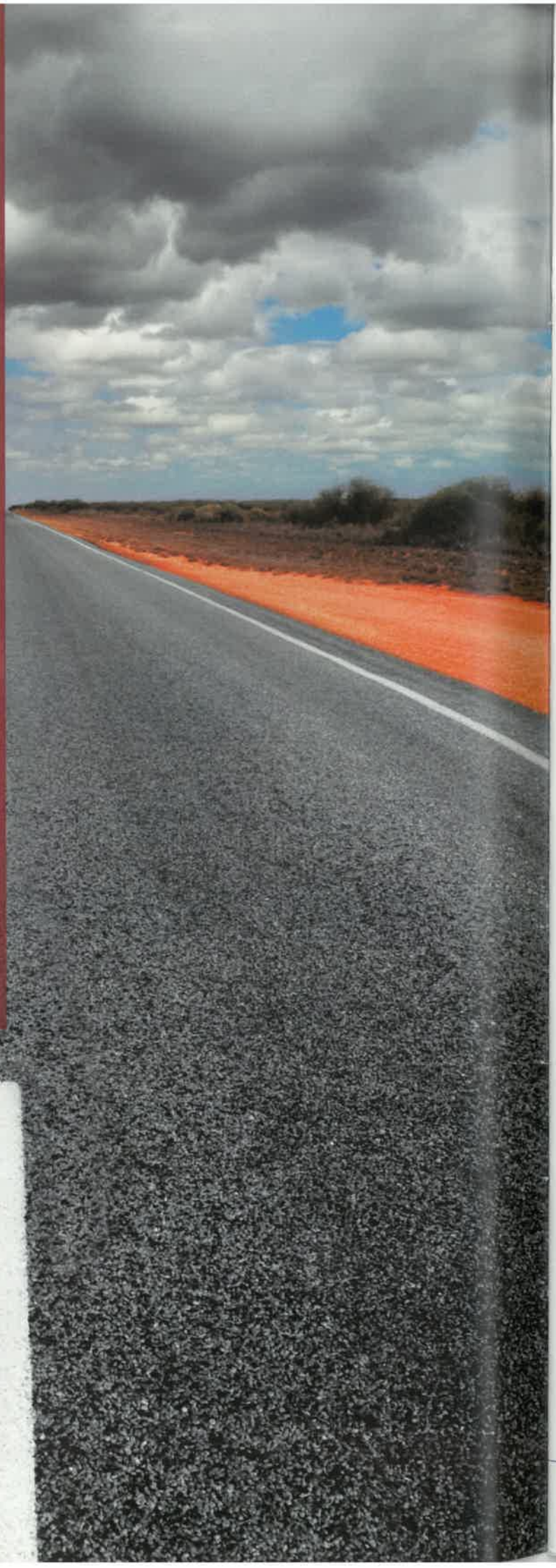


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President's Report



Well Fiji has been and gone, but is still a very strong memory with me and I am sure with all the members that attended. What a great few days in the sun. Although there were not a lot of members there, those that were there enjoyed themselves. I can't put my finger

on the highlight of the weekend, but I am sure that everyone's photos will show that there were a number of them. Once again, it is good to be with the people in our industry, chatting about the wins and losses that we all have. When chatting among friends you will always find that we are all in the same boat and there are always good ideas of how to handle the challenges we all face daily, monthly and also yearly.

I would also like to thank all the people that gave up their time to join us and present to the members while in Fiji. We had some very good presentations on what we are seeing in the market now and also what we can expect over the next few years – so a big thanks to you all.

As I have always maintained this meeting is a great place to discuss the challenges that you face with fellow members, I know that you go away from the time together feeling that you are not out there on your own and that others have the same problems as you do on a day to day basis.

With regards to the business end of the meeting we held our AGM. It has been decided that we are off to the Gold Coast next year for the Conference and it will be a full blown show. The dates will be back to March, so block the weekends now for all the month and you will be ready to go when the dates are confirmed.



We also held a special general meeting to discuss the new Constitution. At the time we didn't have a quorum so this had to be deferred for a week and held again in the same place, this has to be done to meet our rules. As you can understand this meeting also didn't make the numbers so it will be held now in Sydney on a date that will be advised. It looks like it will be in October sometime. We will keep moving ahead with the new Constitution and at that meeting we will hopefully put it in place for the AADS. I know this has taken a long time to get everything completed and correct, but I will say that the Board have been working hard on your behalf to get this right. Some members may feel that we have been dragging the chain, but they must understand that we are working within the rules.

The new Constitution is set up to meet the Federal Government law. Behind this there will be By-laws to cover our special needs. The By-laws will be set up so that they meet the way that this Association operates. These By-laws can be changed over time to meet our member's needs which will change in the future I am sure. So please read these when you get your hands on a copy and understand them. The Constitution is for our members today and it has to reflect what we are doing now and in the future. We need to move forward, take out of the past what has worked for us, then move on and that is what the Board are doing. Some members may think differently to this and they are entitled to do so.

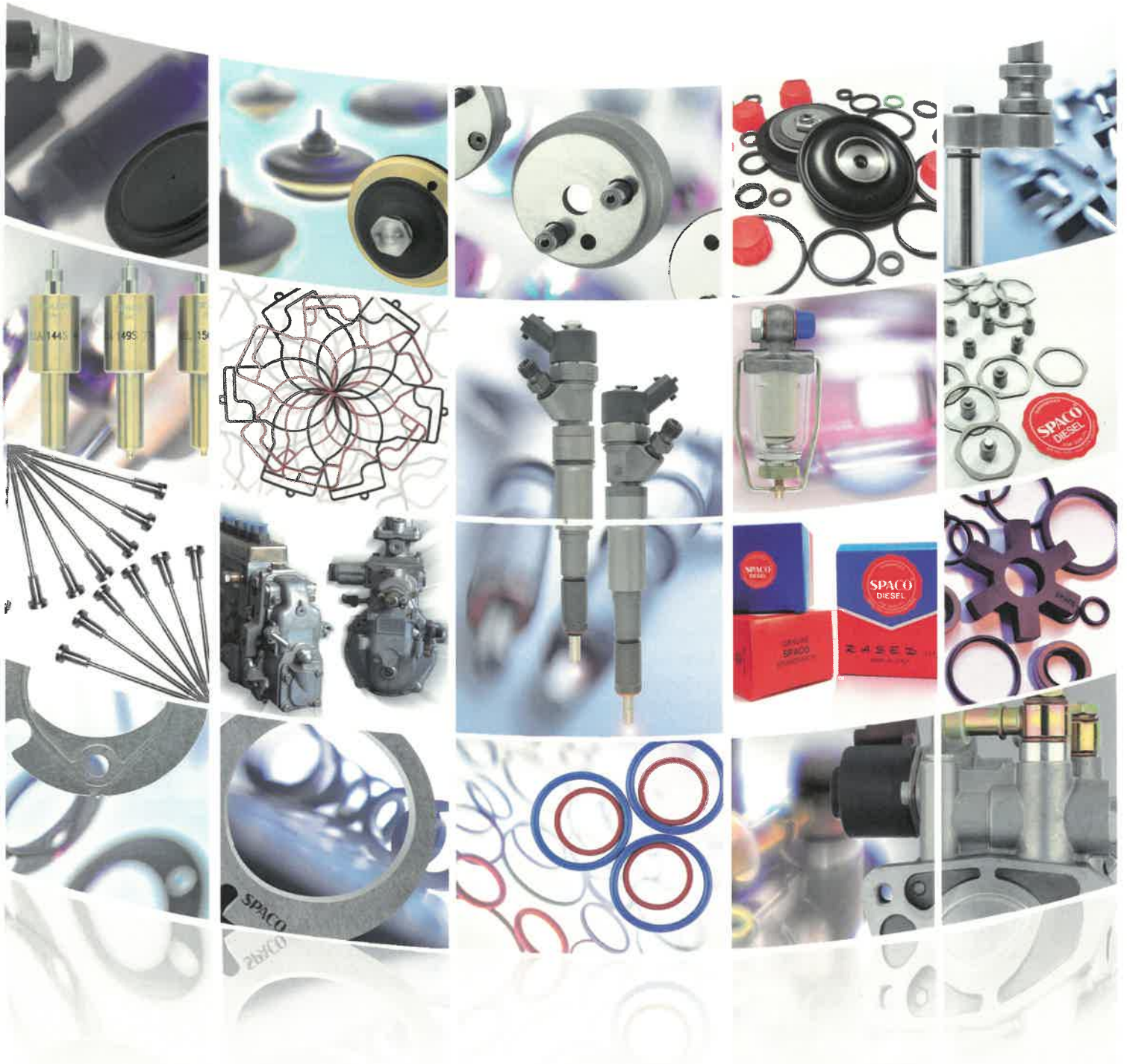
I am looking forward to the end of winter as I guess you all are – roll on summer!

Mike Hurley
AADS President



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How to keep all members informed

Keith Jurgs (Honorary Life and Founding member) 5th July 2012

According to any of the AADS Constitutions that you read, the responsibility for controlling the Association is in the hands of the Board and should include the appointment of an editor for controlling what is published in Diesel Torque. Somewhere along

the line, the power to determine what is published in Diesel Torque has become vested in the President and the publication of articles and/or "Letters to the Editor" apparently rests entirely on his say so. By rights the editor needs to be someone who is independent such as the officer in charge of the Secretariat or an ordinary member (preferably located in Sydney) who is open-minded and impartial in his views. The last person who should be the editor of Diesel Torque is the President because of his status. However, any reports, articles and/or other comments submitted or made by him should be subject to the same scrutiny as anyone else who submits material for publication in Diesel Torque.

The same situation apparently applies when decisions have to be made on particular matters because it seems that everything is currently being referred to the President for decision. When asked recently "What would happen if Mike Hurley were to drop dead tomorrow?" I was told that the Secretariat would not know what to do because every decision was being made by the President. This is not good enough because, whilst the President does have the role of being the official spokesperson, all decision making should be done by the Board not the President according to the Constitution.

In this day and age I doubt if there are very many members who do not have a computer or access to one. A check of the website reveals that the last minutes uploaded were those from the AGM held on 29th May 2010 and those from the NSW branch held on 7th November 2009. Why isn't the Association website being used for the purpose for which it is designed? Obviously there is an urgent need for the website to be used to keep members abreast of what is going on at management level. The website needs to be used to its full potential? Is this the fault of the Board, Secretariat or whom? Who controls and updates the website? Don't all of the branch secretaries [apart from NSW] also have access to the website so that they can upload details of branch meetings themselves?

Why can't all members be kept abreast of developments at Board and/or branch administration level via the website?

Are all Board members really aware of what is going on? Why can't all members be kept abreast of developments at Board and/or branch administration level via the website? It would be interesting to read in Diesel Torque any comments by individual Board

members, branch secretaries and/or ordinary members on the above matters.

In conclusion I wish to advise all members that all of the above issues in regard to the website being more widely used have been addressed in my latest version of an updated alternative Constitution.

For anyone interested, a copy of this document can be emailed to anyone on request by emailing me on keith2@internode.on.net alternately I can fax a copy to any member faxing me on 08 8358 3499 or I can email or fax any member a copy if they call me on my home telephone number 08 8296 2977.



Diesel Fuel Tech

Cairns Diesel Service is looking for a qualified Diesel Fuel Tech with a minimum of 2 years experience. The successful applicant should be hard working, meticulous to detail and a team player, preferably with common rail and VP44 experience. CDS is a leading diesel shop in the north with dealerships for all makes including Bosch Diesel Centre & Denso Common Rail.

FOR MORE DETAILS:

Email: admin@cairnsdiesel.com.au

Phone: Travis or Daniel +61 7 4051 2386

A short note re how to keep all members informed

Mike Hurley

I am all sure that you have read the note from Keith about the Constitution and Diesel Torque and the fact that I, as the Editor of Diesel Torque, have not printed a few things that have been written and put forward, to go to print.

One of the reasons that some things that are written and don't make the Diesel Torque is that the magazine goes to people outside of our industry and as the Editor I don't see any reason that we should put some things in the public domain. I am sure that some members will disagree with this. But while we don't have anyone taking on the Editors job then I am it. If I happen to drop dead tomorrow then I am sure the industry will find someone to take up the position.

Keith is right about the website. We will put the wheels in motion on this matter and make sure that the latest information is up there for members to read.

As you will all understand, the work of the Board is not a paid position. All the Board members have a business to operate and they have families to be part of. It is easy for people to bag the people that put their own time forward for the industry. Maybe things don't get done the way that you would like it to be done, so if you want things to change, then I suggest that you put your name forward and put the time in, rather than sitting on the sideline.

The Association has voted in a group of members to look after the direction that it moves forward. What I am saying is if you don't like it, then stand tall and take the reins. If you don't want to do that then by all means put your point forward, but don't try and push the people aside that are doing it out of their own good will.



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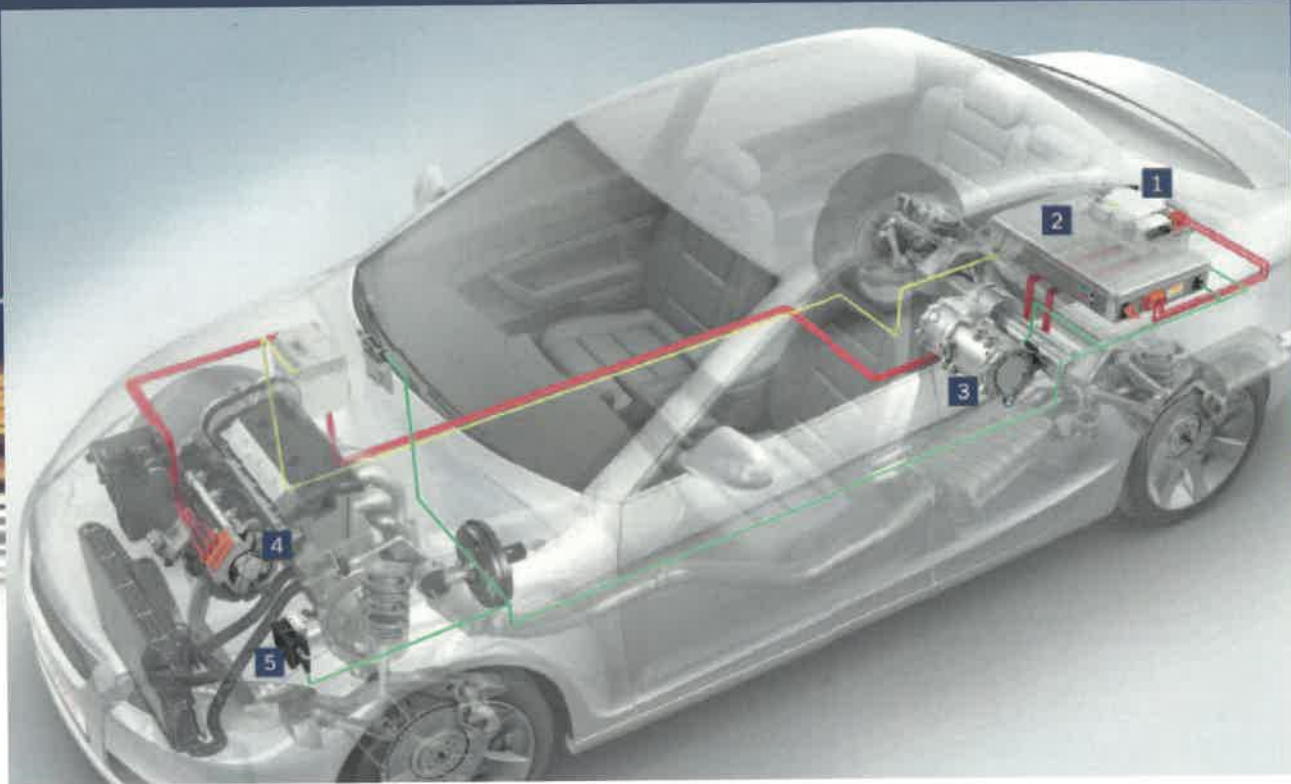
The whole world is talking about electric mobility. And Bosch is helping to pave the way – with technology, components and systems for electric drive concepts. At Bosch, 800 people are already working in this field, with more to come.

Hybrid is only the first step

Electric cars are still something of a rarity on our roads. It will be some time yet before electric drive systems can compete with the internal combustion engine in terms of economy and range. Hybrid systems however already represent a major stepping stone, offering an ecologically and financially acceptable alternative.

Diesel and electric drive: Two-fold power

Thanks to optimum direct injection systems from Bosch, modern diesel-powered vehicles are highly efficient, clean and thrifty. The diesel hybrid concept multiplies this power: The greatest strength of hybrid technology is the recovery of energy whilst driving. Each time the vehicle is braked, the electric motor turns into a power generator. Braking energy is converted into electrical energy, stored in the battery and used to drive the vehicle again on switch-ing to electric mode.



General view of diesel hybrid system with additional electric final drive

Bosch can already supply a full range of electric mobility products

Series production of power electronics has been launched in Reutlingen. The new EM-motive GmbH joint venture company in Hildesheim is working on the creation of efficient electric motors. To speed up the development process, Bosch and Daimler are combining their considerable expertise.

Hybrid vehicles need servicing as well

The interaction of internal combustion engines and electric motors creates new challenges for workshops and demands specialist knowledge, particularly with regard to diagnostics and working with high voltages of up to 650 V. With the aid of special test systems, extended ESI[tronic] workshop software and practice based training courses from Bosch, workshops can soon make a name for themselves as qualified specialists – and win over hybrid drivers as new customers.

The world's first diesel hybrid: Bosch technology inside

Almost as soon as it was launched, it received the prestigious "Green Steering Wheel" award: The Peugeot 3008 HYbrid4 is the world's first diesel full hybrid car. Its combined diesel and electric drive system can achieve fuel savings of up to 35 percent. The electrical components from the motor to the high-voltage generator and the specially adapted ESP were developed in close cooperation with Bosch.

Bosch Diesel Info Magazine, 20 April 2012



**Diesel hybrid
technology in
motor sports and
on the road**

Vitals on VITARA

This article is a true description of an AECS technical help desk problem and how it was solved.

Vehicle: Suzuki Vitara Bosch Common Rail Diesel with a Peugeot 2.0 Ltr turbo engine

Problem presented to the Help Desk

This car developed a sudden lack of power while driving. It smokes white/blue real badly and starts misfiring at higher RPM. The revs won't go past around 3500RPM, it does rev up very doughy.

Upon good advice from a friend, the car's owner decided to drive the car with the air cleaner removed as the old one was extremely dirty.

The car had been to a number of workshops. The car had two fault codes logged, airmass sensor and EGR system faults.

After replacing those items with no result the diagnosis was that the injectors and high pressure fuel pump were faulty, as everything else was tested and found to be perfect.

Eventually the car was brought to an AECS customer who owns a diesel and turbo specialist shop and who recently bought the ATS 5000 scope.

The injectors and high pressure fuel pump were replaced upon request.

The car ran just as badly as it did before.

Diagnose properly

The diesel specialist offered to do further diagnosis on this vehicle to find out what the problem really was. The old injector pump was fitted back again, but the new injectors remained in the engine as they could not be restocked.

When the diesel specialist heard the engine run, it sounded and smelt like an EGR fault (stuck open valve), a timing issue (retarded injection timing) or a breathing issue.

EGR elimination

A blanking gasket was made for the EGR valve, which knowingly would log a fault code, but it would confirm if the problem was an EGR issue. No effect at all.

Breathing problems elimination

To make sure the engine was breathing properly the exhaust was removed to confirm that the catalytic converter wasn't blocked up. No change, just more noise.

The turbo with intake / exhaust manifold was taken off and inspected just in case the intake was blocked with carbon deposits from EGR problems, or if the turbo was seized blocking exhaust and intake flow at higher RPM.

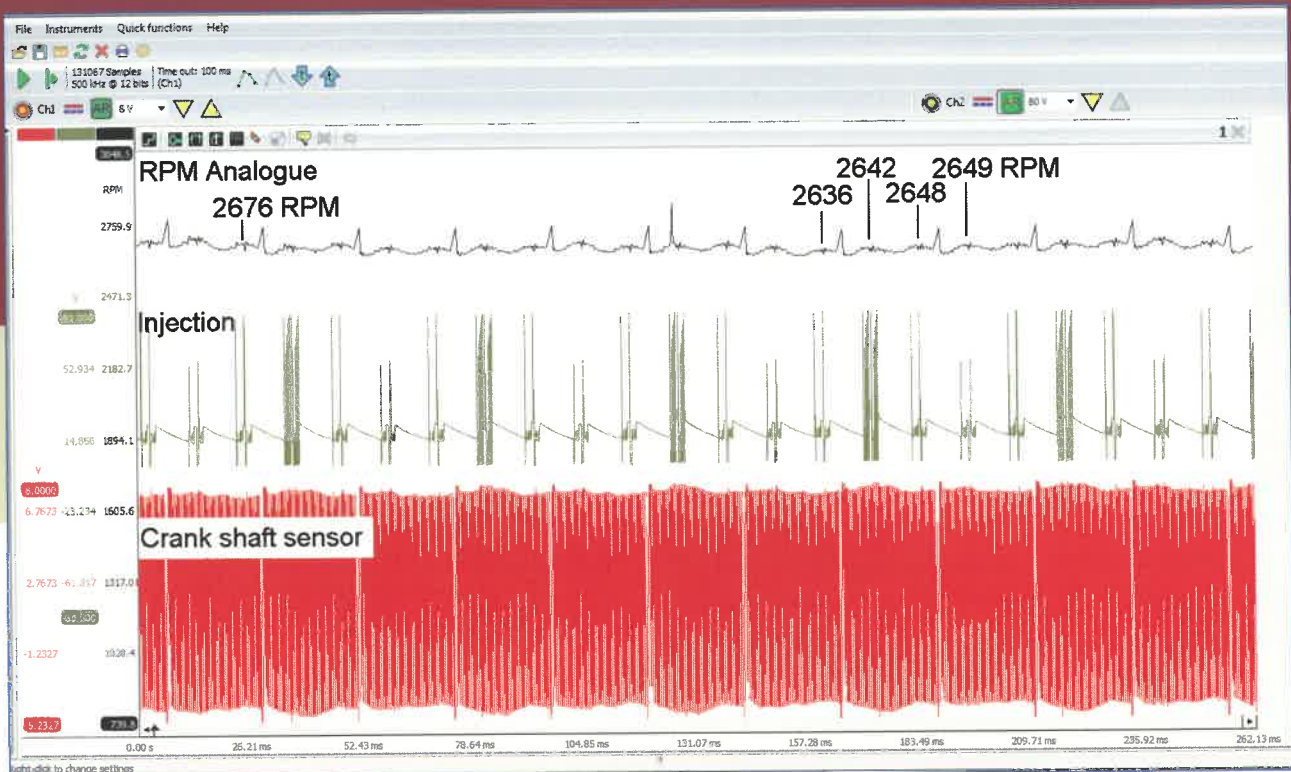
The vacuum operated throttle was disconnected to get it into the wide open position, just in case.

The crank case ventilation was disconnected from the manifold, in case there was a lot of blow by entering the manifold. Nothing untoward was found and putting it all back together made no difference to the running of the engine. The disconnected crank ventilation showed very little clean air movement during running, while the exhaust was smoking really badly.

It's been expensive so far wouldn't you agree? Please make in your head a quote for the work so far.

Timing issues elimination

Now we are in scope territory. The injectors on this common rail system are controlled by the ECU. This means that the injection timing is purely controlled by the ECU, not by moving the pump around like with older style diesel engines.



ATS 5000 dual channel detailed scope recording of 12 revolutions of the injector pattern vs the injection pattern while the engine is misfiring and smoking.

Diagnostically you need to first identify the inputs, which the ECU needs to control the timing.

Possible issues

In no particular order:

- we could have an ECU input fault (sensors like RPM, load, temp, gearshift, etc.)
- we could have an ECU output fault (injectors, injector driver, power supply to injectors, fuel pressure, etc.)
- we could have right in the middle a fault with the ECU itself

All the above have an effect on when the actual diesel enters the combustion chamber, and could more or less be the reason for this engine to misbehave.

So where to start?

We firstly wanted to know if the timing was actually erratic while the engine was misfiring, we also wanted to know if the problem was with one cylinder or running across all cylinders.

The scope was used to record the injector signals versus the crank shaft sensor signal.

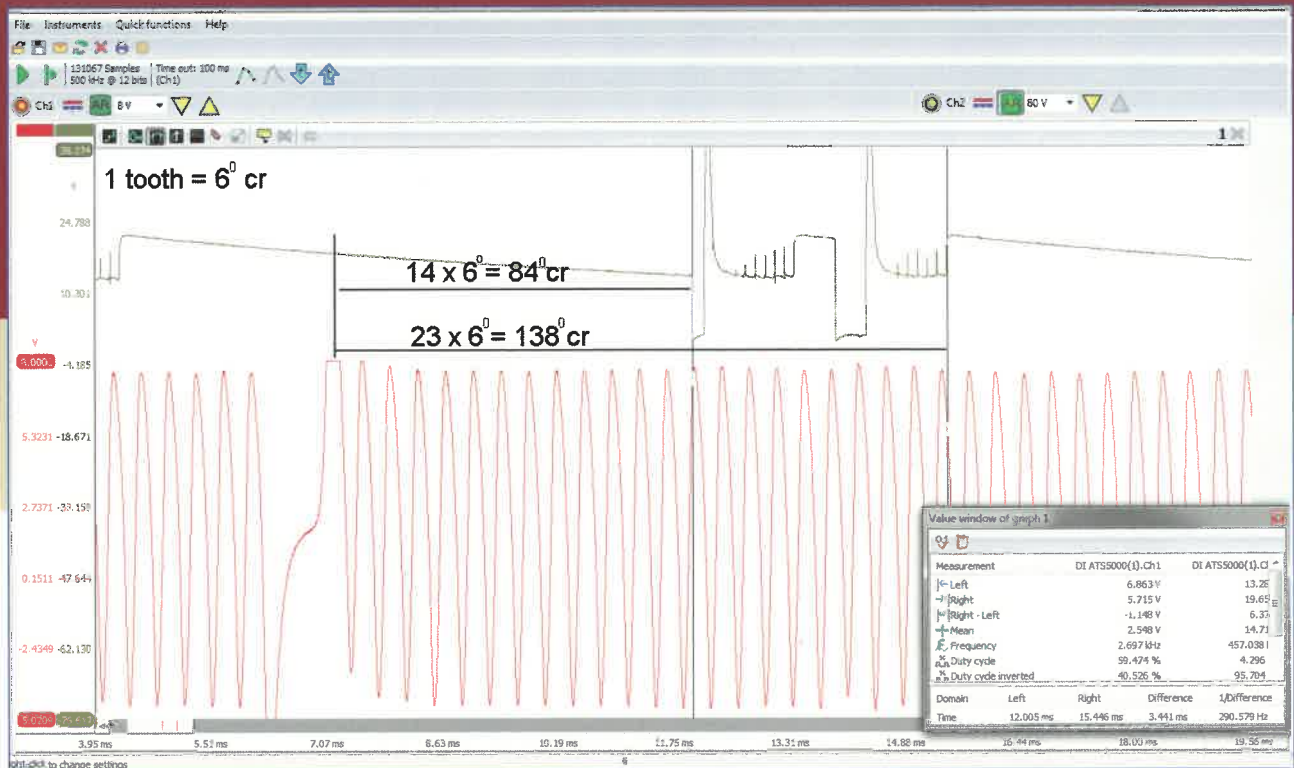
ATS 5000 dual channel detailed scope recording of 12 revolutions of the injector pattern vs the injection pattern while the engine is misfiring and smoking.

An analogue RPM trace was added to the dual channel measurement. This pattern is a calculated RPM value based on each crankshaft sensor's pulse frequency. It gives us incredible detailed information about slight RPM changes during compression and ignition. This is used to determine if a misfire is random or cylinder specific, just like how this is done inside modern ECU's to set the OBD P03xx codes when the fuel quantity compensation cannot get the RPM changes even, across all cylinders.

It is clear to see that each cylinder puts in an effort and that not one cylinder stands out, this in my view determines that the engine has no big compression and ignition problems.

More detail

Let's look at this pattern in more detail to see if the quantity and timing are erratic.



Crank shaft sensor vs injection zoomed in.

Crank shaft sensor vs injection zoomed in

The start of injection and end of injection was measured on each of the 23 injection patterns recorded. They were all absolutely even and consistent in relation to the crankshaft sensor. This could only mean that the ECU is doing a consistent job (not necessarily a good job). It could of course be that the tone wheel had slipped on the crank shaft, or that the ECU was injecting consistently at the incorrect time. Please think about this!

Check actual injection timing

To check the actual timing is harder than you think. There is no way you can have a clip around the injector line with a timing light, it is also not useful to check pump timing like with older systems.

The diagnostician checked where TDC is on the crank shaft pattern by using the analogue RPM measurement once again. The simple fact is that the crankshaft (during deceleration) moves the slowest at the end of compression, just before decompression, which is TDC.

TDC determination with the ATS 5000 scope

This showed that TDC is at the 20st teeth after the reference mark, if you go back to the injection pattern you can see that the main injection starts just before the 20st teeth (about 5 degrees on the crank shaft).

We checked with the Launch scan tool the timing in life data at the same time. It showed 4 degrees BTC.

All this told us is that the ECU got what it wanted, that also confirms that the crank tone wheel is fixed solid on the crank shaft! Please imagine what job this would be, taking the flywheel off just to inspect the tone wheel.

ECU demand wrong?

It could still be that the ECU demanded the incorrect timing. 4 degrees BTC at about 2600 RPM does not sound okay, although many modern engines have very low compression and retarded timing to reduce NOx emissions.

We had to advance the timing, the easiest is to alter the coolant temperature sensor signal. For this the ATS scope signal generator was used, it simply over rides

the ECT signal into the ECU. We simulated – 30 degrees Celsius, as that gives you a lot of advance.

The engine revved a little freer and sounded a little better but was still smoking and doughy.

Certainly not the fix we were looking for.

Back to basics

At this stage all three engineers here at AECS did not know what else we could sensibly test to electronically find the fault with this system.

So as usual when you hit that wall you need to go back to basics, and retrace your steps.

The engine was checked over by a number of other garages was the story, well that leaves us with no certainty at all, better check the simple stuff like cam timing and compression.

Wrong cam timing could send a plume of measured air back into the intake manifold and upset the compression pressure so that ignition would not happen properly.

Cam timing

Cam timing was good following the factory procedure. Maybe the cam marks were incorrect, the marks are on the cam gear, which could have slipped on the camshaft.

The TDC was determined with a dial gauge on the piston (= injector removal). The cam shaft was set to rocking, this made the marks line up almost perfectly. So cam timing was confirmed good.

Compression

The compression looked good on the RPM signal, every rise and fall on the analogue RPM signal was similar. So the compressions could not be too bad, yet we needed to know for sure as the ECU has cylinder individual injection quantity compensation to stop the engine from vibrating in some case masking bad compression.

The compression test showed that cylinder 2 was 98% of the other cylinders, which is not bad at all. However since the injectors were out the diagnostician decided to do a cylinder leak test.

One of the old injectors was used to make a leak test adapter. Cylinder 1,3 and 4 had 8% leakage, cylinder 2 had 25% leakage and a hissing sound in the intake manifold.

Found it

What happened? The leaking intake valve blew high pressure combustion gas into the intake manifold. The combustion gas was choking the other cylinders randomly as the pulse back into the manifold would have upset different cylinders at various RPM, due to the time it takes for the pulse of gas to travel.

The 25% leak was not a big enough leak to show up during compression tests as the pressure in a cylinder is only low at the end of a compression stroke (small leak) compared to combustion pressure.

On the scope it was not visible as all the cylinder's combustion was upset, so there was not much in the way of relative compression and energy delivery checking possible in the analogue RPM pattern.

Was the valve damaged as a result of pieces of the extensively blocked air cleaner sucked into the engine? We will never know.

It must also be clear that, like with so many other support cases the team at AECS deals with, it is not possible to solve real faults like this one with simple software updates or by resetting fault codes.

The two logged fault codes (airmass and EGR) were of course the result of the airmass sensor measuring a lower quantity of air going into the engine as a result of the blow back into the manifold. A normal cause for this is a faulty open EGR valve. Both the airmass sensor and EGR valve were fine.

Conclusion

This job ended up being very expensive. But the one lesson that needs to be taken out of this is do not assume that someone before you has done a good job.

Also one important lesson we here at AECS have learned is that no matter how advanced the customer's workshop is, always check the basics!

Prepare for cases like this with appropriate training, a backup team and real equipment.

for AECS Ltd:
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 Web: www.aecs.net
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Apprentices: the Business Owners of the Future

Mike Hurley, AADS President

We all know that if we want something to last we need to have a good solid foundation. If we have the right things in place then the future is solid, and then we can build on it without too much trouble, because of the solid foundation that we have in place. And we also need to look at the future long term, 10 to 20 years out. This will set our Industry up to be a success in the long term future.



I know that if we look at our Industry over the past few years not many on us have invested in training of young people. We have all been looking short term which I am sure has given us some short gain, but it is going to cause all of us some long term pain.

When our Industry trains these young people, we are building up an asset for all our futures

When our Industry trains these young people, we are building up an asset for all our futures, not just for a few, but for the Industry as a whole. We are always going to see these young people move about a bit, but if we are all taking part in the training process then we will all be enjoying the fruits of our efforts, and making a good solid foundation.

I understand that it is away hard to come to terms with the costs of employing an apprentice when business is slow, we all need to look into the future and we all need to invest in that future. That future is the people that work within our Industry and that means we all need to take a long hard look at where we are going with this and who we are going to leave behind to keep our Industry going once we are gone. Having an apprentice in your business day to day will mean an extra pair of hands to help you with the work that is being done. The apprentice will also be someone that may take over your business when you want to move on. Just at the moment there are not too many of these types of people around. That gives us a weak foundation.

I know there has always been a problem of where and when do we train these people, but I am sure that if we have enough young people wanting to be part of what we do then the training process will happen, this will happen due to the numbers that will be in the system.

If we were to all have a look at what we are doing and be honest with ourselves I am sure we could see another 100 young people in our Industry and then within a few years then we would all be happy, because not only would our Industry be changing it would also be growing. So be it, I am sure in different directions, but it would be positive and I can only see that as a great thing. A great future on a good solid foundation.



New Zealand Branch
2012 Conference • Wellington

AADS (Inc.) 2012 Conference Wellington

Welcome to the 2012 AADS Conference being held over the weekend of 14th to 16th September in our cultural capital, Wellington.

The conference this year has been designed to give you a balance of business and pleasure where leading manufacturers and suppliers engage you with their presentations, before taking in a scenic and fun evening on Wellington's picturesque West coast.

We have secured the Rydges, a 4 star hotel, providing us with a competitive conference and accommodation package.

The Rydges is located in the center of the capital presenting a world of scenic and shopping opportunities within walking distance. Top quality bars, restaurants and cafes are all a hop skip and jump from your plush accommodation.

VENUE: The Rydges Hotel - 75 Featherston Street, Wellington
www.rydges.com/wellington

PROGRAM OVERVIEW

Friday

Tee off at Golf and stretch those legs followed by an opportunity to view some of the exhibitor's stands, then sitting down to enjoy a sumptuous buffet dinner.

Saturday

The conference kicks off at 8.45am - getting through all the business before setting out to perfect your aim, test your adventure and fuel some adrenalin at the Boomrock. Then when all the hardwork is done, sit back and enjoy some of the finest and fresh cuisine from the region, all whilst holding onto your seats from laughter at the quick witted, hilarious comedian, the "WESTIE" **Ewen Gilmour**.

EARLY BIRD REGISTRATION COMPETITION

Registrations received before 15th July automatically go into the draw to win your own Exclusive Boomrock Package.

Registration: all prices include gst
Delegates \$320 | Partners \$200

Claybird shooting



Archery



4WD All terrain park experience



AADS (Inc.) 2012 Conference
Wellington
PROGRAM OVERVIEW TIME TABLE

**Friday
14th September**

10.30 am	Golf
11 am - 4 pm	DDL Training Denso Common Rail Injector principles of Operation training.
05.00 pm	Exhibitor Display Area Open
06.30 pm	Welcome Dinner

**Saturday
15th September**

08.45 am	AGM
09.30 am	Guest Speaker
09.50 am	Exhibitor activity
10.10 am	Morning Tea
10.45 am	Guest Speaker
11.15 am	Break out Workshop
11.45 am	Guest Speaker
12.10 pm	Lunch and view exhibits
01.00 pm	Break out Workshop
01.30 pm	Guest Speaker
01.50 pm	Break out Workshop
02.10 pm	Break out Workshop
02.30 pm	Conference over Change into casual/warm dress for Boomrock Adventure and Dinner with "the Westie" Ewen Gilmour
03.00 pm	Bus Ride to Boomrock
03.45 pm	Boomrock Adventure begins
07.00 pm	Dinner with "the Westie" Ewen Gilmour
10.00 pm	Bus Ride Back to Wellington

Partner Program

9.30 am	Meet for Shopping
12.00 pm	Meet for Lunch and resume shopping
03.00 pm	On Bus to Boomrock

AADS (Inc.) 2012 Conference
Wellington
Registration Form



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292 Boomrock Road, Ohariu Valley
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Name of those attending:

Surname : _____ First name: _____

Company : _____

Mailing Address : _____

Phone : () _____ Fax : () _____

Accommodation Booking Room Type: _____ Sharing with _____

Superior King \$179 _____ Twin \$179 _____

Add \$20 to room if breakfast is also required.

Detail you wish discussed in AGM general business:

Friday Activity - circle if interested: GOLF/ PARTNER ACTIVITY

Saturday afternoon/evening event includes Claybird shooting/Archery and dinner. However the following activities are also available at your own expense. Please indicate participation below and include activity cost in registration:

4WD All terrain park experience \$40 +GST _____ Knife throwing \$15 +gst _____

Delegate Registration: _____ @ \$ 320 inc. GST \$ _____

Partner Registration: _____ @ \$ 200 inc. GST \$ _____

Accommodation : _____ @ \$ _____ inc. GST \$ _____

Signed: _____ Total Enclosed: \$ _____

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10% Diesel in America by 2022

A new image for diesel: Driven by increasing consumer confidence



Diesel Power: Gaining in Popularity

Diesel, a term strongly linked to trucks is now taking on an expanded meaning on US roads. Clean diesel car sales are on the rise with many new models on the way. Driven by increasing consumer confidence in the US, clean diesel automotive sales in 2011 soared 27% versus 2010. 30% of consumers shopping for a car say they would consider a diesel model, up from 17% in 2008. Nowadays the diesel engine is no longer synonymous with a slow moving commercial vehicle. Word is getting around about the advantages of the modern diesel engine, such as fuel economy and compliance with even the most stringent emission legislation. Even though the diesel share of new registrations is currently only 3 percent, it is on the rise. As Mark Reuss, president of General Motors North America commented "The number of diesel vehicles being sold by our rivals is anything but peanuts." Volkswagen, for example, reported a 37% increase in diesel vehicle sales in October 2011 as compared to the same month prior year. European premium manufacturers such as Audi, BMW and Mercedes-Benz are also registering growth

in the US diesel market. Starting in 2013, GM will be launching its first diesel passenger car since the mid 80s equipped with Bosch Common Rail technology.

The higher the price of gasoline, the greater the popularity of diesel

As the leading developer and supplier of modern diesel technology, Bosch is keeping a very close eye on the growing trend within the American market. Over the next decade, the world's largest automotive supplier is expecting up to 10% growth in the diesel share of the USA vehicle market.

And why? Diesels deliver approximately 30% better fuel mileage than gasoline, meet the stringent emissions requirements, are quiet and diesels are FUN to drive.

Bosch Diesel Info Magazine, 20 April 2012

Opportunity for Ethanol Growth in Australia By Ron Kotrba

Lux Research has generated a new report titled, "Nations Race to Build Alternative Fuel Capacity." The report states that "alternative fuels comprise 4.3 percent of petroleum capacity today, and countries such as Thailand, Australia, and Sweden represent the best growth opportunities."

Current production capacity for alternative fuels such as ethanol, biodiesel and renewable diesel is at 44.6 billion gallons a year, Lux says, "but systemic hurdles will constrain growth to less than 5 percent annually through 2015. "It notes, however, that "pockets of promising growth still exist as variations in local policy, demand, and feedstock availability mean that new nations will arise as global hotspots in the constrained industry."

Lux says the best opportunities for ethanol growth are in Brazil, Australia, China, Sweden and Thailand, and ethanol capacity will grow to 35.1 billion gallons a year in 2015.

Source: <http://www.biodieselmagazine.com/blog/article/2011/12/54-billion-gallons-by-2015>

Peak3 wins grant through the Commercialisation Australia program for their Diesel particulate reduction technology

Queensland-based Peak3 has developed a unique and highly effective system for removing harmful particulates from the exhaust of diesel engines. Having successfully completed the first phase of development for its technology,

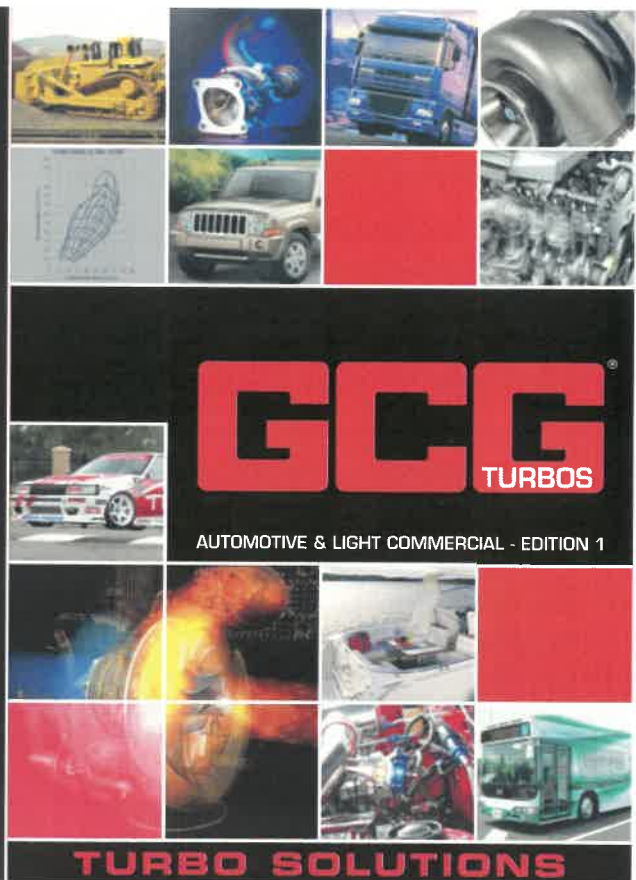
Peak3 will use Commercialisation Australia funding to complete its emissions reduction technology to meet specific vehicle and mine requirements. Using a specific set of in-service mining vehicles, the system will be developed to final industrial grade commercial deployment level for in-mine use including protective housing and operating/management software.

GCG TURBOS

We are pleased to announce the release of the first comprehensive Passenger Vehicle & Light Commercial Turbocharger applications catalogue here in Australia, after months of research and collating the 61 page catalogue is now available for free distribution.

This catalogue references all OE Manufacturers with turbocharged vehicles from A-Z, indicating year, horsepower, engine size and model, and of course the applicable turbocharger found on the OE application. This is a useful guide for every work shop in Australia, and will be seen as the Bible for the industry over the coming years.

FREE copies are available by contacting GCG Turbo's on 1300TURBOS or sales@gcg.com.au



GCG TURBOS
AUTOMOTIVE & LIGHT COMMERCIAL - EDITION 1
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TRANSPORT FUELS

Households, on-road business use of light vehicles and the agriculture, forestry and fishery industries will not face a carbon price on the fuel they use. Some businesses which effectively pay no fuel excise will face an effective carbon price, through changes to the current fuel tax regime. Eligible businesses may choose, however to have their liquid transport fuel emissions come under the carbon pricing mechanism rather than the fuel tax system.

Heavy on-road vehicles will not face a carbon price from the commencement of the scheme. The Government intends to apply a carbon price on heavy on-road vehicles from 1 July 2014, but notes this measure was not agreed to by all members of the Multi-Party Climate Change Committee.

On-road use by households and light commercial vehicles

Households and on-road commercial vehicles 4.5 tonnes and under currently pay the full rate of excise. They will continue to pay excise under current arrangements but will not also pay a carbon price on top of this.

Off-road business use

Some businesses effectively pay no excise on the fuel they use off-road, as their excise is offset under the fuel tax credits scheme. An effective carbon price will be imposed on some businesses through reduced fuel tax credit entitlements and reductions to the automatic remission of excise on gaseous fuel used for non-transport purposes.

The current fuel tax regime provides fuel tax credits that remove or reduce the incidence of fuel tax from business inputs so that fuel tax falls primarily on non-business consumers and light commercial vehicles. By reducing existing fuel tax credits by an amount equal to the carbon price, the Government will impose an effective carbon price on businesses liquid and gaseous fuel emissions through the existing fuel tax regime.

Fuel tax credits will not be reduced for the agriculture, forestry and fishery industries. Therefore, these industries will not pay an effective carbon price. The fuel tax credits will remain at 100 per cent of the effective fuel tax for these industries. Fuel tax credits will also not be reduced for businesses that have opted-in to the carbon pricing mechanism.

Calculating the fuel tax credit reductions

As different fuels emit different amounts of carbon when they burn, the fuel tax credit changes for petrol and diesel will be determined according to their specific level of emissions. Fuel tax credit changes for liquid fossil fuels other than petrol and diesel will be based on the diesel emission rate. Fuel tax credits changes for gaseous fuels (such as Liquefied Petroleum Gas (LPG), Liquefied Natural Gas (LNG) and Compressed Natural Gas (CNG)) will reflect the effective carbon price, based on their specific emission rates.

Fuel tax credits for businesses will be reduced for fuels acquired after 1 Jul 2012 by the amount of the fixed carbon price as set at the beginning of each of the fixed price years from 2012-13 to 2014-15.

When Australia moves to an emissions trading scheme in 2015-16, the fuel tax credit changes will be determined on a six-monthly basis, based on the average carbon price over the previous six-months.

Table 1 lists the relevant fuel tax credit reductions per fuel type over the three year transitional assistance period. Figures are in cents per litre except for CNG and LNG which are in cents per kilogram.

Table 1: Fuel tax credit reductions

Fuel	2012-13	2013-14	2014-15
Petrol	5.52	5.796	6.096
Diesel and other liquid fuels	6.21	6.521	6.858
LPG	3.68	3.864	4.064
LNG & CNG	6.67	7.004	7.366

On-road business use: heavy vehicles

Heavy on-road vehicles (over 4.5 tonne gross vehicle mass) will not face a carbon price from the commencement of the scheme. The Government intends to apply a carbon price on heavy on-road vehicles from 1 July 2014, but notes this measure was not agreed to by all members of the Multi-Party Climate Change Committee.

Gaseous fuels such as LPG, LNG and CNG used for on-road transport will not be subject to an effective carbon price as their eligibility for a fuel tax credit is reduced to zero due to the Road User Charge.

Non-transport use of gaseous fuels

Non-transport LPG and LNG receive a remission, and non-transport CNG receives an exemption from the excise and excise equivalent customs duty imposed on gaseous fuels so that effective tax only falls on gaseous fuels for transport use.

To ensure consistent coverage of non-transport use of gaseous fuels, such as emissions from bottled LPG and reticulated gas, an effective carbon price will apply through a reduction in the automatic remission or exemption of excise.

Under the Government's plan for a clean energy future, the fuel tax remission or exemption for the non-transport LPG, LNG and CNG will be adjusted on a 'cent-for-cent' basis equivalent to the carbon content price on the fuels, had the gaseous fuels been subject to carbon pricing.

Aviation, marine and rail transport

As aviation fuels do not receive fuel tax credits, domestic aviation fuel excise will be increased by an amount equivalent to the carbon price on an annual basis over the fixed price period to provide an effective carbon price for aviation. From 1 July 2015, aviation excise will be increased on a six-monthly basis, based on the average carbon price over the previous six months. Businesses that have opted-into the carbon pricing mechanism will be entitled to a fuel tax credit equal to the excise increase equivalent to the carbon price. International aviation fuel use is not subject to fuel tax and will therefore not be subject to an effective carbon price.

Table 2 Carbon price impact on aviation fuel, cents per litre

	2012-13	2013-14	2014-15
Carbon price (\$/tonne CO2-e)	23.00	24.15	25.4
Aviation kerosene	5.98	6.279	6.604
Aviation gasoline	5.06	5.313	5.588

Note: impact based on emissions of the fuel only, does not include impact from other refining based emissions or energy costs.

The current rate of excise on aviation (both aviation kerosene and aviation gasoline) is 3.556 cents per litre. Over the period the excise rate for aviation kerosene would rise by 6.604 cents per litre to 10.16 cents per litre in 2014-15, and the excise rate for aviation gasoline would rise by 5.588 cents per litre to 9.144 cents per litre. The vast majority of fuel used in aviation is aviation kerosene.

Marine and rail transport effectively pay no excise on the fuel they use, as their excise is offset under the fuel tax credits scheme. An effective carbon price will be put on those activities through reduced fuel tax credit entitlements in the same way that it applies to off-road business use.

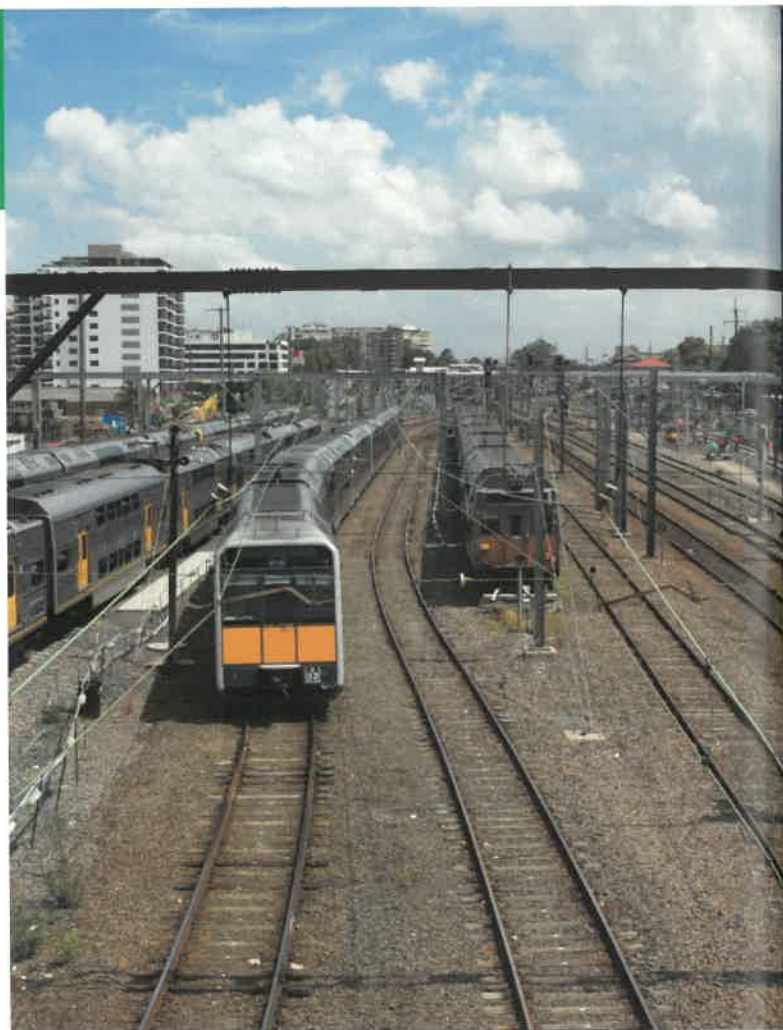
Other fuels

Due to their zero-rating for carbon emissions, renewable fuels such as ethanol, biodiesel and renewable diesel will not be subject to a carbon price. Similarly, non-combustion fuels such as solvents and lubricants will not face a carbon price.

Supporting new fuel efficient vehicles

A new wave of vehicles are becoming available that are cleaner and cheaper to run. Under new standards being introduced from 2015, all car companies will be required to reduce emission levels from vehicles they sell by introducing better technologies and adjusting the range of models they sell in Australia.

The Government is working with the automotive industry to set the emission levels that will apply under the new standards. In addition to helping make a reduction to Australia's carbon pollution from transport,



this initiative will deliver real cost savings for motorists through improved fuel efficiency in new vehicles.

The Green Vehicle Guide and the Fuel Consumption Label are two other initiatives supporting Australians to make better informed decisions and help consumers choose vehicles that use less fuel and have lower emissions.

Cutting transport emissions

The Government is also working to cut pollution by improving our transport systems. Since late 2007, the Government has committed over \$7.3 billion to modernise and extend urban passenger rail infrastructure to provide genuine alternatives to private car travel.

The \$60 million national smart managed motorways trial will help improve congestion, lower pollution, and expand the capacity of existing road infrastructure networks. Managed motorways use new technologies to create a more consistent level of motorway performance, resulting in lower greenhouse gas emissions.

The Government will continue working with the aviation industry to reduce its emissions.

www.cleanenergyfuture.gov.au/transport-fuels



www.gcg.com.au

NEW PRODUCT RELEASE
2011-02



Imports/Metric Locking Header Bolt Kits

Exhaust Manifold & Turbocharger:

Stage 8 Locking Header Bolts or Nuts are easy to use and they are real assurance against horsepower loss or gasket failure created by loose nuts or bolts. The unique patented and trademarked functional design is just three pieces: a bolt (4130 Alloy Steel), a locking retainer and a spring clip. The header bolt kits are application specific as either hex head with a 3/16 recessed allen head or 12 point, USA or metric. The turbo bolt kits are application specific as either metric hex head 6 point or metric nut. All Stage 8 Locking Header Bolt Kits are sold with all of the necessary hardware for your application. *GCG Turbochargers has been appointed the Australian Distributor for the range and now have stocks ready to purchase.*



STAGE 8 LOCKING HEADER BOLTS NOTE: DHH = DOUBLE HEX HEAD BOLT, INCLUDES 3/16 RECESSED ALLEN HEAD

Application	Part #	Description
Turbo Kit (4) 8mm-1.25 nuts	3950	(4) 8mm-1.25 nuts
Turbo Kit (4) Bolts	3902	(4) 8mm-1.25x 25mm bolts 6pt
Turbo Kit (4)10mm-1.25 nuts	3951	(4) 10mm-1.25 nuts
Turbo Kit (4) Bolts	3903	(4) 10mm-1.25x 25mm bolts 6pt
Turbo Kit (4)10mm-1.50 nuts	3952	(4) 10mm-1.50 nuts

FOR MORE INFORMATION OR SEE MORE OF THE RANGE VISIT www.stage8.com or www.gcg.com.au

Branch Updates



Neil Quick *NSW Chairman*



The NSW branch held its last meeting in Inverell, hosted by Ross and Margot Worgan from Dieselequip.

Although a small gathering of shops (being in the north west of the state maybe it was a long way for some to travel) it was a very

entertaining and informative meeting.

Points that were discussed were the Vale to John Moir read out plus an update from the National committee about progress with the rewriting of the Constitution as well as the 2012 Convention together with General Business.

After the business of the day was completed we were given a very interesting display via a PowerPoint presentation given by John Jamieson from Dieseldcare demonstrating the benefits of the Stanadyne Fuel Management system.

This was then followed by another presentation, by Chris Graham from Diesel Distributors.

Chris gave an excellent "hands on" demonstration of the Delphi YDT278 High pressure diagnostic kit with some printed hand outs.

Both presentations were informative and well received. As an association we strive to make these meetings as informative as we can so I would like to sincerely thank John and Chris for their time in organising and presenting these talks.

After a very nice lunch we were taken on a tour of a local manufacturing company's premises – Boss Engineering founded in 2007 – for what was a very interesting tour. It is a credit to the four partners, and a good example to us all as employers, to see what dedication and investment can make to such a small family business that continues to grow and expand and be a success.

Sunday was spent at the local car museum which was hosting the annual car show coincidentally so we were treated to some great sights, old and not so old but well loved cars and bikes.

Both presentations were informative and well received. As an association we strive to make these meetings as informative as we can so I would like to sincerely thank John and Chris for their time in organising and presenting these talks.

A nice way to finish a very good weekend.

Thank you to Ross and Margot for the organisation, making your premises available for the presentations and all the little things that went into making a very good meeting.

The last meeting for the year will be our meeting/AGM to be held in Western Sydney. This is a voting year for committee members and I would

encourage all members contemplating a position on the committee to come forward.

I hope to see more members at these meetings, (especially the AGM) as a small number of members put forward their time to inform, educate and entertain all members of the AADS. This is time well spent if it is made worthwhile by the numbers in attendance.

Points to ponder:

To the pessimist the glass is half empty.

To the Optimist the glass is half full.

To the engineer the glass is probably twice as big as it needs to be.



The wife told me to go to the doctors and get some of those tablets that "help" get an erection.

You should have seen her face when I came back and tossed her some diet pills.

I am still looking for a place to live.

Friends are like knickers....

Some crawl up your arse....

Some snap under pressure....

Some don't have the strength to hold you up....

Some get a little twisted....

Some are your favourite....

Some get thrown away when new ones come along....

Some are holey....

Some are cheap and just plain nasty....

And some actually do cover your arse when you need them to!

FUEL INJECTION FOR THE BODY AND SOUL

Leonie's Winter Casserole



Here is a must have recipe for all those winter nights when filling up with warm foods is a necessity!

Gravy beef or good quality it doesn't matter what you pay for your meat with this recipe. It will all come out so tender and delicious

You may as well keep the pennies for a good bottle of red to accompany the meal.

INGREDIENTS

- 500g beef, cubed, small bite sized pieces
- 1 full clove garlic, smashed
- 2 potatoes & 2 carrots, skin on, cubed
- 2 large sticks celery, chopped
- 1 Large onion, diced
- 1 cup of red wine (for the pot)
- 4 Tomatoes/chopped and diced

METHOD

Place all ingredients in casserole dish together, in any order. Sit overnight.

4 Hours before needed, place dish in a slow oven and cook. Stir occasionally.

Serve with chunky bread and red wine straight to the table from the oven.

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Highway Diesel — Brisbane
Lismore Diesel — Lismore
MTQ — Melbourne
Sydney Diesel Centre — Sydney
United Fuel Injection — Perth
Walz Diesel — Sydney
West End Diesel — Sydney

Common Rail Pump—DFP3 Australia

AG Diesel — Melbourne

Common Rail Injector C2i Euro III

AG Diesel (Nov 2010) — Melbourne
Diesel Australia — Brisbane
United Fuel Injection — Perth
West End Diesel — Sydney

Common Rail Injector—C3i Euro IV

Diesel Australia (Nov 2010) — Brisbane

Electronic Unit Injector—A and AO Series Australia

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B and M Fuel Injection — Sydney
Fremantle Fuel Injection — Fremantle
Highway Diesel — Brisbane
Lismore Diesel — Lismore
Sydney Diesel Centre — Sydney
United Fuel Injection — Perth
Walz Diesel — Sydney
West End Diesel — Sydney

Electronic Unit Injector—E1

Highway Diesel — Brisbane
Lismore Diesel — Lismore

Common Rail Pump—DFP1 New Zealand

Alltech Diesel — Auckland
Diesel Progress — Palmerston North
Diesel Services — Auckland
Diesel and Turbo — Wellington



Electronic Unit Injector—A and AO Series New Zealand

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Carbon Pricing

The Carbon Pricing Mechanism introduced by the Commonwealth Government came into effect on 1 July 2012. Under the legislation operators of facilities that generate a particular level of greenhouse gas emissions must make payments for each tonne of greenhouse gas they emit, with some large businesses being required to purchase carbon credits against their emissions.

Most companies operating large emitting facilities will be liable—those which generate over 25,000 tonnes of CO₂ emissions each year. Most of these companies directly emit greenhouse gases, such as power stations, mines and heavy industry. Some will be public authorities responsible for emissions from landfills.

The carbon pricing mechanism has been called the 'carbon tax' because it will have a fixed price set by the governments for the first three years of the mechanism, after which supply and demand will set the price through emissions trading, a market mechanism.

The carbon pricing mechanism will impose no red tape on small businesses – there will be no reporting or compliance obligations, the impact is on those generating large CO₂ emissions. The Government is also delivering new measures to help small business improve their energy efficiency and lower their costs.

As part of the carbon price mechanism, the Government have also reduced the fuel rebate on diesel fuel for off-road equipment from 1 July 2012. This reduction will follow the carbon price and will equate to an increase of approximately 6.2 cents per litre on diesel fuel for off-road equipment.

If consumers think a business is attributing significant price rises to the carbon price, concerns can be referred to the Australian Competition and Consumer Commission. The ACCC will investigate businesses' carbon claims and has the power to issue infringement notices or take legal action against businesses suspected of breaching the law.

More information can be found at www.accc.gov.au/content/index.phtml/tag/carbon

A fact sheet about how the legislation will affect a range of transport fuels can be found on pages 22-24.

General information about carbon pricing can be found at www.cleanenergyfuture.com.au

DIESEL TORQUE

OFFICIAL MAGAZINE OF THE ASSOCIATION OF AUSTRALASIAN DIESEL SPECIALISTS INC. (AADS)

Editorials Required

Diesel Torque is your magazine. Currently most articles are submitted by your respective State Chairmen and members of the National Committee.

We would encourage the members to submit any articles of interest that everyone would enjoy reading. It does not necessarily have to be technical, diesel or turbo oriented. We are looking for articles of interest across the board to all who read our magazine. Write an article of interest, find an article that you think would help others and submit it to your State Chairman for publication.

- All submissions can be sent to the following email address aads@apcaust.com.au
- All pictures should be sent separate from text, preferably in jpg format and all articles written in Word.
Do not embed images into the word document.

Help yourselves to your own magazine and think how you can contribute to make it something that is of interest to your fellow members. This is your association, make it a success. We look forward to receiving your contribution for the next publication.

**Help Yourself,
It's Yours.**



DIESEL TORQUE

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