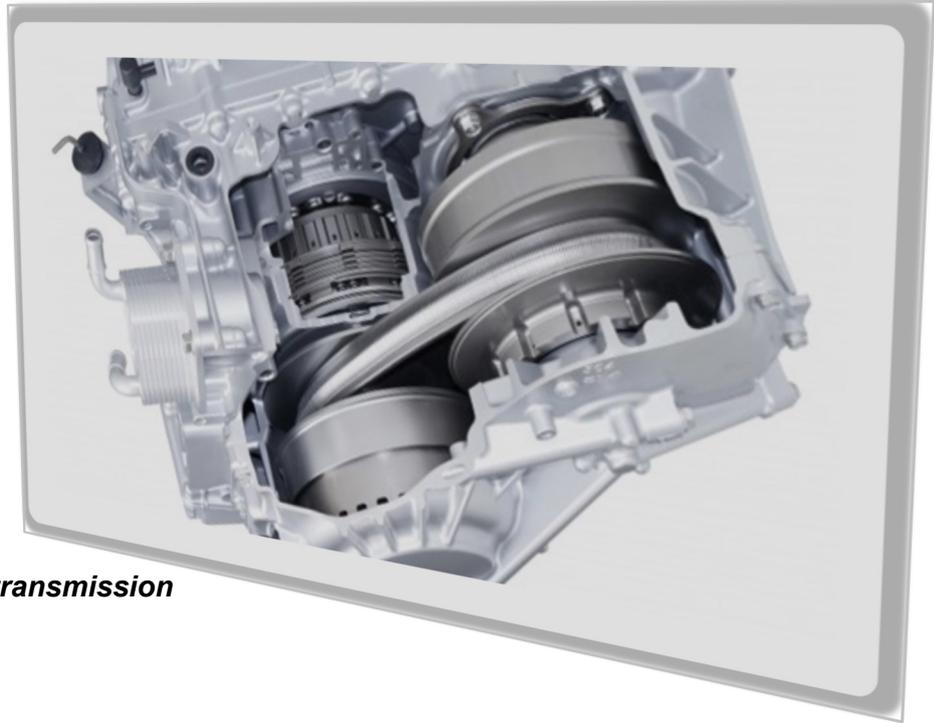


A different point of view

In this article, I am looking at diagnostics from a wider perspective, not as usual into the minutest details of one vehicle, more from an industry perspective. I hope you like it.



CVT transmission

Problems presented to the Helpdesk

We are often asked by workshops what the most common faults are and what the trends are in diagnostics. This is important information for the workshop as it can assist in planning for the future. If you know what freight train is coming towards you, you can prepare appropriately.

Not just engine management

Most of our articles are focussed on petrol and Diesel engine management systems, frankly, this is where most of the problems are. The engine is still the most dynamic component in the vehicle. However at our tech help desk we have an exponential increase in support requests on other complex systems in the car. We are working hard here at AECS to have this trend reflected in our training seminars. A car with 30 ECU's on board is not special anymore. Each ECU has got its own circuits, to measure sensor's signals and to control actuators. Each of those ECUs has got its own power supply and earths, often switched on/off very much independent of the ignition switch position. Most of these ECUs are communicating with each other sharing signals across multiple data bus systems. In any of the circuits described above a fault can occur, naturally, or as a result of working on the car.

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Mine field.

As a business owner (or manager) employing technicians, "go on then" and see if you can find the fault! See if you, yourself can find it any quicker when the customer puts financial pressure on you ;-).

The technician diagnosing the vehicle is in many ways just like everybody else, just human, willing to help, but not super human.

Highly skilled

We are talking about highly skilled work here, not even closely related to the work we did 10 - 20 years ago. Diagnostics is fun and rewarding for the technician and customer. For me personally the buzz from finding a fault is still as great as it was, in my case, 30 years ago. I am sure

that most technicians out there feel the same.

In addition, any customer feels great when they can have fresh confidence in their car again.

To achieve this level of satisfaction in the customer and technician takes an ever increasing amount of skill (and equipment).

CVT

We have dealt with lots of CVT issues in the past year. For example where the garage gets the transmission overhauled by a trans shop and after fitting, finding that the car still has the same problem. Some very expensive and unkind blaming each other has often been the outcome, with the customer caught somewhere in the middle. We are building a beautiful new training to make diagnosing "is it the trans or is it the engine" so much easier and certain. Plenty of real issues are dealt with, not so much repairing the trans, but the focus on diagnosing where the fault lies.

Trucks EBS

Problems in truck electronics are increasing rapidly. The evolution in the truck world is very different from the car industry. Even in the early 2000s there were still trucks being produced with virtually no electronics on board, where in the cars most were electronically controlled already in the late 80s.



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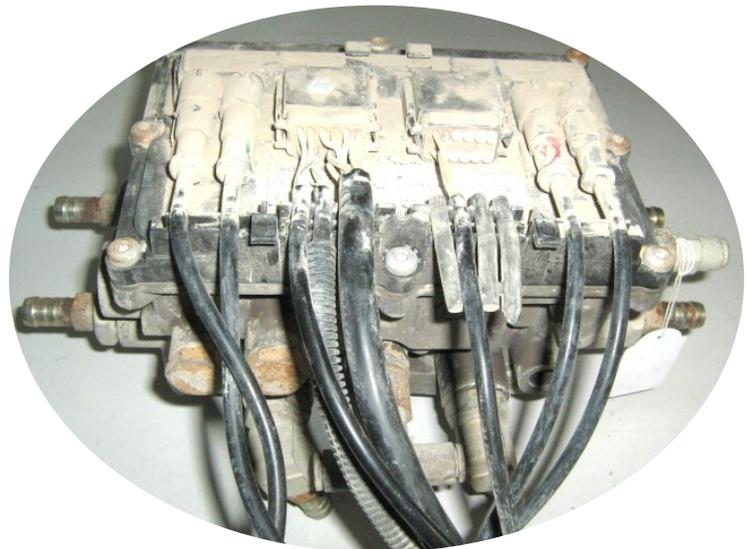
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Truck EBS controller

Late model trucks surpass late model cars by miles in levels of electronic technology. This obviously goes hand in hand with 'hard to find' faults. The adaptations that truck technicians had to make to stay relevant in the industry are phenomenal. We at AECS are currently focussing on EBS truck and trailer

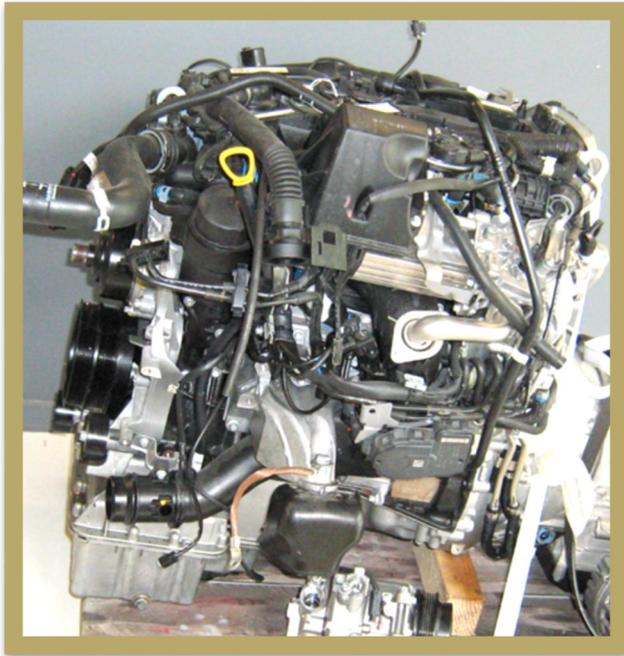


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brake systems, as there is virtually no correlation between ESP on cars and EBS on trucks. This very likely will have a new training seminar as effect, which only seems to be a drop in the ocean.



2014 2.2 Ltr, 500Nm Euro6, series/parallel twin turbo, common rail MB Diesel engine.

Common rail Diesel V2

We have been running since 2008 a really nice common rail Diesel training (DMS 1-3) throughout Australia and NZ. This very popular course is still very relevant as it has seen many changes and additions. It has helped many technicians to be confident with this level of technology.

We have just recently purchased a 2014 MB Sprinter engine for building a new common rail training seminar, the DMS 1-4.

I must honestly say that this tiny 2.2ltr Euro6 engine with all its 150KW and 500Nm(!) torque stunned me when I first saw it, or rather did not see it. See if "mr google" can help you when this develops a fault!

The amount of 'stuff' bolted around the engine makes it virtually impossible to even see the engine. In addition, the injection system where the nozzle needle gets pulled up directly by a stack of 250V Piezo crystals, rather than pushing open a pilot valve in the injector really blew me away. The oil pump with variable quantity and pressure is another trap for young players!

Already the older (2009) 2.2Ltr engines, with the cam gears at the front of the engine, do not have an oil pressure switch or pressure sensor. When, during a service, draining oil takes too long, oil will run back out of the pump. The

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pump is above the oil level and has difficulties picking up oil through vacuum. As we, ourselves, have found out this has some very expensive damage as result, without the oil light coming on! The oil light in many modern Euro vehicles is only to indicate level and quality.

Some of this is not stuff we would see in the workshops every day yet, but it is certainly on the road already.

We will be doing research on this system and gather measurement data, but the building the training might not finish this summer.

Building a training simulator with a system this complex needs all skills we have present here at AECS. Think only about all the CAN data bus signals we need to simulate in order for the engine management to think every other system, present in this van, is happy...

Technical support help desk.

We are certainly not experts in everything, which is simply not possible. However, we spend a lot of time researching best methods for fault finding, and I believe we have something to offer you in the form of technical support, training and equipment.

We offer technical support to our clients who have our equipment and attend our training seminars. If we open up this technical support to everyone, we simply cannot keep up with the demand.

Our team is already very regularly full time on the phone assisting multiple clients with technical problems, sometimes for days in a row.



Recording of Key transmission

Anti-theft

We did not only make a new air conditioning training rig last year but also developed a beautiful anti-theft/ immobilisation seminar (EMS 1-5). The complexity of modern anti-theft systems is enormous, the simulator we use for this training is a simple 2007 Nissan, which has the system spread across 7 ECUs! Anything can go wrong there, and believe me, it does, across various brands.

This is actually an area where obviously the manufacturer does not want aftermarket garages to be able to figure out how it works.

See if you can do the fault finding now efficiently if your customer has a no start or no entry situation!

Conclusion

Quality back up from your equipment provider is just as important as the quality of the tools they provide. However, before the tools, comes the highest level of training!

for **AECS** Ltd:

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(trainer/research)

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To view the pattern pictures in High Definition - click on the pictures

Start planning your 2015 training.

March	April	May	June	July
1	1	1	1 Queens birthday	1
2	2	2	2	2 AIRCON - Hamilton
3 AIRCON - Christchurch	3 Good Friday	3	3	3 AIRCON - Hamilton
4 AIRCON - Christchurch	4	4	4 ATS11 - Christchurch	4
5	5	5 AED - Auckland	5 ATS11 - Christchurch	5
6	6 Easter Monday	6 AED - Auckland	6 CANBUS - Christchurch & (AED - Ashburton - CLOSED)	6
7	7 Southland anniversary	7 AED - Auckland & (DMS1-3 - Auckland - CLOSED)	7 AED - Ashburton - CLOSED	7
8	8	8 AED - Auckland & (DMS1-3 - Auckland - CLOSED)	8	8
9 EMS1-4C Palmerston North - CLOSED	9	9	9 AED - Christchurch	9
10 EMS1-4C Palmerston North - CLOSED	10	10	10 AED - Christchurch	10
11 EMS1-4C Palmerston North - CLOSED	11	11 ATS - Auckland & (EMS1-4 - Auckland - CLOSED)	11 EMS1-5 - Christchurch	11
12	12	12 ATS - Auckland & (EMS1-4 - Auckland - CLOSED)	12 EMS1-5 - Christchurch	12
13	13	13 AEDD - Auckland - CLOSED	13	13 AED - New Plymouth
14	14 ATS - Wellington	14 AEDD - Auckland - CLOSED	14	14 AED - New Plymouth
15	15 ATS - Wellington	15 AEDD - Auckland - CLOSED	15 AIRCON - Christchurch	15 ATS - New Plymouth
16	16 Canbus- Wellington	16	16 AIRCON - Christchurch	16 ATS - New Plymouth
17	17	17	17	17 CANBUS - Palmerston North
18	18	18	18 CANBUS - Hastings	18
19	19	19	19	19
20	20	20	20	20
21	21	21	21	21 AED Auckland - CLOSED
22	22	22	22 AED - Rotorua	22 AED Auckland - CLOSED
23 Otago anniversary	23 SCAN - Palmerston North & AIRCON - Wellington	23	23 AED - Rotorua	23 EMS1-3 - Auckland
24 AED - Auckland	24 SCAN - Palmerston North & AIRCON - Wellington	24	24 SCAN - Hamilton	24 EMS1-3 - Auckland
25 AED - Auckland	25	25	25 SCAN - Hamilton	25
26 EMS1-5 - Auckland	26	26	26	26
27 EMS1-5 - Auckland	27 Anzac day	27	27	27
28	28	28	28	28
29	29	29	29	29
30	30	30	30	30
31	31	31	31	31



Please note: Dates & Courses may change without notice, refer to the AECS calendar for update information.

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