Dear Oner, Dear Pierre,

During my visit to your site on February 12th, I performed a demostration on a BMW X5 EURO6 vehicle, but for some reason, the HEM OBD data was only acquired for runs 1 and 2, and not runs 3 and 4.

Fortunately, you provided me with a sample of fuel additive for gasoline powered vehicles.

The following short test and analysis is provided as a complete demonstration of the 3DATX parSYNC capacity for the low cost screening and improvement assessment that Malcan Greentec is seeking.

On 29/02/2020, I used the product in my wife's vehicle and performed before and after testing using the 3DATX parSYNC and the HEM OBD Data Logger.

The vehicle data is as follows:

- 2009 Suzuki Splash (manufactured in Hungary)
- Motor type K12B, 1 242 cm3 with catalyser, 63 kW @ 5500 RPM
- AT/4 Automatic transmission
- Vehicle weight 1115 kg
- Tires 185/60 R15 84H
- Constructor rate speed 170 km/hr
- Constructor emissions data:
    - o CO: 0,282 g/km
    - o HC: 0,038 g/km
    - o NOx: 0,007 g/km
    - o HC+NOx: - g/km
    - o CO2: 142 g/km
    - o Consumption: 5,9 l/100 km

Observed results:

Parameters	Test 1	Test 2		Test3*	Test3 (cor*)	Test 4
Start time	1:54:08 PM	2:24:10 PM		3:19:07 PM	3:19:07 PM	4:51:29 PM
Stop time	2:20:26 PM	2:48:48 PM		3:43:42 PM	3:40:49 PM	5:17:08 PM
Test duration (sec)	1 578	1 478		1 475	1 302	1 538
Test distance from Google (km)	20,6	20,6	Malcan Greentec additive for gasoline vehicles added, vehicle driven at highway speeds for 15 minutes prior to starting Test 3	20,6	N/A	20,6
Test distance calculated (km)	20,61	20,60		20,60	19,25	20,60
Average speed (km/hr)	47,01	50,16		50,28	53,22	48,22
Average engine RPM	1 700	1 772		1 776	1 831	1 729
Total CO2 consumed (g)	1 999	1 928		1 865	1 758	1 975
CO2 (g/km)	97,0	93,6		90,5	91,3	95,9
NOx (g/km)	0,010	0,012		0,009	0,009	0,013
PN (#/km)	7,26E+11	5,46E+11		**2,02E+12**	7,61E+11	1,18E+12
PM (g/km)	0,00024	0,00016		**0,00065**	0,00018	0,00028

*During the pause for refueling the vehicle, I turned off the CUBE (that removes excess water in the sample lines) and subsequently forgot to restart the CUBE before performing Test 3.
 The physical water trap become full at time 3:40:49 PM and water droplets created significant false

PN/PM measurement.
 Note that the PN/PM measurement in Test 4 may still be affected and reading a little high.

Overall my wife's 2009 Suzuki Splash performed significantly better than constructor norms, close to or exceeding the EURO6 standard (see https://en.wikipedia.org/wiki/European_emission_standards).

By averaging the results between Tests 1 and 2 and Tests 3 and 4, I observed a 2,2% improvement in CO2 production that can be attributed to the Malcan Greencheck additive.

Please find attached datafiles with merged parSYNC and Hem OBD Data.

We await your purchase order for our parSYNC and the recommended vehicle data logging solution, and I remain at your disposition for any questions.

Best regards,

Matthew
--
Matthew Berry
European Commercial Development

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Dear Oner, Dear Pierre,

I was a little surprised at the very low CO2 consumption of the vehicle, which would mean that the fuel consumption was less than half of constructor specifications!

I had used the OBD data "Air Flow Rate from Mass Air Flow Sensor (g/s)" for calculations, so I decided to check this against a calculated value from vehicle displacement and RPM. I discovered that the vehicle Air Flow Sensor was only accurate at high RPM, and measured progressively more inaccurately as RPM dropped to be only 20% of calculated value at idle! Overall, the Mass Air Flow Sensor measured only 40% of calculated value.

Therefore I recalculated all results:

Parameters	Test 1	Test 2		Test3*	Test3 (cor*)	Test 4**
Start time	1:54:08 PM	2:24:10 PM		3:19:07 PM	3:19:07 PM	4:51:29 PM
Stop time	2:20:26 PM	2:48:48 PM		3:43:42 PM	3:40:49 PM	5:17:08 PM
Test duration (sec)	1 578	1 478	**Malcan Greentec additive for gasoline vehicles added, vehicle driven at highway speeds for 15 minutes prior to starting Test 3**	1 475	1 302	1 538
Test distance from Google (km)	20,6	20,6		20,6	N/A	20,6
Test distance calculated (km)	20,61	20,60		20,60	19,25	20,60
Average speed (km/hr)	47,01	50,16		50,28	53,22	48,22
Average engine RPM	1 700	1 772		1 776	1 831	1 729
Total CO2 consumed (g)	4 418	4 226		4 036	3 744	4 290
CO2 (g/km)	214,4	205,2		195,9	194,5	208,2

NOx (g/km)	0,019	0,023		0,018	0,017	0,022
PN (#/km)	1,47E+12	1,10E+12		**5,74E+12**	1,56E+12	2,37E+12
PM (g/km)	0,00055	0,00033		**0,00194**	0,00039	0,00056

*During the pause for refueling the vehicle, I turned off the CUBE (that removes excess water in the sample lines) and subsequently forgot to restart the CUBE before performing Test 3.
 The physical water trap become full at time 3:40:49 PM and water droplets created significant false PN/PM measurement.
 Note that the PN/PM measurement in Test 4 may still be affected and reading a little high.

No real surprises, the vehicle still exceeds EURO6 standards for NOx and PM, but exceeds allowed EURO6 PN emissions. So a very good EURO5.

There is good news: The recalculation of the CO_2 emissions with corrected exhaust mass flow at lower RPM values led to a much greater improvement in CO_2 production that can be attributed to the Malcan Greencheck additive: By averaging the results between Tests 1 and 2 and Tests 3 and 4, *I observed a 3,7% improvement in CO_2 production.*

I suppose that after 11 years, the vehicle Mass Air Flow Sensor has partially failed.

Please find attached the corrected datafiles with merged parSYNC and Hem OBD Data. By two separate e-mails, I send an image of the test route and photos of the set-up.

We await your purchase order for our parSYNC and the recommended vehicle data logging solution, and I remain at your disposition for any questions.

Best regards,

Matthew

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