Emission Testing Report. 29th and 30th June 2019

Thruxton Races 9, 10, 11 and 12.

Bulletin 3:-

With Pembrey behind us, we rolled into Thruxton armed with 1000 litres of GTL Fuel, a Premier Diagnostics DS2 smoke meter and a 4 Gas Analyser capable of measuring O2, CO, CO2 and NOx.

The weather was forecast good all weekend. With no chance of rain we were able to set up the equipment outside in the BTRA technical area, which enabled us to measure the Trucks as they were leaving the Track before they got back to their respective pits.

As we had the ability to measure more than just peak smoke values due to the additional equipment we had bought along we had to look at what numbers would be of interest to us and how we were going to implement the test. A peak smoke test would be conducted averaged across 3 accelerations, as we had previously carried out. With focus on the other Gases we could measure, O2 and CO2 are not gases that are linked to harmful pollution and variation across the test were not significant so were disregarded. CO is a poisonous gas and may have been of interest, however Diesel Engines are not associated with producing large quantities of CO, the levels were well below the MOT limits of the latest road going petrol cars with advanced catalytic converters, and we saw little variation across the tests. NOx is associated with pollution and air quality issues so we focused on this along with the smoke test. We were unable to test on track and all tests were stationary tests with results determined for Peak Smoke (Particulates) with an average across 3 full throttle accelerations, with NOx measured at Idle and a further reading taken at a Fast Idle held steady at between approximately 1/2 to 2/3rds of the maximum speed of the engine.

Driver: Erik Forsstrom	Vehicle: SISU		Race Number: 50	
Fuel Type:	Session:	Smoke average	NOx PPM Idle	NOx PPM Fast
Diesel	Race 1	6.85 K(1/m)	10	6
Shell GTL / Certas	Race 2	6.04 K(1/m)	2	3

Driver: Jim Bennett	Vehicle: Seddon Atkinson		Race Number: 28	
Fuel Type:	Session:	Smoke average	NOx PPM Idle	NOx PPM Fast
Diesel	Race 1	4.56 K(1/m)	129	190
Shell GTL / Certas	Race 2	4.12 K(1/m)	106	148
Shell GTL / Certas	Race 3	3.64 K(1/m)	84	105

Driver: Graham Powell	Vehicle: Renault		Race Number: 55	
Fuel Type:	Session:	Smoke average	NOx PPM Idle	NOx PPM Fast
Diesel	Race 2	0.67 K(1/m)	298	197
Shell GTL / Certas	Race 3*	0.37 K(1/m)	249	190

*** Graham only ran 3 laps with the GTL fuel, we anticipate further reductions in subsequent test sessions.**

In summary we have again witnessed some significant reductions in Particulate Matter as well as seeing a reduction in NOx emitted from the trucks tested when using Shell GTL EN15940 fuel

The low levels of NOx from truck 50 were anticipated as we witnessed higher levels of smoke / particulates which would indicate lower combustion and manifold temperatures. As levels of smoke / particulates decrease due to fuel burning under higher temperatures the formation of NOx gases becomes a trade off as we can see with the common rail Renault engine powering Truck 50.

We would like to personally thank Erik, Jim and Graham for their support with this programme of testing, along with their teams and crew and we look forward to continuing our testing during the upcoming meeting at Donnington Park over the weekend of the 9th and 10th August.

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