

# Five alive



Product tester Pete puts the Sykes Pickavant SP9550 5 gas analyser through its paces and delivers his verdict...

**S**omething that has intrigued me for some considerable time now is what gases are emitted by diesel engines?

I have tried to find out without success. I know complete combustion produces a smokeless exhaust with low soot particle emission – this is how diesel engines are tested for MOT purposes. If a diesel engine is not running at its optimum for whatever reason, then the fuel is not burnt completely and so produces particles of visible soot, carbon or smoke.

Diesel, like petrol, is a fossil fuel: a complex hydrocarbon. When mixed with oxygen and nitrogen from the atmosphere, as occurs when it's burnt in a combustion engine, it will produce the same gases as petrol. The bi-products of combustion are CO<sub>2</sub>, CO and NO<sub>x</sub>. The number of oxygen atoms attached to the nitrogen can vary from 1 to 4 so they are collectively called NO<sub>x</sub>. It is these gases that are harmful to the atmosphere and need to be reduced or neutralised using catalytic converters.

As such, I was delighted when I was given

a diesel gas analyser from Sykes Pickavant to test. At last, I would be able to see exactly what is emitted by a diesel engine....

### The features

The Sykes Pickavant SP9550 5 gas analyser is a small, portable unit measuring 28x19x13cm. It is powered by the mains, although a 12v cigarette lighter will also do the trick. Upon starting, the SP9550 runs through a warm-up process prior to carrying-out an HC and leak check.

On completion, you should connect the sample hose making sure the fitter is in good condition. The probe fitter screws into the end of the probe and is able to be recycled by the company.

Select diesel sample, press enter on the simple touchpad and the analyser compressor will start and the screen will display the gas readings. Insert the probe into the exhaust and note the readings (it is very important that the engine is hot when analysing the exhaust gases and all electrical equipment is turned off so there are no extra loads on the engine). The values are clearly

displayed on the screen in a digital format and have a quick response time.

Sampling is different to the method used by a smoke meter. Instead of flooring the accelerator, sampling is done at idle and fast idle as you would with petrol engine exhaust gas analysers.

### Great values

The gases measured are CO, HC, NO<sub>x</sub>, CO<sub>2</sub> and O<sub>2</sub> and the values displayed are in percentages or ppm. The expected values differ from idle to fast idle as you would expect. These values are listed in the main menu for quick reference, under technical tips, which is very useful especially when first using the analyser to aid in the diagnosis of the engine condition and its components. If all the gases are measured within the expected tolerance, then that indicates the engine is running efficiently.

Having had the opportunity to use the SP9550 on a good number of applications, mostly whilst servicing or for a pre-MOT check, I found that the results I obtained were valuable in that they showed the

### VERDICT:

The SP9550 is an excellent machine and as a bonus, can also be used on petrol engines using a different sampling pipe. It's a great aid in diagnosing and checking the efficiency of diesel engines with far greater accuracy than when just measuring smoke particle content.

measurements were within the expected limits, confirming the smooth running of the engine.

I noted pre-service and post-service values and observed that although there were no issues with the vehicles, an oil and filter change reduced the HC values,

I also had a customer with a Nissan Quashqai who was concerned about high fuel consumption. The vehicle was only two years old and performed very well. I took a series of readings which confirmed all was well with the car, so was able to offer the customer reassurance.

### Efficiency

The SP9550 analyser has another useful feature in the main menu in which you can measure the efficiency of a repair. If you find a problem with the readings, you can record the data. After carrying-out the necessary repairs to rectify the fault, the new measurements taken can be stored and then the difference is calculated as a percentage of age. This information can then be shown to your customer either on screen or if connected, as a print out.

So, thanks to Sykes Pickavant, I now have a better knowledge of what the exact content of diesel exhaust gases should be.

### MORE INFORMATION

For more information on the SP9550, pricing, nearest stockists and other products in the Sykes-Pickavant range circle 136