DETERMINATION OF IGNITION DELAY AND DERIVED CETANE NUMBER OF BIODIESEL AND DIESEL FUEL

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etane number is a defined parameter designed to provide an indication of the ignition quality of diesel fuels. A higher cetane number means that the fuel has better ignition quality than fuels with lower cetane numbers. Cetane number is a measure of a fuel's ignition delay, which is the time period between the start of injection and the start of combustion of the fuel in the engine. A fuel which has a shorter ignition delay will have a higher cetane number and *vice versa*.

PRINCIPLE

In the present test, an ignition quality tester (IQT^{TM}) (*Figure 1*) is used to determine the ignition delay

Figure 1. Ignition quality tester (IQT^{TM}).

and subsequently the derived cetane number. A small sample is injected into a heated, temperaturecontrolled constant volume chamber which has previously been charged with compressed air. Each injection produces a single-shot, compression ignition combustion cycle. Ignition delay is measured using sensors that detect the start of the fuel injection and the start of significant combustion for each cycle (Figure 2). A complete sequence comprises 15 preliminary cycles and 32 test cycles. The ignition delay measurements for the last 32 cycles are averaged to produce the ignition delay result. The ignition delay result is used to obtain the derived cetane number according to EN 15195 (2007) and ASTM D 6890 (2008) standards.

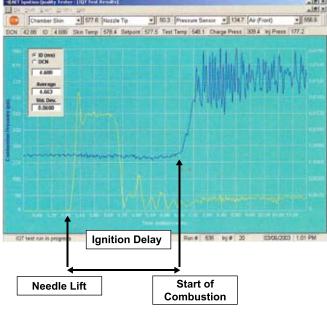


Figure 2. Ignition delay graph.

Amount of sample: 100 ml

required

Cost of analysis : RM 1000 per sample*

(*as at June 2009; subject

to change).

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REFERENCES

EN 15195 (2007). Liquid Petroleum Products – Determination of Ignition Delay and Derived Cetane Number (DCN) of Middle Distillate Fuels by Combustion in a Constant Volume Chamber. European Committee for Standardization.

ASTM D 6890 (2008). Standard Test Method for Determination of Ignition Delay and Derived Cetane Number (DCN) of Diesel Fuels by Combustion in a Constant Volume Chamber. American Society for Testing and Materials.

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