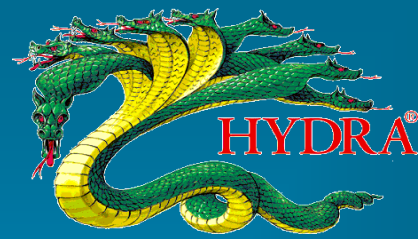


# HYDRA DPB-100 TEST RESULTS



# HYDRA®

## ABSTRACT

The following report depicts the need for the improvement of the fuel quality in respect of combustion, ignition, stabilization and emissions. The method that allows reduction in the fuel consumption of six cylinder diesel engines and avoids damage to the environment by harmful exhaust gases is the application of the fuel additives and the following test results describes the difference by using **Hydra DPB-100** fuel additive as compared to the sole JP-8 based fuel.

## CHEMISTRY OF HYDRA DPB-100 FUEL ADDITIVE

Hydra DPB-100 Fuel Additive (*will be referred as 'HDPB' in this entire report*) consists of a polar head, polarity of which is derived from nitrogen, oxygen molecules and a hydrocarbons which enables the additive to be fully soluble.

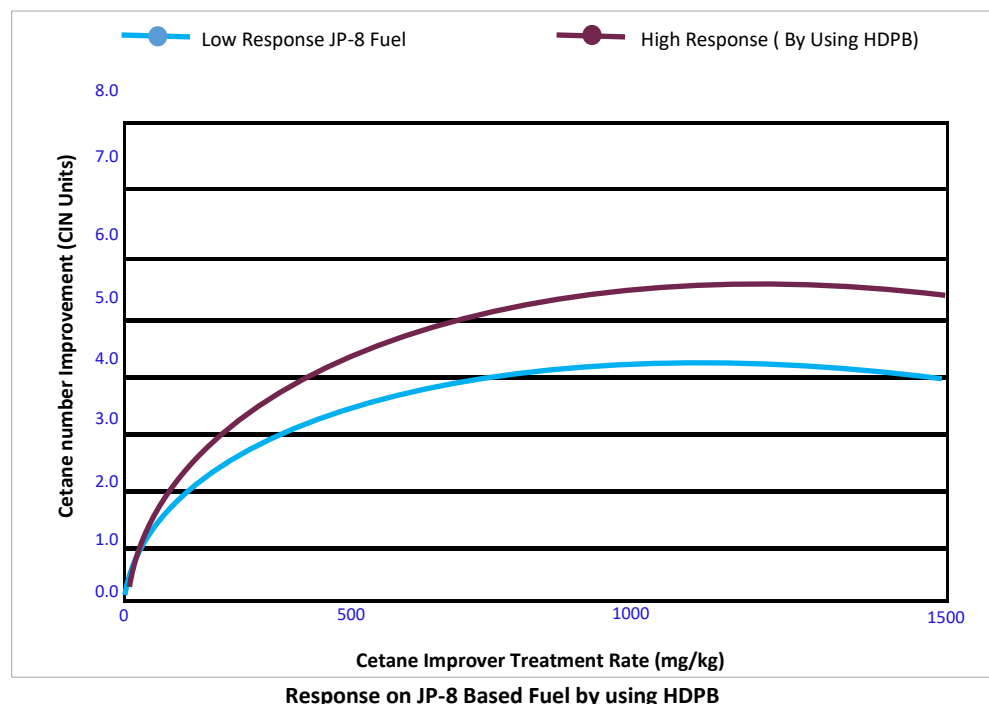
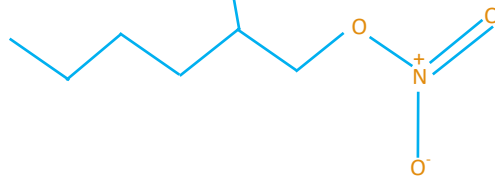
Fuel Additives are often referred as **detergents** but their function is completely different from the conventional detergents used for cleaning and washing purposes.

Chemically, HDPB is similar to **dispersants** used in lubricants. It is designed to keep the entire fuel system clean, from the fuel lines, fuel tank to the combustion chamber. It prevents the formation of deposits, particularly on the intake valve and the fuel injectors.

### Cetane Number Improver in Hydra DPB-100 Diesel Power Blast Fuel Additive

HDPB consist of cetane number improver, which are predominantly alkyl nitrates, of which 2-ethyl hexyl nitrate is the most common, having been used to increase cetane numbers of kerosene based fuels.

#### 2-Ethylhexyl Nitrate

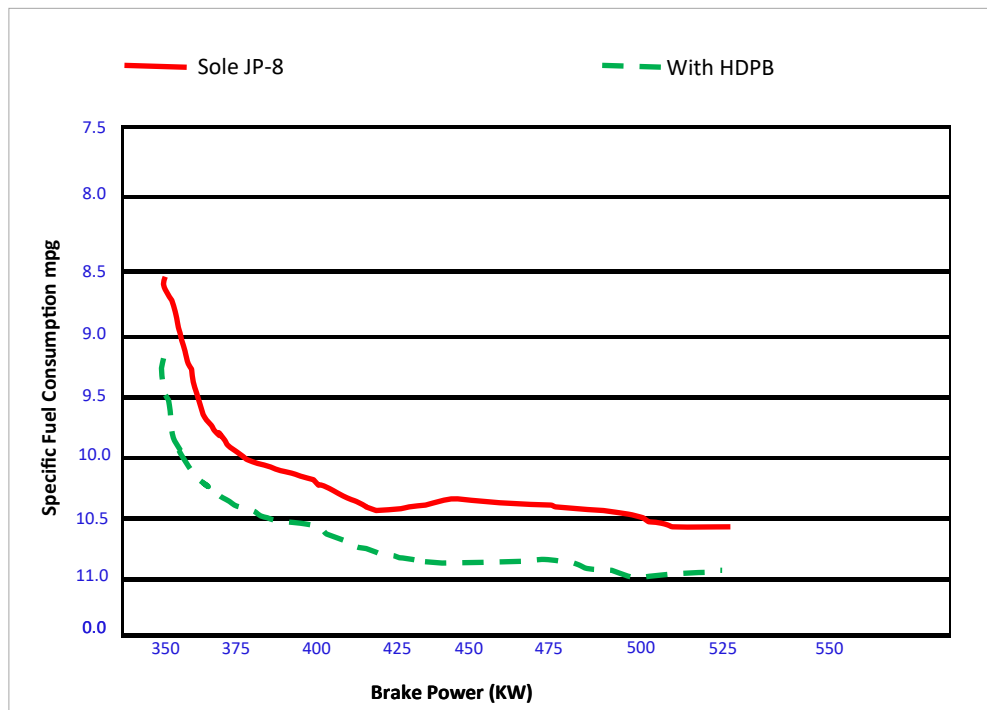


## METHODS AND TEST MATERIALS USED

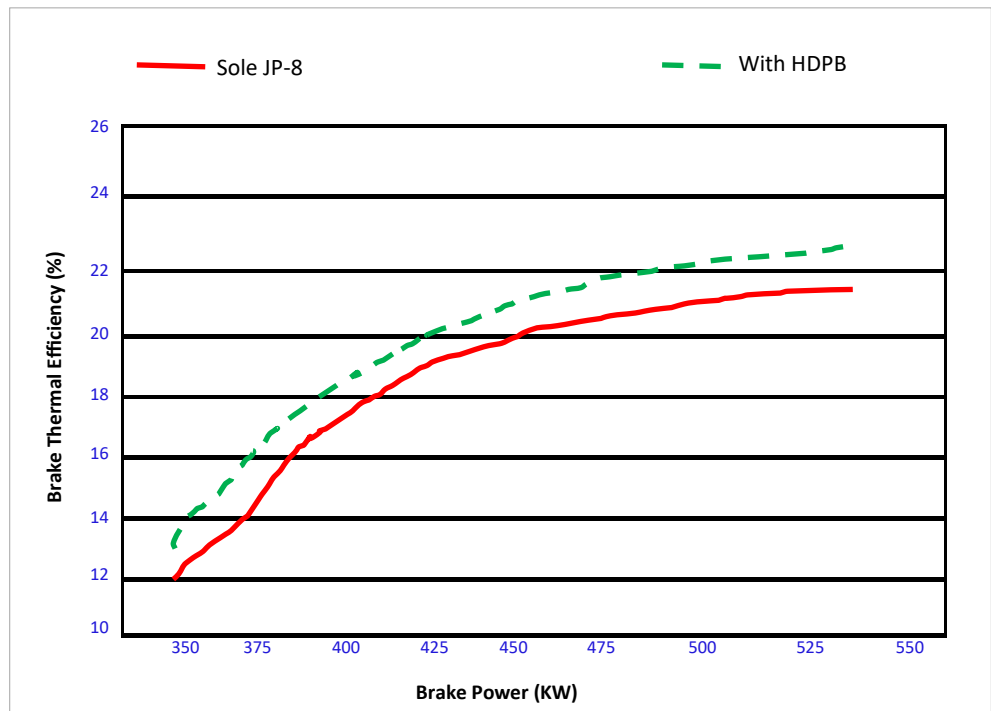
The test material used is standard specification JP-8 fuel and the experimental investigation was carried out in a six cylinder diesel engine. The test engine was attached with a current dynamometer to apply variable engine loads. Throughout the experiment the fuel injection pressure was maintained at 1800 bar. Then the fuel consumption, particulate emission, NO<sub>x</sub>, CO and thermal efficiency were measured and recorded at different loads at each operating point and stored in computer for post processing of the results.

## RESULTS

### Specific Fuel Consumption & Thermal Efficiency Analysis

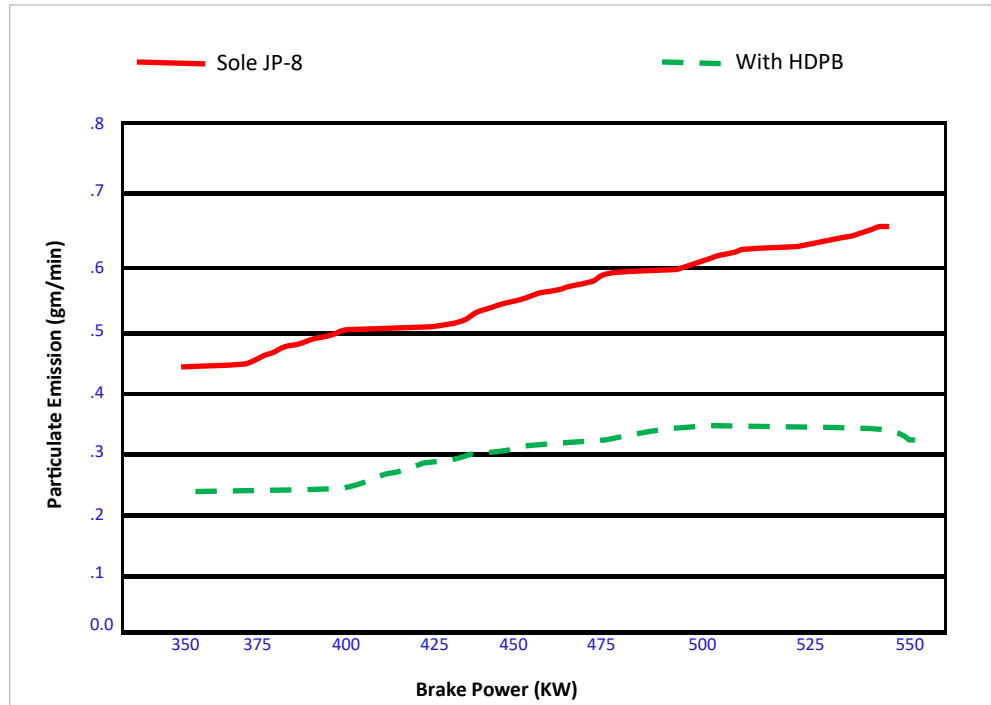


As shown in the above graph, the Specific Fuel Consumption is Low when HDPB has been used at all loads due to the proper injection of fuel in combustion chamber.

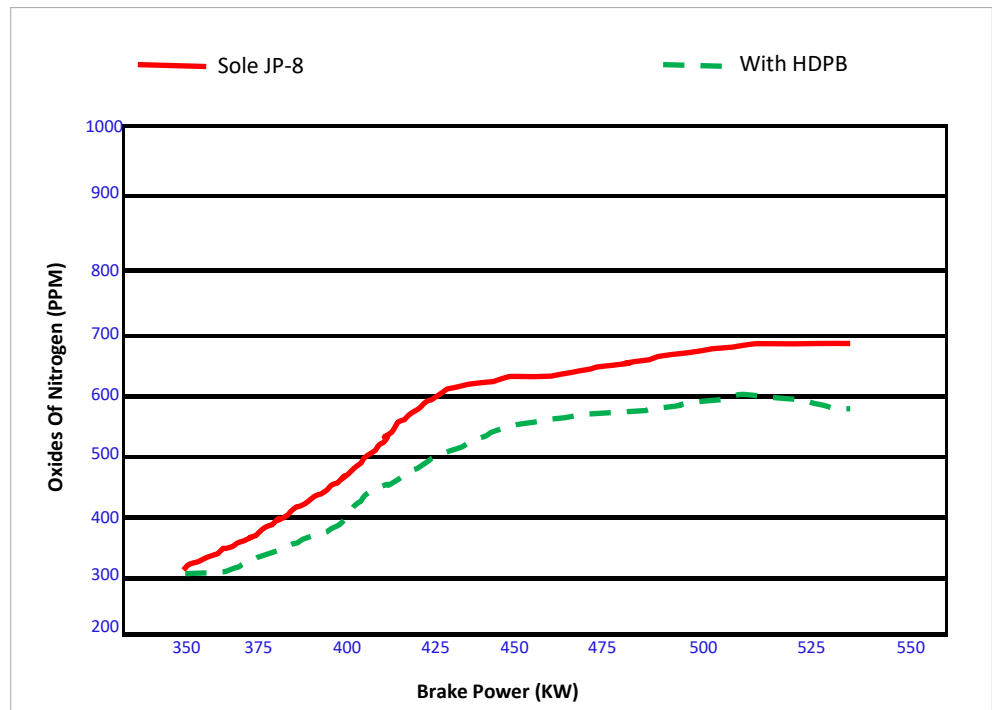


Above graph indicates the variation of Brake Thermal Efficiency with Brake Power of the engine. The Brake Thermal Efficiency at full load condition is increased with the use of HDPB and this is due to full atomization of the fuel.

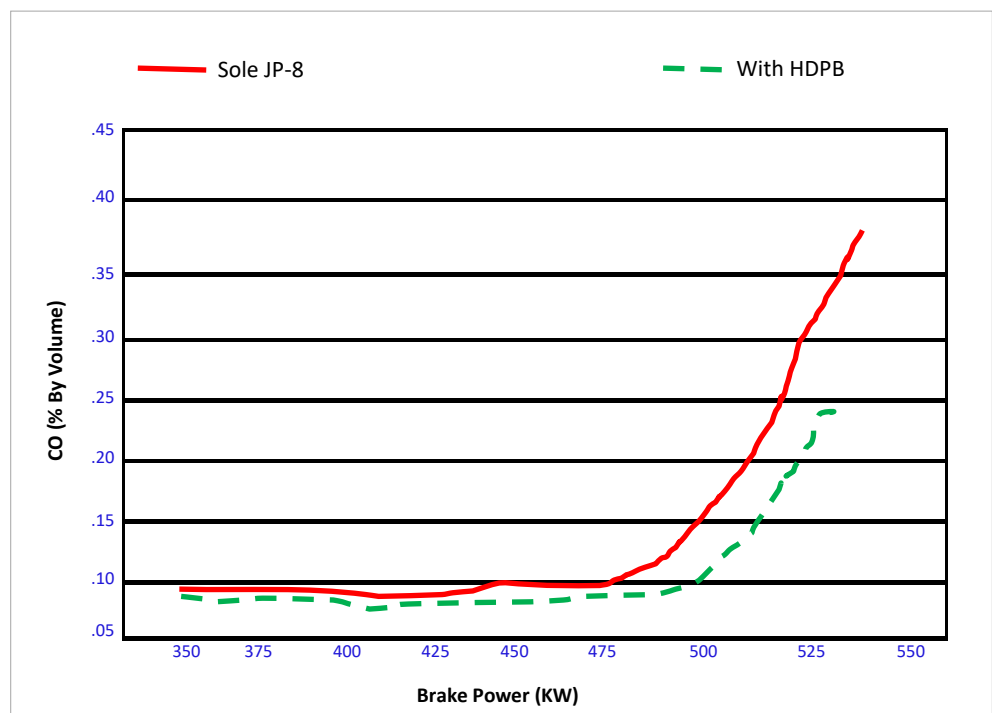
#### Particulate Emission, Oxides Of Nitrogen & Carbon Mono Oxide Emission Analysis



It is seen from the graph the particulate emission is Reduced when diesel blends with Hydra DPB-100.

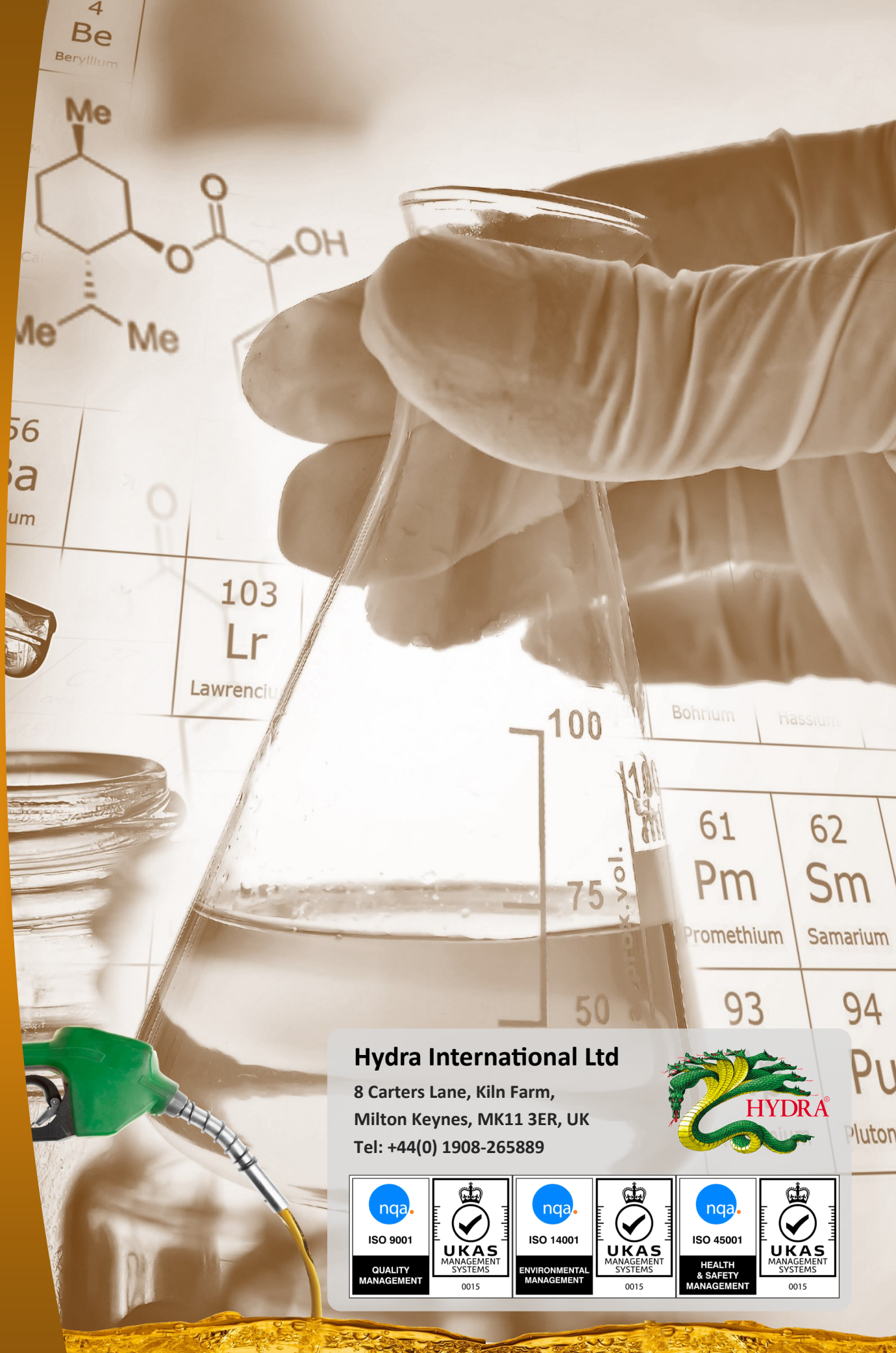


Above graph shows the variation of NOx emission with brake power of the engine. It is seen that for HDPB blend emits lower NOx level compare to standard JP-8.



Above graph shows the CO emission with brake power of the engine, the CO level for Hydra DPB-100 is less than the sole diesel fuel at full load.





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