

Performance of Ultra Low Sulphur Diesel Fuel Additives and its Side Effects

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Editorial

Demand of ultra-low Sulphur diesel fuel and cost of additives have created interest in fuel additives. Cetane improver (CI) and lubricity additive (LA) are being regularly added in the ultra-low Sulphur diesel (ULSD) fuel to meet the requirements of the specification. The additives are always costlier than diesel fuel and the price depends on the performance of additives. Sometimes, additives may have side effects on other properties of fuel. Hence additive's performance as well as its adverse effect on other properties of fuel is paramount while using additives.

Nayara Energy Research and Development team has conducted laboratory scale experimental study to evaluate performance and side effects of different additives used for ULSD fuel viz. cetane improvers and acid & ester based lubricity additives.

Following are the aspects studied using ULSD fuel

- 1) Alternate cetane improvers.
- 2) Performance of cetane improvers.
- 3) Effect of cetane improver on lubricity of ULSD fuel.
- 4) Performance of lubricity additives in presence of cetane improvers.
- 5) Effect of cetane improver on twenty other Diesel fuel properties.

6) Two months stability study for key Diesel fuel properties.

The observations derived from experimental study are quite interesting and valuable. The study results clearly indicate that, cetane improver can deteriorate the lubricity of fuel and also affect the performance of lubricity additives. 2EHN is increasing total nitrogen content of the fuel which will produce more NO_x while combustion. Ester based lubricity additives perform well as compared to acid based lubricity additives. Hence globally, the study work will be highly useful for petroleum refineries to select the best additives and combination of additives to produce ULSD fuel. It will be equally important for additive manufacturers to develop and produce best additives for ULSD fuel. This experimental study work will also be helpful to research and analytical scientists for evaluation of additives Performance and its side effects. It will provide information of alternate additives / improvers to various users.

Study report includes the observations and test results of various laboratory experiments, the performance evaluation data of cetane improvers, the side effect of cetane improvers, the performance of lubricity additives (acid based and ester based) in presence of cetane improvers. Study report also includes two months stability study results and literature study information.

Biography

Dhiraj Gondalia is General Manager Laboratory with Nayara Energy Ltd and is responsible for research and analytical activities. He has more than 28 years of professional experience in petroleum and petrochemical laboratory. He holds a MSc degree in Organic Chemistry from Saurashtra University, Gujarat, India.

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