RESUMO

The volume of pre filter sold during last five years have lead us to evaluate the root cause of it. Initially, it was verified the entire volume of pre filter commercialized increased 9 times from 2005 to 2018. The costumer’s complaints are related to premature filter plugging and change interval under specification as informed by maintenance manual. Analysis have performed according to SAE J1839 and SAE J905 standards in order to evaluate water separation and filtering performance. It was confirmed a water separation performance reduced, including several cases near 60% with low mileages. Besides, it was noted sludge and wax at filtering media surface in umpteen samples. On the other hand, a comparison between field components – with commercial Diesel S10 B10 and diesel S10 B10 with high oxidation stability – was done and it was confirmed the filtering media life with high oxidation stability keeps the change interval according specification. The trend with diesel S10 B15 with low and high stability was accomplished too. The media was analyzed with Scanner Electron Microscopy (SEM) in order to understand the influence of wax in water separation performance and effects in injector nozzle. According to Biodiesel Hand Book (2005) [2], the vegetable oils and animal fats were investigated as diesel fuels well before the energy crisis of 1970s. However, neat vegetable oils and animal fats are about 10 times more viscous than petrodiesel fuels, and they caused some operational and maintenance problems for diesel engines, so they were eventually abandoned as alternative diesel fuels. In Brazil, was started in 2005 with 2% in v/v until the current 10% in 2019. Some efforts to increase to 15% are on going and tests previewed to be done at end of this year. According Brian Sims (Biodiesel Magazine) [17], the use of petrodiesel and biodiesel blend has been practiced in many parts of the world for diesel engines. For example, since October 2005, B2 (B2 = 2 vol % biodiesel in diesel fuel) has become a mandatory use in Minnesota in most of the state’s diesel fuel supply, in spite of a temporary snag due to the use of an off-spec biodiesel. “In August 2007, Minnesota governor Tim Pawlenty announced a plan requiring the state to increase its biodiesel mandate incrementally from B2 to B20 by 2015. The governor’s proposal calls for Minnesota to move to B5 by 2008, B10 by 2011, B15 by 2013 and B20 by 2015”. The American Filtration and Separation Society Conference (2008) affirm that the use of petrodiesel and biodiesel blend still causes some extent of concerns for the end users, especially when the ratio of the blend is increased from B2 to B20. The Biodiesel Hand Book also inform that Biodiesel’s storage stability, oxidative stability as well as its high affinity to dissolved water could lead to shortened fuel filter life and deteriorated fuel/water filtration efficiency. Biodiesel is known to have higher cloud point and more unsaturated hydrocarbon content, which tend to lead to earlier wax precipitation and increased intensity of fuel oxidation. The affinity to water is attributed to the more polar nature of alkyl-esters and unsaturated acids which barely exist in petrodiesel, a middistillate of crude oil with boiling temperature ranging from 180°C to 340°C.