Looking for Ways to Improve Fluid Technologies in a Recovering Market

With oil prices still struggling to recover, it is important to develop new technologies to increase efficiencies. In the area of the fluids, there are many opportunities out there for improving their performance. These vary depending on the application.

Typically we want non-aqueous base fluids that have good stability (they should be non-reactive). They should also exhibit thin consistency, for better control of rheology. It is very important that the fluids are not harmful to humans or the environment, and that they meet regulatory requirements. Last but not least, they should be relatively inexpensive.

During specific operations it may be desirable to add components to a fluid so that the blend can achieve powerful performance. For application to a wide range of subsurface reservoirs, the density of the blend can be changed. For cleaning solids surfaces, the wettability can be altered. The fluid can be made bioavailable for degradation by microorganisms at the surface. In all cases, the performance is affected by the type and distribution of molecules, and the desired chemical interaction.

You can have your cake and eat it too! The challenge is to select or develop a better alternative that significantly improves at least one of the following: HES benefits, performance, and cost, without negative trade-offs on the others.

Consider a case study. A new non-aqueous fluid manufacturing plant in Asia had just started up in the mid 90's. One of the offtake streams was identified for potential use as a drilling fluid base oil, and it

was modified. After field trial and commercial application, the HES benefits improved by ~80%. The new fluid was virtually aromatic-free, compared to the previous fluid which contained 30% aromatics (toxic, unbiodegradable, carcinogenic components). This improvement was important because the drilled cuttings were being discharged into the ocean. Drilling performance improved by ~30% from reduced viscosity, better elastomer compatibility, and other factors. The unit cost of the new fluid did not increase from that of the previous fluid.

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