Tratamento de corrosão e limpeza simultaneamente para maximização de produção

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Resumo:

If you can keep your system clean, you can keep it from corroding. This simple, yet true premise is specially important for operators of aging assets who attempt to maximize production using equipment that may be heavily fouled with oil wet solids and/or operating past its original design life. CS production systems without pigging capabilities pose additional, unique challenges.

For example, the gradual buildup of oily, corrosive sludge, often referred to as "schmoo", on the inside of pipelines and equipment can cause serious production restraints and localized corrosion problems. Schmoo build-up will prevent most conventional corrosion inhibitors from reaching the pipe wall. Even worse, this schmoo will act as a breeding ground for common oilfield bacteria that form corrosive byproducts during their metabolic cycle, bringing about the aggressive, and costly, process of microbiologically influenced corrosion (MIC). In water injection systems, schmoo may deposit on filters or downhole in the formation, resulting in decreased water injection rates. While this schmoo buildup may take weeks or many months to occur, the inevitable outcome is the same: increased incidence of leaks, higher operating costs and decreased production revenue.

The corrosion R&D Scientists at Nalco have met this challenge head-on by developing an advanced cleaning and corrosion inhibitor treatment solution, Clean n Cor technology. Clean n Cor technology incorporates hands on technical expertise with advanced chemistry and in-field, monitoring. At the heart of Nalco's Clean n Cor technology is a patented multifunctional chemistry that possesses desirable interfacial properties for effective schmoo removal.

Analysis of typical field "schmoo" sample is : Biomass 10%, Sulfur 9%, Hydrocarbon 40%, Asphaltenes 14%, Iron 14%, Sand 10% , Other 3%

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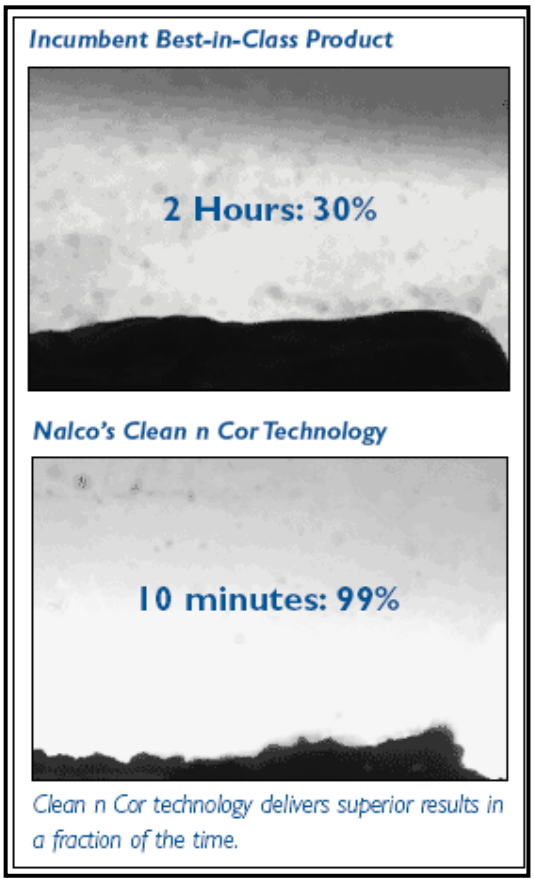

The actives identified as the best oil solubilizers from this research effort were formulated into a 'suite' of new Clean n Cor technology. The best of these new products were then compared to a current best-in-class corrosion inhibitor that lacks the patented oil-solubilizing active found in Clean n Cor chemistry. The results were incredible: **After just 10 minutes, the Clean n Cor product removed 99% of the original schmoo at a dosage of 80 ppm.** The best-in-class inhibitor did not come close to this level of performance, and removed only 30% of the schmoo after two hours. Nalco's other effective corrosion inhibitors were also tested, and the results were the same: none came close to Clean n Cor technology's schmoo removal efficiency.

Of course, cleaning is only one part of the challenge. Nalco then compared Clean n Cor technology to a best-in-class inhibitor in its suite of laboratory corrosion tests that evaluate mitigation performance under a range of flow velocities and shear stresses.

In both low and high shear tests, Nalco's Clean n Cor technology performed at least as well as the best-in-class product, providing greater than 95% protection efficiency at low dosages of between 5 and 25 ppm.

The lab performance of Nalco's Clean n Cor technology caught the attention of several field operators with severe corrosion and water injection problems. Corrosion performance was evaluated first, in a customer's flowline that experiences severe uninhibited corrosion rates on the order of 150-200 mpy.

Using high sensitivity electrical resistance probes, Nalco field engineers evaluated the Clean n Cor product versus the incumbent, best-in-class corrosion inhibitor. While the incumbent dropped the corrosion rate to 2 mpy at a dosage of 177 ppm, the Clean n Cor technology

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dropped the rate to 1.8 mpy at a dosage of just 145 ppm. Clearly, the Clean n Cor product is superior to the incumbent, and can provide a significant performance improvement in the field.

A separate field test was performed with an operator in California who had water injection problems due to sand-face plugging by schmoo in the formation. This operator was looking for a cheaper and safer alternative to conventional acidizing jobs or service rig cleanouts to help meet or exceed production targets.

Upon continuously injecting Clean n Cor technology at a dosage of 100 ppm into the water injection lines, an injection increase from 400 to 600 barrels a day was observed within three weeks, a 50% increase! Another water injection well in the field treated with Clean n Cor technology showed a 100% increase in water injection rates after one month. Two rod coupons, one placed upstream and the other downstream of an injection point, told the story best: while the upstream coupon had schmoo deposits forming on it, the downstream coupon that was exposed to Clean n Cor technology was pristine. Subsequent increases in oil production have provided this operator with a return on investment of greater than 800% by applying Clean n Cor technology in this application. Monitoring the performance of Clean n Cor technology

In order to more accurately gauge cleaning and corrosion mitigation in the field, Nalco has developed a patented probe for measuring performance. This unique probe measures sludge removal and corrosion rates in the water phase and under the sludge. As a result, you can more efficiently measure the success of your Clean n Cor program.

Producers will continually attempt to squeeze every last drop of oil out of their producing assets, and they will increasingly turn to novel, multifunctional technologies to help them do this. For your aging assets with schmoo and solids challenges, count on Nalco's Clean n Cor technology to keep your system clean, corrosion-free and at maximum production.

Palavras-chave: corrosão, limpeza , maximização , produção , Nalco

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