

What's new in production



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Biosurfactants at work. It is amazing to what lengths this industry will go to bring more oil to the surface. It will even enlist the help of the world's most populous nation—bacteria—to solve oil production problems and increase oil flow.

Last August, this editor presented some information on the US industry's investigation of biosurfactants, based on a recent DOE/NETL project with the University of Oklahoma and Arrow Holding. Microbial Enhanced Oil Recovery (MEOR), a blending of oilfield and biological technology, is a reality and at work in the US and other regions.

This past month, I received a call from Charles Siess, director of sales and marketing with GloriOil, a two-year-old oil service firm located on the southern edge of Houston near Pearland. The company is applying MEOR lessons to oilfield problems in Texas' Frio trend. Soon, I was at their facility, meeting with their key people: Stuart Page, CEO, Jack Babcock, president and Bhupendra Soni, director of microbial research and development.

Their story begins in 1997 when ONGC began working with The Energy and Resources Institute (TERI) in New Delhi, India, to solve oilfield problems with microbial treatments. TERI research found ways to collect and culture anaerobic bacteria, tease out their differences and grow bacterial consortia to solve oilfield problems and increase production. Over the next few years some 25 wells were treated and produced with good results, increasing oil production up 200% for 6–10 months with a single treatment. That approach is now being commercialized in the US by GloriOil.

Their process begins with a water sample extracted from the producing zone, so that the native anaerobic bacteria can be identified and cultured. Then, depending on the well problems being addressed, a bacterial consortium is blended to overcome wax plugging, scaling or to reduce the surface tension in the immediate area of the well bore, so that more oil can flow.

The anaerobes are cultured in large sealed vessels, avoiding all contact with air. To inoculate a well, the concentrated culture is blended with a nutrient stream, while the mixture is being pumped

downhole. Standard oilfield injection methods are used. The well is shut-in for a week or two to give the microbes time to establish themselves, and then the well is opened and produced.

The huff-and-puff method is used at present, but Page's goal is to move toward microbial floods that will reach deeply into the reservoir to release oil. The company is trying to aggregate MEOR technology and experience through acquisition and partnering to improve microbial-flood efficiency. Soon the mature fields of Texas and other regions will have an extended producing life.