

HCD EOR

green tech enhanced oil recovery



Decreasing production can be challenging as paraffin and asphalt solids build up continually in your oil formation, wellbore perforations, the wellbore itself and your down hole pumps. Subsequent removal and cleaning of deposits from your wells and pumps can be a costly on-going exercise.

Down-time to remove well and pump blockages disrupts your cash flow whilst increasing cleaning cycles may exacerbate your cost of stabilising production. Traditional carcinogenic, volatile chemicals are incompatible with the latest long lasting bacterial solutions that have been proven to stabilise production and reduce the time between cleaning cycles.

Traditionally well formation blockages are treated with heat and chemicals to remove asphalt and wax depositions. Relying on heat to continuously remove blockages can work against the operator as asphalt deposits tend to reform after heat treatments, with increasingly harder deposits that subsequently become challenging to remove.

High water content (water cut) is problematic to treat in the oil formation and often dealt with at surface level by poorly performing emulsion breaking chemicals, heat and/or mechanical means.

Hydrocarbon Dynamics Enhanced Oil Recovery (EOR) solution is a new frontier of compatible, environmentally safe chemicals and bacteria regimes that not only rapidly removes blockages and reduces your water cut with Hydrocarbon Dynamics' game changing core chemistry - but stabilises your production by introducing long lasting beneficial microbial colonies to the oil formation.

How it works:

HCD Multi-Flow™ acts as a lance to liquefy wax and asphatene deposits that occlude the near wellbore area. Rapidly increasing production of oil.

HCD Salt Reducer chelates calcium, magnesium and sodium chloride deposits. This ensures that any scale formation is broken down and removed.

HCD Micro Phase is a beneficial microbial solution made up of a natural organic blend of numerous strains of hydrocarbon reducing bacteria. This unique blend builds colonies in the oil formation and increases production by reducing crude oil viscosity and stabilising long term oil well production.

Contact your Hydrocarbon Dynamics representative to learn more about an EOR solution that stabilises your bottom line.

Applications

- Oil formations
- Offshore oil formations
- Wellbore
- Perforation blockages
- Down hole pumps
- Cold climate challenged formations

Features & Benefits

- Increased pump efficiency
- Increased oil production rate
- Increased gas production rate
- Retrieve previously unobtainable oil in the formation
- Reduction of time for oil and water separation in the holding tank
- Greatly reduces 'stuck rod' incidence
- Reduction of paraffin and asphalt deposits in cold climate conditions (effective to -40C)
- Greatly reduce mild steel corrosion rates
- Chelate and remove scale deposits
- Chelate and remove sodium chloride deposits
- Chelate and remove potassium chloride deposits
- Increase longevity and stabilise production rates
- Increase oil volume in your oil to water ratio

HCD EOR Protocol Stimulates Well - 300% Increase in Oil Produced - Liquefaction of Blockages and Microbial Longevity

HCD EOR treatment performs significantly with green solution

Benefits

Cleaning of paraffin wax deposits in Argentinian oil well, removing blockages, increasing oil production by 300%

Stabilising production longevity by building beneficial microbial count - 200% increase in production long term

32% reduction of oil to water ratio (water cut)

Project background and challenges

Decreased production due to high levels of wax and asphaltenes led to the client requiring well intervention after numerous attempts to increase production using traditional stimulation protocols - including the application of heat and carcinogenic chemicals.

The client's well was less than 1,500m deep and pressurised by water.

The client implemented **HCD EOR** protocols resulting in a dramatic lift in production (300%) and a 30% decrease in BS&W levels in produced oil (water cut).

Hydrocarbon Dynamics' patented Tri-Phase EOR protocol included the introduction of beneficial microbes that were squeezed into the oil formation after wax blockages were removed.

Using environmentally friendly HCD Multi-Flow™ as the liquefier of paraffin wax and asphalt build-up allows the HCD Micro Phase bacteria to increase colony numbers in a non-carcinogenic environment.

The result was long term stabilisation of production at a significantly increased production level (200% stabilised increase in oil production in 21 days).



An Argentina based oil producer experienced a long term production decrease and increased water cut in produced fluids from their wells.

The Hydrocarbon Dynamics' Tri-Phase EOR solution or HCD EOR was applied over a 21 day period. The well stimulation was an unqualified success and led to a significant increase in well production (300% increase in produced oil) and an equally significant decrease in water cut (32% reduction of water in the oil and water ratio).

With the inclusion of HCD Salt Reducer and HCD Micro Phase as part of the HCD EOR protocols, the client's well stabilised production and doubled its previous produced oil baseline long term.

Initially the HCD EOR protocol uses HCD Multi-Flow™ which acts as a lance to remove wax and asphaltene deposits that occlude the near well bore area. Rapidly increasing production of oil and reducing the water cut.

Secondly HCD Salt Reducer is introduced to chelate and remove Scale, calcium, magnesium, sodium chloride and potassium chloride deposits. This ensures that any scale formation is broken down and removed.

Thirdly and importantly for long term production benefits, HCD Micro Phase is introduced to the oil formation. Micro Phase is a beneficial microbial solution made up of a natural organic blend of numerous strains of hydrocarbon reducing bacteria. This unique blend builds colonies in the oil formation and increases production by reducing crude oil viscosity. This contributes significantly to stabilising and increasing long term oil production returns.

Hydrocarbon Dynamics' products, including those used in the HCD EOR protocol, are uniquely environmentally friendly, allowing the Tri-Phase solutions to act together in harmony without affecting or downgrading each parts' performance - leading to reduced operational down-time and enhancing the client's oil formation's microbial longevity - stabilising production.

The HCD EOR protocol significantly increased long term oil production and reduced the water cut in produced fluids. Additionally the protocol reduced and stabilised the client's lifting costs whilst improving reservoir management.

Disclaimer of Liability: This information is provided for general information purposes only and is believed to be accurate as of the date hereof; however, Hydrocarbon Dynamics Limited and its affiliates do not make any warranties or representations of any kind regarding the information and disclaim all express and implied warranties or representations to the fullest extent permissible by law, including those of merchantability, fitness for a particular purpose or use, title, non-infringement, accuracy, correctness or completeness of the information provided herein. All information is furnished "as is" and without any license to distribute. The user agrees to assume all liabilities related to the use of or reliance on such information. HYDROCARBON DYNAMICS LIMITED AND ITS AFFILIATES SHALL NOT BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, PUNITIVE, EXEMPLARY OR CONSEQUENTIAL DAMAGES FROM ANY CAUSE WHATSOEVER INCLUDING BUT NOT LIMITED TO ITS NEGLIGENCE.

© 2015 Hydrocarbon Dynamics. All rights reserved. 12/2015