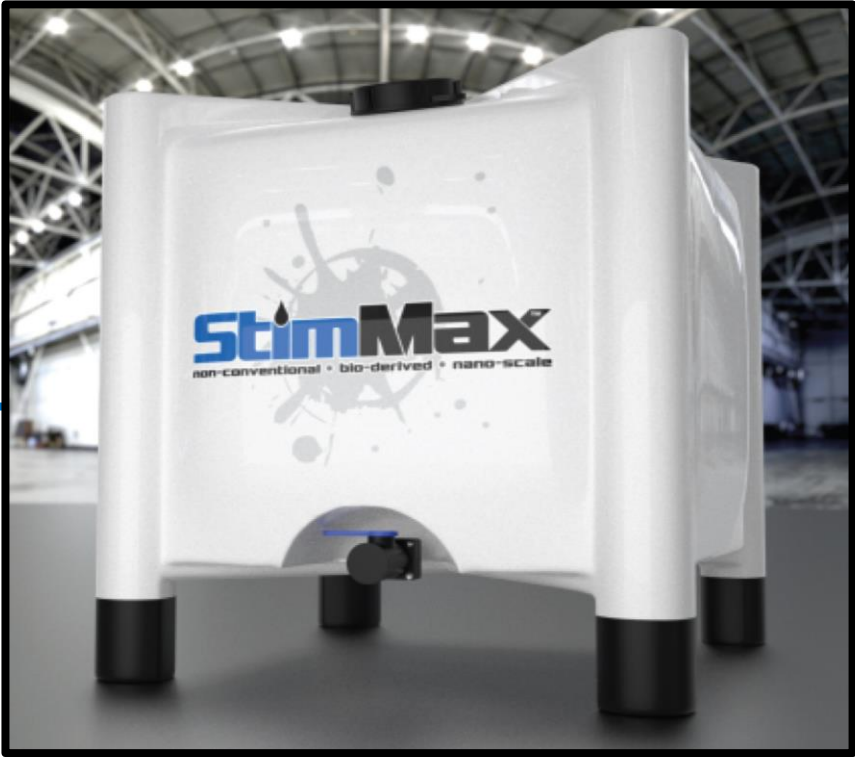
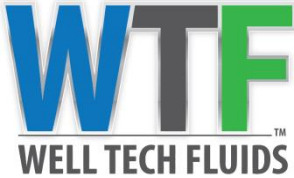
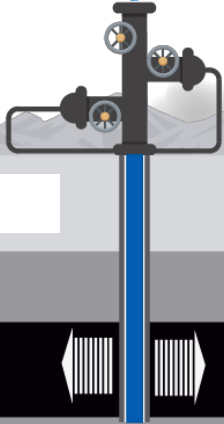
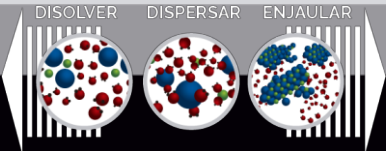




Advanced Oil Recovery




non-conventional • bio-derived • nano-scale





Introduction

A vertical diagram of a wellbore. At the top, a blue pipe is surrounded by a stack of colored rings (blue, orange, yellow, green, teal). Below this, two workers in red gear are shown working on the wellhead. A blue line representing the wellbore extends down to a wellhead assembly with gauges and valves. At the bottom, a wellbore is shown with arrows indicating fluid flow into and out of the well.

StimMax Stimulation Remedies are proven patent pending “non-conventional” solutions that preserve WELL INTEGRITY. Our bio-derived, readily biodegradable nano-scale complex mixtures are formulated to replace traditional acidic and solvent chemical stimulation methods that allow in every case, to brake and dissolve any high weight molecular organic matter into a solution, like paraffin, asphaltene, scales, mud cake, emulsion and retrograde condensation from open-hole perforations and formation of sandstone and carbonate reservoirs. The products can be customized to satisfy specific geological and geographical needs.

By definition, well stimulation is a well intervention performed on an oil or gas well to increase production by improving the flow of hydrocarbons from the drainage area into the well bore.

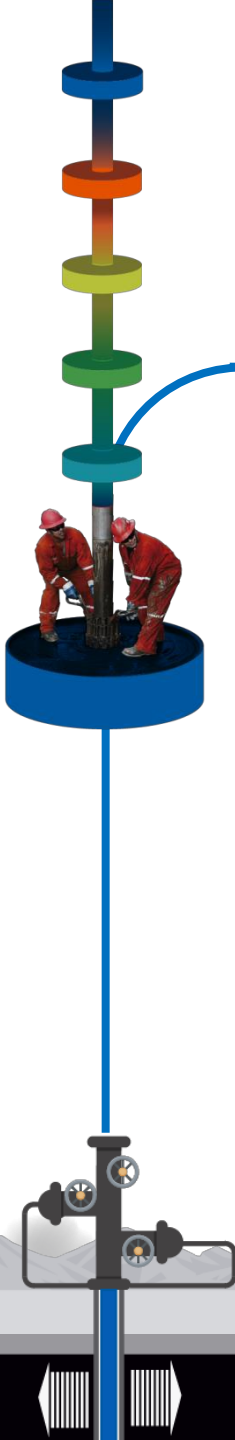
Introduction



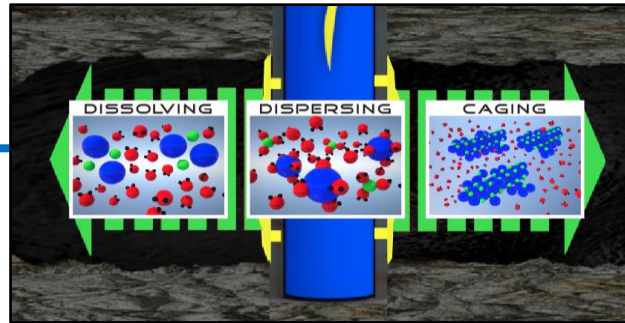
StimMax products are committed to the environment and worker safety, only offering non-conventional products and meeting today's energy needs while conforming, satisfying and helping to achieve customer's sustainability (HSE) goals.

Non-conventional products = superior performance = minimal environmental impact (land – sea – air):

- Made from bio-derived, biodegradable “renewable” natural materials
- No volatile organic compounds (VOC's), no CO2 emissions
- Product will not compromised or degrade the oil or gas



Introduction



Dissolving: The technology employs a versatile, broad range molecule in specifically engineered compositions that break down the aromatics, paraffin and asphaltene – literally exploding them apart. This complementary, complex, composition of a bio-derived solvent, surfactant and potent surface acting agent(s) all work in concert to melt and reduce the contaminants to their lowest energy form – a sphere. As part of the naturally occurring separation, the larger spheres will gather together in suspension from the smaller spheres.

Dispersing: At this point, due to the electrostatic action of the free energy surface acting agent, the collection of spheres begins flowing. The negative attractions of these agents keep the undesirable spheres from agglomerating while they are swept away from the perforations. The flowing spheres gravitate towards the positive attraction of the cages which are composed of sub-micron particles.

Caging: Much like a paperclip that is attracted to a magnet, the flowing spheres of dissolved obstructions become “locked” in the spherical globe of electrochemical protection. These segregated and now harmless cages of hard mineral salts such as calcium, magnesium and other contaminants are swept to the surface of the well for disposal.

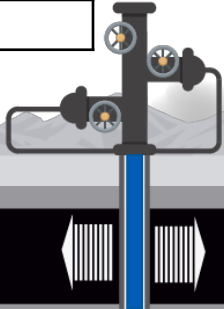
The powerful, tough acting StimMax takes solid obstructions and quickly reduces them to a free flowing liquid. The sub-micron particles are corralled and then encapsulated in an electrochemical, spherical globe of protection. In other words, we use electrochemical principles to bring sustainable productivity and good health to the well. StimMax assortment of products provides full range effectiveness from hard inorganics that would naturally agglomerate and remove them from the well.



Introduction

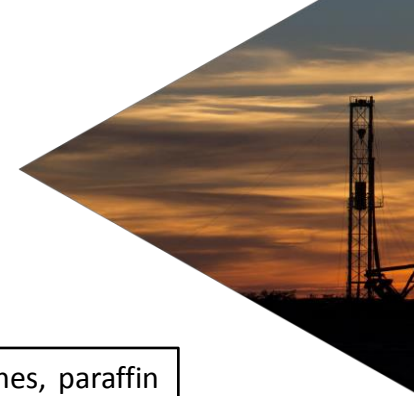


NON CONVENTIONAL	VS	CONVENTIONAL
Cutting edge Bio-derived Nano-scale Technology		Traditional SAME OLD SAME OLD this is how it's done technology
Readily Biodegradable		Persists in the environment with long half lives
No VOC's		Toxic Levels of VOC's
Safe, Non-toxic		Deadly chemicals, heavy aromatic distillates
Superior Performance		Need for constant re-stimulation
Does not promote corrosion		Acids and some chelatants can cause corrosion in pipes
No need for Large Equipment		Pump trucks and holding tanks required
Contaminants are separated		Flow-back water is biomass and bacteria laden (H2S Sour Gas)
Less Labor (man hours)		More workers needed due to more required equipment
Less downtime		Long downtime
No need for special safety equipment		Hazmat gear, booms and evacuation pumps required
No Damage to Formation		Acidizing wells has shown deterioration to formations
Competitively Priced		Costly when compared to low oil prices





Offering



StimMax PAS-1000 – Specially formulated to treat specific precipitation obstructions (asphaltenes, paraffin and scale) within an near the wellbore

StimMax CRR-1000 – Specially formulated to treat condensation and other liquid obstructions within and near the wellbore

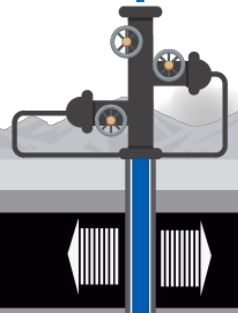
StimMax FD-1000 – Specially formulated to treat specific problems (repair, restore and improve) resulting from formation damage due to post completion within sandstone reservoirs

StimMax FD-2000 – Specially formulated to treat specific problems (repair, restore and improve) resulting from formation damage due to post completion within carbonate reservoirs

StimMax Hot-Shot – Specially formulated as a “pre-wash” coupling agent to prepare the wellbore/perforations prior to Stimulation and Enhanced Mobility treatments

StimMax ME-1000 – Injected under pressure, the product is specially formulated to enhance oil mobility by penetrating deep into the wellbore and surrounding formation with its sole objective to improve the reservoir environment

Improved permeability, shrink clay swelling, remove soil film on rocks, restore water wet pores
Diluting and deconstructing long chain impeding molecules





Performance



- ➔ Stimulation of producing wells of sandstone deposits
- ➔ Stimulation of producing wells of carbonate reservoirs
- ➔ Stimulation of producing wells of heavy and extra-heavy oil deposits
- ➔ Cleaning production pipes
- ➔ Removal of damage in gas fields





Performance



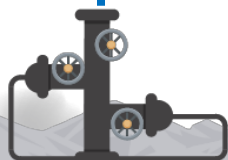
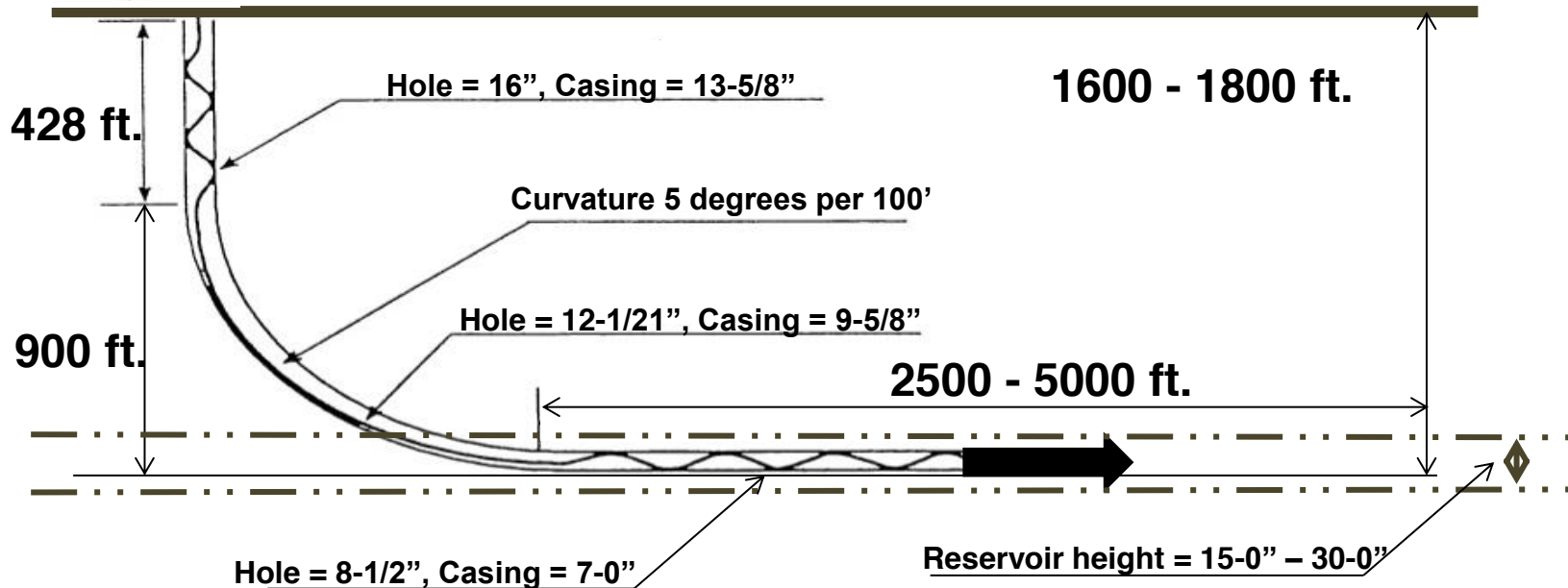
Workover Rig



Horizontal Well Parameters



Current product diluted with diesel - 2,500 42-gallon barrels or 105,000 gallons

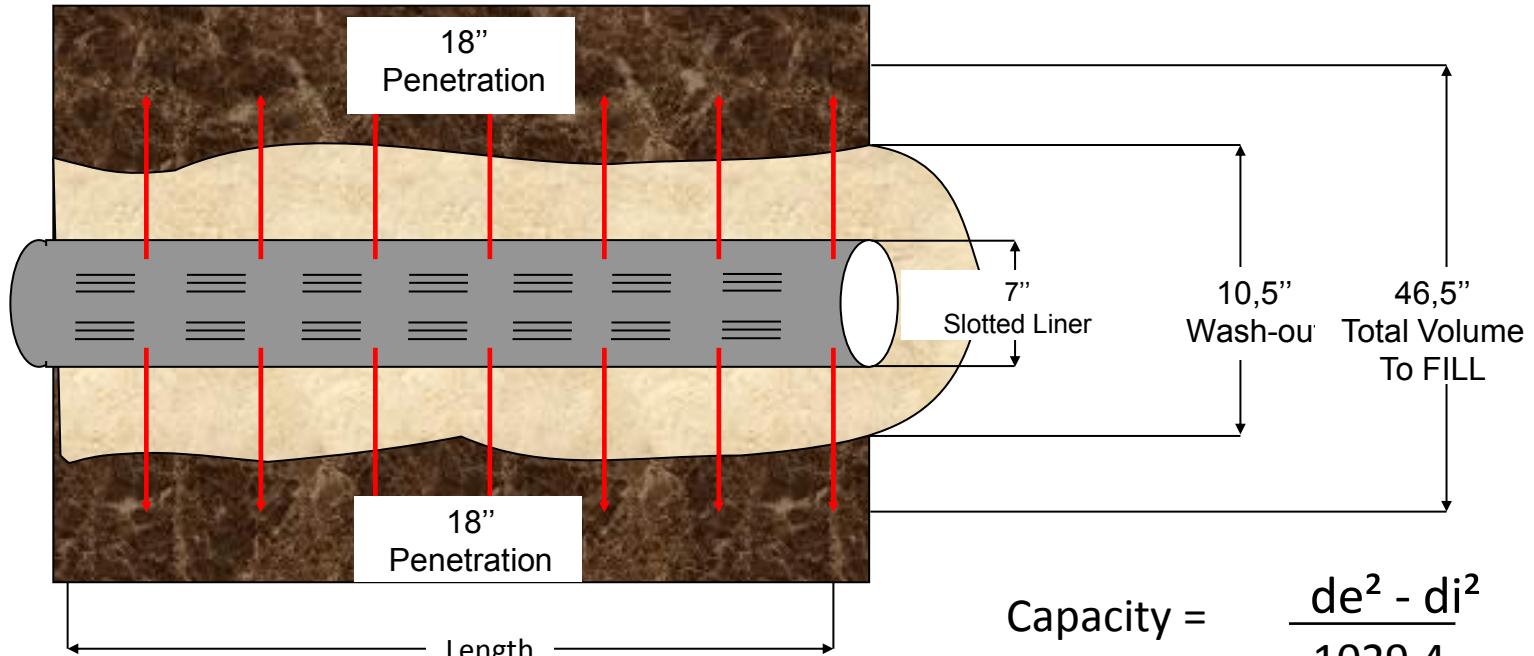




Volume Calculation

Performance

Horizontal Well Parameters



$$\text{Capacity} = \frac{de^2 - di^2}{1029,4}$$

$$\frac{(46,5)^2 - (10,5)^2}{1029,4} \times (0,3) + \frac{(10,5)^2 - (7)^2}{1029,4} = X = 0,6575 \text{ BBL/ft}$$

Note: The Value "X" is calculated for a penetration of 18"

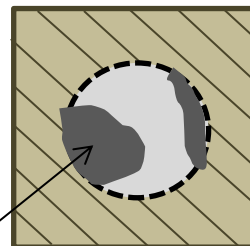
- 18" para una sección de 1000 ft = 0,6575 BBL/ft x 1000 ft = 657,5 BBL
- 18" para una sección de 2000 ft = 0,6575 BBL/ft x 2000 ft = 1315 BBL
- 18" para una sección de 3000 ft = 0,6575 BBL/ft x 3000 ft = 1972,5 BBL



Performance

Horizontal Well Parameters

Perforations = 300 - 500 Microns (0.012" - 0.020") 16



Issue #2

"Mush" Obstructions

Heavy Crude Obstructions

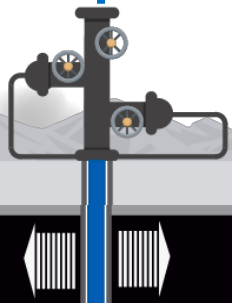
Issue #1

7-0"

Issue #3

Leftover Salts

15-30"

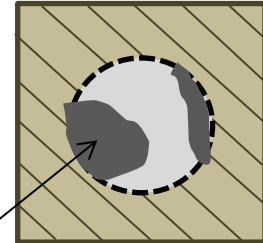
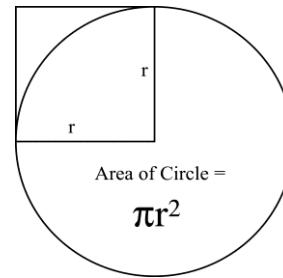
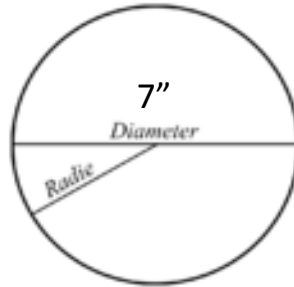




Performance

Horizontal Well Parameters

REMOVE THE HEAVY CRUDE OBSTRUCTIONS



Heavy Crude
Obstructions

Issue
#1

- ✓ An unobstructed casing is 7" in diameter and has a circle area of 38.48.
- ✓ An obstructed casing (see below) can have a flow opening as small as 1.5" in diameter...having a circle area of only 1.77.
- ✓ By dispersing, dissolving, caging and eliminating the obstruction, StimMax increases the area of the circle almost 22X (22 times increase in area volume) and improves the flow.
 - ✓ $38.48/1.77 = 21.75$
- ✓ In other words, the larger the circle area, the greater the mobility and flow.





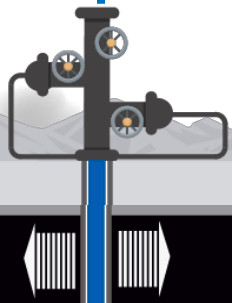
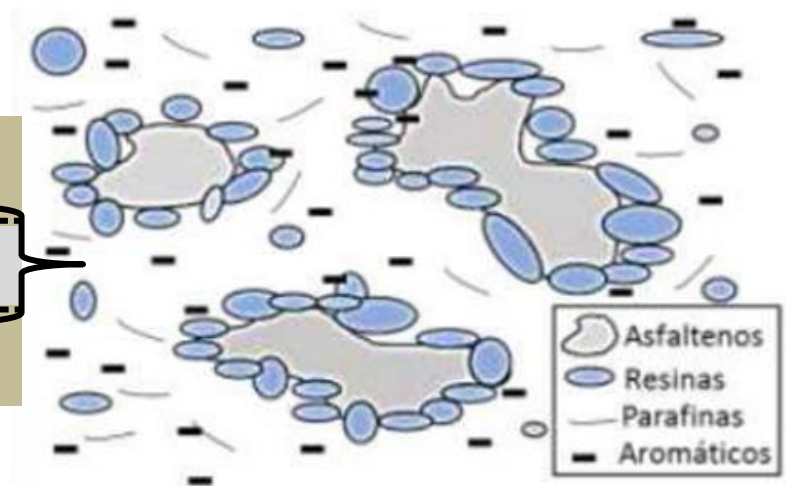
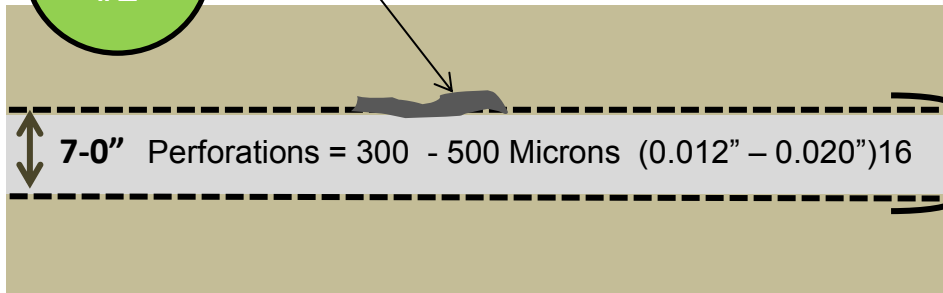
Performance

Horizontal Well Parameters

DISOLVE and DISPERSE the "MUSH" in the PERFORATIONS

Issue #2

"Mush" Obstructions

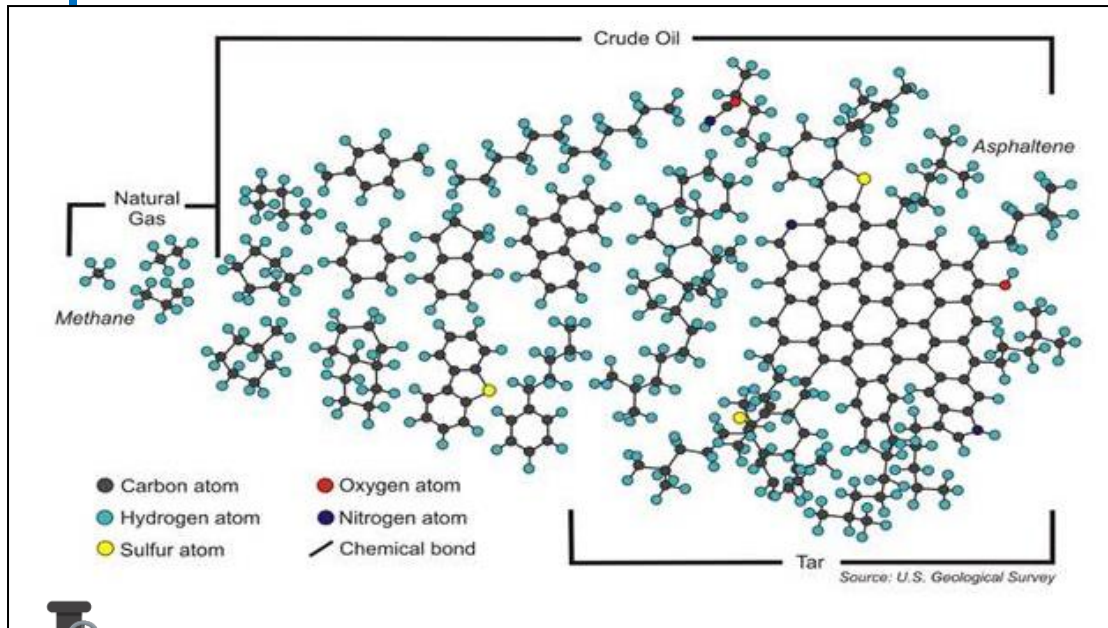




Performance

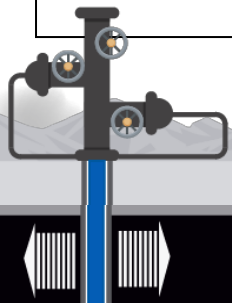
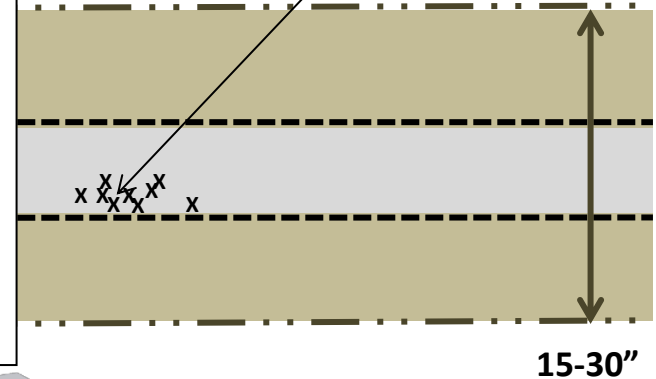
Horizontal Well Parameters

CAGE and LIFT the LEFTOVER SALTS



Issue #3

Leftover Salts

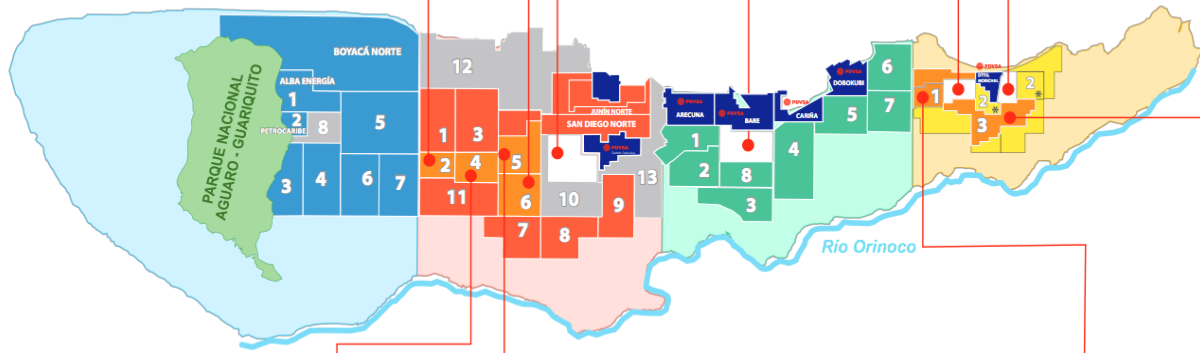




Test Sites



 VIETNAM	 RUSIA	 FRANCIA / NORUEGA	 EEUU	 RUSIA	 CHINA
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 VENEZUELA
JAPÓN
EEUU

- E.M. en Proceso de Constitución
- Esfuerzo Propio en Operación
- E.M. en Operación
- Área Asignada E&P
- Proyecto Carabobo 2 (En proceso de definición)
- * En Proceso de Registro

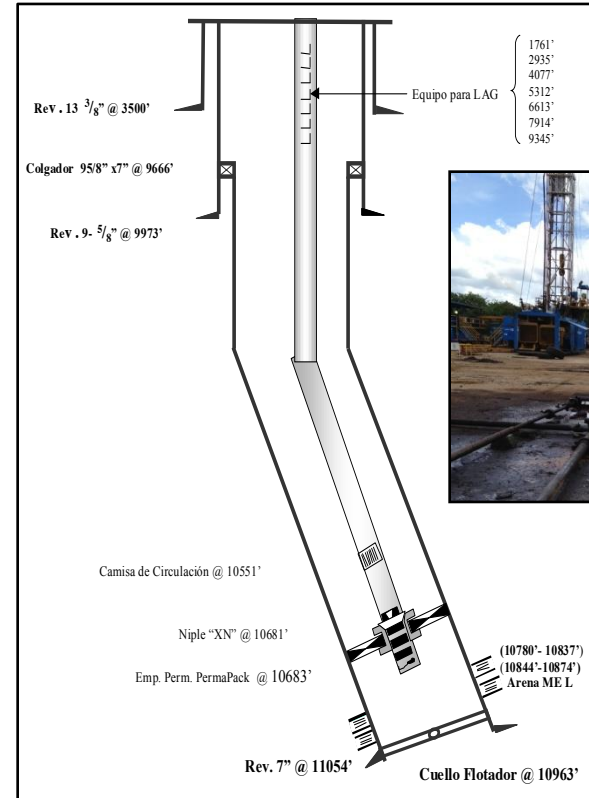
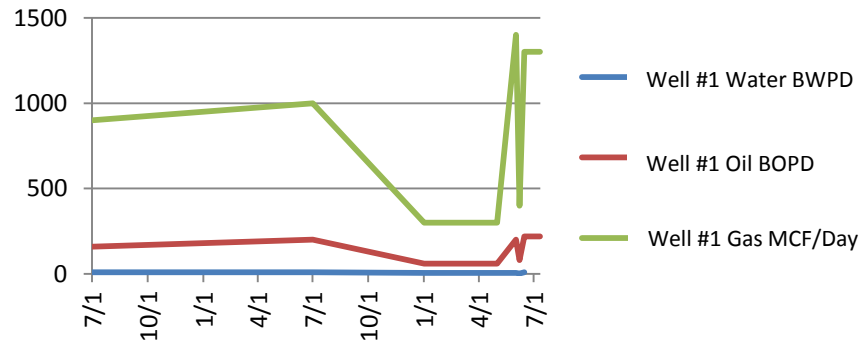
 CHINA	 ITALIA	 ESPAÑA	 INDIA	 MALASIA
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Test Results

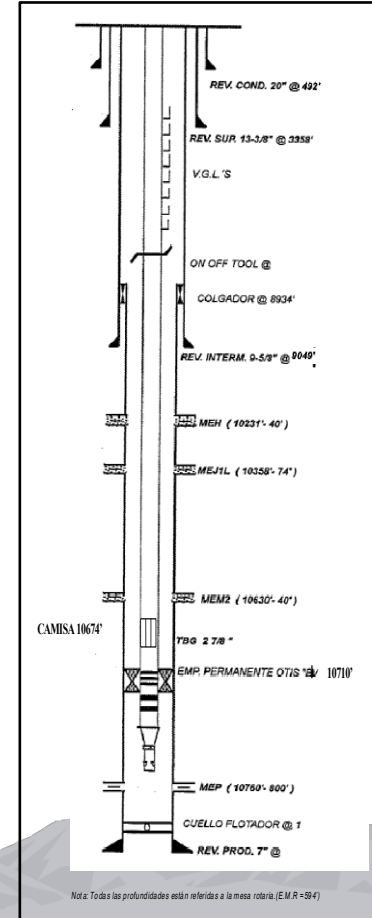
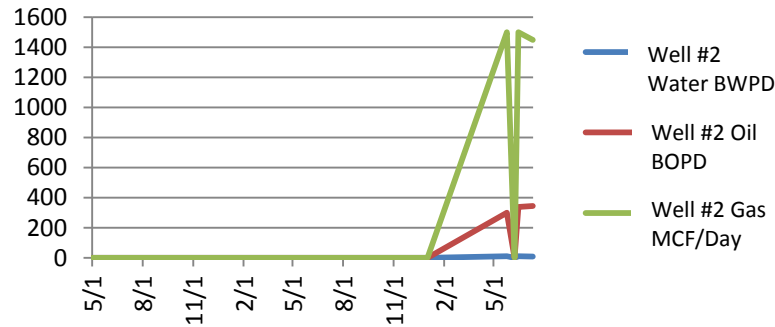
PDVSA Well #1 Stimulation Totals 2015 - 2017





Test Results

PDVSA Well #2 Stimulation Totals 2015 - 2017

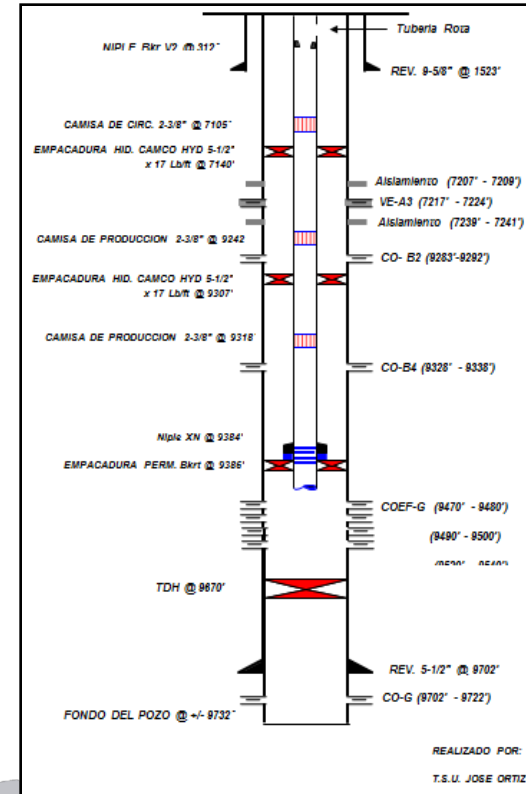
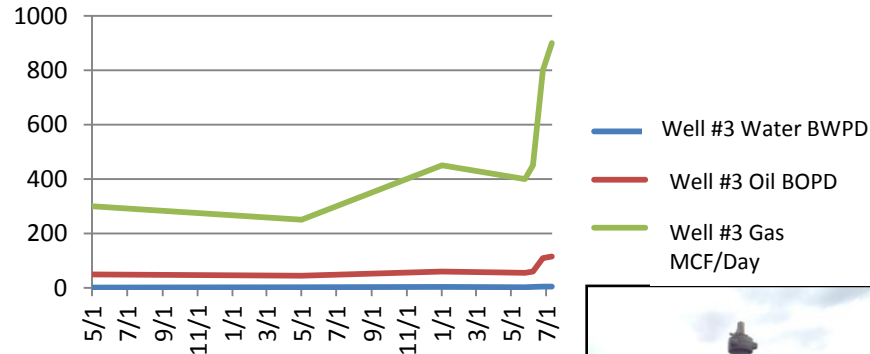




Test Results



PDVSA Well #3 Stimulation Totals 2015 - 2017





Test Results

Return on Investments

Product (Current VS NEW)	Production (Bbl/Year)	Output (\$40/Bbl)	Treatment (Drums/Treat)	Frequency (Times/Year)	Price (55 Gallon Drum)	Treatment COG (Per Well)	ROI (Year)
Incumbent	146,000.00	\$ 5,840,000.00	100.00	12.00	\$ 2,000.00	\$ 2,400,000.00	0.41
StimMax PAS-1000	182,500.00	\$ 7,300,000.00	15.00	4.00	\$ 10,000.00	\$ 600,000.00	0.08
Increase	36,500.00	\$ 1,460,000.00	(85.00)	(8.00)	\$ 8,000.00	\$ (1,800,000.00)	(0.33)

MIXED COMPANY (PETRO)
 25% Production Increase = 400 BPD to 500 BPD
 25% More Revenue = \$1,460,000.00 per well/per year
 85% Less Product = 75% Annual Savings of \$1,800,000.00 per well/per year
 66% Less Treatments = Reduced DOWNTIME and Labor Costs

INCREASED OUTPUT + IMPROVED SAVINGS = \$3,260,000.00 Per Well/Per Year

Annual Benefit





Mobility change tests within the porous medium:

Mobility Enhancement Conclusions

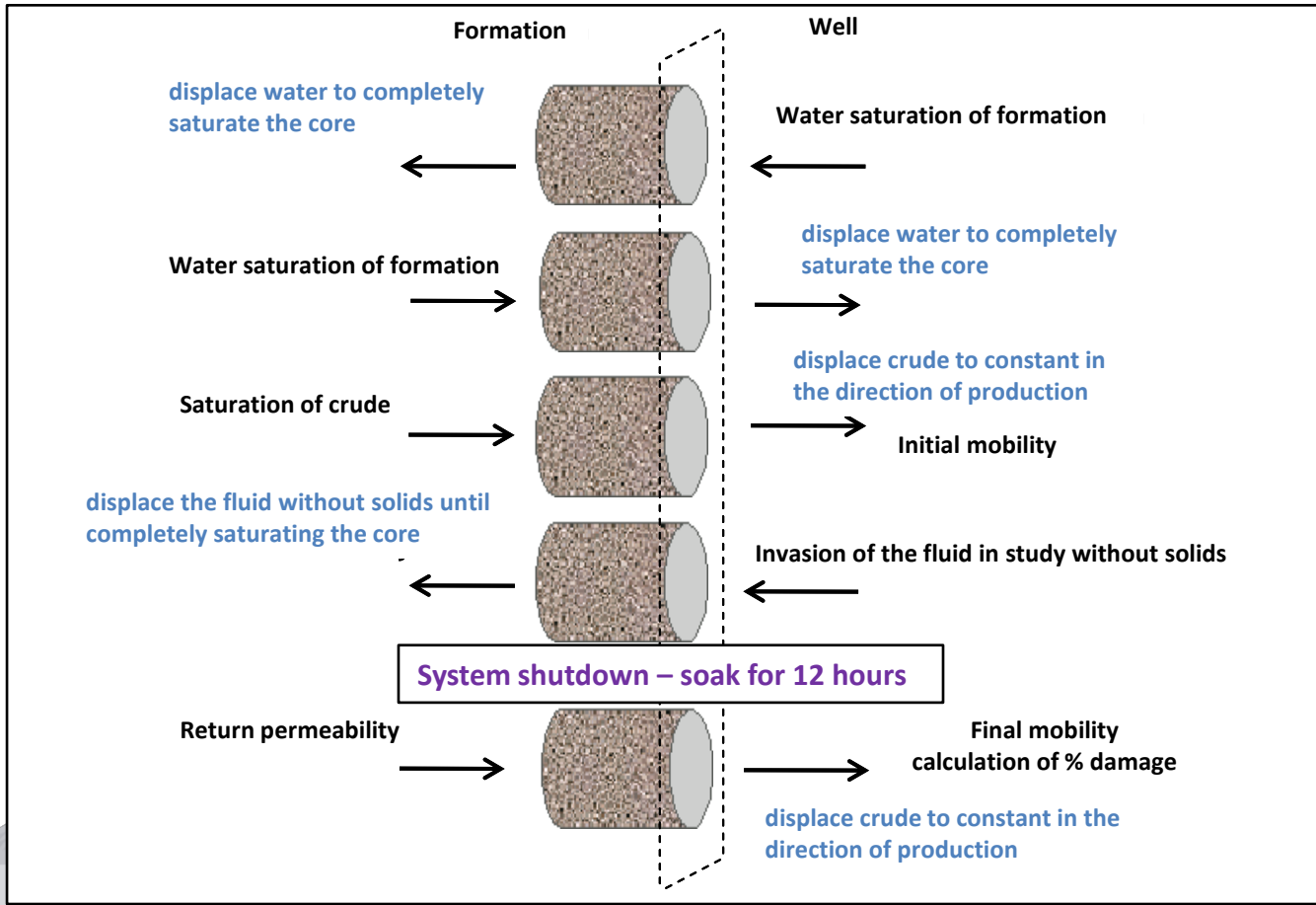


Diagram of the permeability return test used to evaluate the interactions of fluid systems within the porous medium



Mobility change tests within the porous medium:

Mobility Enhancement Conclusions

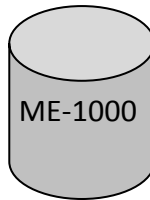
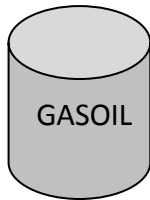
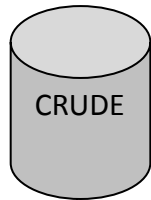


Date	01/01/2018
Company	PDVSA CVP
District	FAJA
Applicant	CVP

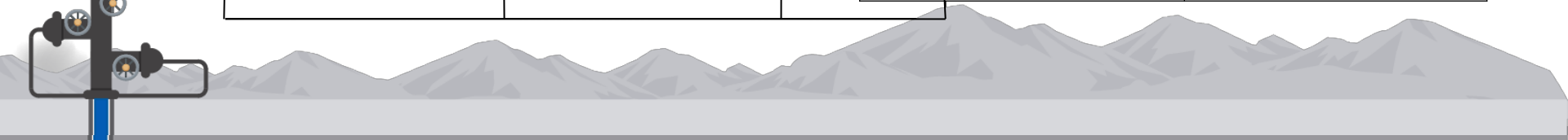
Test Type	DISPLACEMENT
Program	PRODUCTION INCREASE
Operator	FAJA

DATA TABLE

Core Conditions:		Experimental Conditions:			
Core Type:	BEREA	Pore Pressure (psi):	700		
Sand:	UN-Consolidated	Confinement Pressure (psi):	1000		
Porosity (%):	20	Transducer Calibration: (psi):	500		
Permeability (mD):	1000	Temperature (°F):	150	Initial Differential (%):	Final Differential (%):
Depth (Pies):		Overbalance Pressure (psi):		6.9	5.5
Well:	PJS05	Mud Injected Pressure (psi):		6.9	5.4
Porous Volume (cc):	20	Pressure level of Plaster (psi):		6	5.4
Length (cm):	6	Injection Rate (cc/min):	1	6.8	5.3
Diameter (cm):	3.753	Fluid 1 (cc):		6.7	5.3
Area (cm2):	11.784	Fluid 2 (cc):			
		Fluid 3 (cc):			



DIFER. INITIAL PRESSURE (PSI)	DIFER. PRESSURE FINAL (PSI)
33.5	26.5
INITIAL MOBILITY (md/cp)	MOBILITY FINAL (md/cp)
3.723	5.100



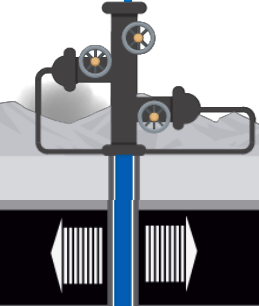


Mobility change tests within the porous medium:

Mobility Enhancement Conclusions

% Damage to the Formation	-31.01%
% Return to Permeability	131.01%

The results obtained during the tests of mobility within the porous medium, with radial displacement methodology in core subjected to equivalent pore pressure and simulation temperature gave negative results, since our fluid system is of direct emulsion type with high physicochemical stability, creates an obvious reaction of ultra-low interfacial tensions, and the incorporation of broad molecular chain organic systems such as heavy and extra heavy crudes, which induces physiquimicamente to perform an early stimulation inside and outside the porous medium, which translates into a modification of its mobility, or increase in the speed of displacement of crude oil, within the porous medium, which brings a benefit action at the level of immediate production of the wells treated with our technology, which is characterized by an electrochemical modification of the system creating a double electric layer by the presence of a mix of surfactants of various natures, which couples in organic modules of long chains, shielding this natural feature inside and outside the reservoir inside creates the bridge in the petro physics of the deposit, and outside of it, in the innate crude itself of formation.

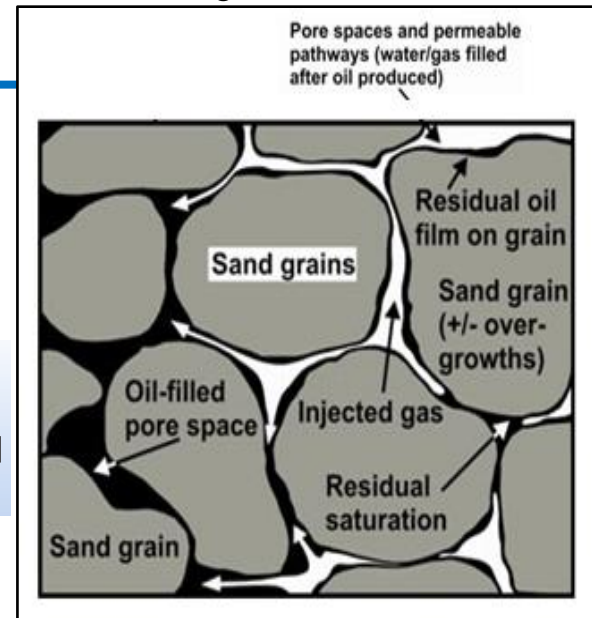
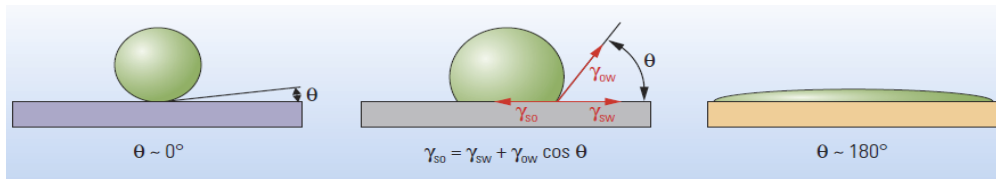




Results

The powerful, tough acting StimMax™ takes solid obstructions and quickly reduces them to free flowing liquid. The sub-micron particles are corralled and then encapsulated in an electrochemical, spherical globe of protection. In other words, we use electrochemical principles to bring sustainable productivity and good health to the well. StimMax assortment of products provides full range effectiveness from hard in-organics that would naturally agglomerate and remove them from the well.

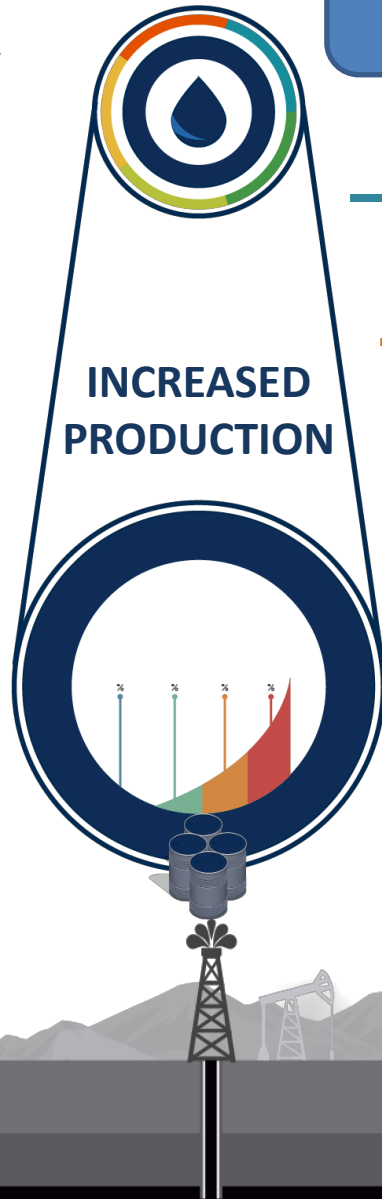
StimMax Stimulation Solutions can remove natural or induced damage efficiently and economically!



In other words, our electrochemical principles provide sustainable productivity and good health to the well.



Results



- Biodegradable nanotechnology fully adjusted to environmental regulations
- Recovery of the production potential of oil and gas producing wells
- Cleaning and removal of fillers and incrustations in production pipes
- Lengthening and improving the useful life of the well
- Post-stimulation follow-up by highly qualified professionals

