

Get the most from depleted wells...



...with our high performance, cost effective, exclusive patented oil lift system.

In mature oil fields, maintaining wells in profitable production the longest time possible has become a growing and continuous challenge for producers: high percentage of incoming water, excessive accumulation of sand around the pump or paraffin along the tubing have been the major concerns for keeping such depleted wells in production.

Pump-based conventional lifting systems (Pump-Jack and ESP) were not originally designed to address these specific issues of depleted wells and cause important disadvantages for these wells with high water cuts in extracted fluid, costly water recycling, high inherent energy, work-over and maintenance costs.

As a consequence, operators have lost interest in these low production wells because of their poor profitability and have stopped production for lack of a suitable solution. This is the reason why hundreds of thousands of oil wells (approx. 400,000 in the US only) have been abandoned all over the world due to technical and economical limits of conventional extraction systems, thus leaving more than 50% of valuable identified reserves in the ground.

Our unique, high performance patented mechanical extraction technology has been specifically designed to address typical issues of oil production from mature fields and depleted wells. Fundamentally different from conventional technologies and showing a particularly high adaptability to natural well production principles, it resolves most typical problems encountered with pump-based systems.

The unique features of our technology reduce radically water cuts, energy and maintenance costs and eliminates all work-over expenses.

Therefore, our technology offers an ideal solution for pushing back the limits of recoverable reserves by successfully replacing pumps on depleted wells still in production and has no equivalent for reactivating inactive ones.

Our system works on a casing free of tubing and sucker rods. It recovers oil that has been naturally driven to the wellbore and pushed up into the casing by reservoir pressure. Our fully automated program-controlled equipment lowers a collector tube at a programmed depth down into the upper part of the fluid's column, and then lifts it up to the surface so it can be drained by suction.

Thanks to its distinctive nature, reliability, cost effectiveness, low maintenance and optimized production capabilities our technology has been approved and referenced by major oil industry companies (Peru, Brazil, Venezuela, Argentina, Colombia, Algeria...) which have been using it for years with complete satisfaction. Our equipment is environmentally friendly and meets international environment preservation rules thanks to our patented gas-capturing wellhead system.



THE OPTIMOIL® SYSTEM IN ACTION

Conventional lifting systems exert a high differential pressure on the oil producing formation allowing an easier water flow thereby creating high water saturation around the wellbore. This saturation prevents a satisfactory flow of oil and results in such a high level of water production that such wells become uneconomical to exploit.

OPTIMOIL® technology works in tubing and sucker rod free casing and simply bails out the oil standing in the fluid column, which is naturally driven towards the wellbore by the pressure of the reservoir. Our fully automatic mechanical system lowers a hollow collector tube connected to a wire line down into the oil column at a predetermined immersion depth and then lifts it up to the surface to be drained off.

1 A stainless steel hollow cylindrical collector tube connected to a steel wire line is lowered down through the well casing (free of tubing & sucker rods) to the fluid.

2 The fluid level is automatically detected and the collector tube is slowly immersed at a programmed depth below this level (approximately 50 feet).

3 The collector tube starts filling up with fluid from the top of the liquid column through a bottom check valve.

4 Once fully filled with fluid, the collector tube is then lifted up to the surface at high speed until it arrives close to our patented wellhead.

5 The system is programmed so that the upper part of the filled collector tube enters the wellhead slowly until the opening of the 1 1/2" stainless steel tube reaches the suction level of a 3 to 5 HP Moyno type pump.

6 The pump is then automatically activated by a sensor. It then pumps out and discharges fluid directly towards a storage facility or a conduction line. When the fluid has been totally drained from the collector tube, the pump is deactivated by the sensor and the collector tube runs back into the well at the programmed speed, starting a new cycle.

1 During the three phases of descent, filling and lifting of the collector tube, the gas inside the casing is discharged towards the conduction line through a gas outlet located at the upper part of the wellhead. This gas discharge occurs while the wellhead internal pressure exceeds that of the conduction line.

NOTES : The system is programmed so that the collector tube follows the descent of the fluid level during the initial period of the test until the fluid extracted compensates the fluid produced by the formation. At that stage a "balance point" is reached and the collector tube will no longer descend further. Driven by reservoir pressure, the oil naturally migrates from the formation towards the wellbore to recharge the fluid column while the oil-filled collector canister is surfacing.



STARTING POSITION



RUN OUT



RUN IN



WELL HEAD REACH



WORKING LEVEL REACH



OIL DRAINAGE



FILLING UP



GAS RECOVERY

APPLICATIONS

SUBSTITUTION OF CONVENTIONAL PUMP-BASED SYSTEMS ON DEPLETED WELLS



Our equipment is a very efficient and economically competitive substitute to conventional pump-based systems on low production wells because:

- Operating and maintenance costs on productive wells are key factors for preserving economical production.
- Our equipment benefits from low energy consumption, low operating costs and very limited maintenance costs (more specifically no heavy work-over costs), and no or very low volume of water extracted to be separated and recycled.
- The visual impact of traditional pumps may disturb an increasingly sensitive and evolving environment. The low visual impact of our equipment allows it to be hidden discreetly behind a vegetal fence for better environmental integration.

During exploitation periods with conventional pumps, the fluids equilibrium of the formation have been disrupted by the high level of differential pressures exerted in front of the formations. This leads to excessive water production and closure of these wells thus abandoning large quantities of unrecovered reserves in the ground.

However, after a certain non-producing period of time, the fluids around the well bore have by nature slowly reorganized. Driven by reservoir pressure, the oil migrates towards the well, flowing up inside the casing to reach a static level generally higher than the productive formation.

Any other fluid lift system that would be installed to reactivate an abandoned well would inevitably create a new disequilibrium leading to the same consequence: High water production, sand production, high energy costs and workover expenses.

WELL TESTING



The OPTIMOIL® system is also designed to complete full well testing programs in order to evaluate an accurate productivity index. This application obviously constitutes a key preliminary step of the well reactivation process described above. This well testing process typically goes through 2 main steps:

- Fluid level detection: our system's collector tube automatically detects the initial fluid level and keeps tracking it during test cycles.
- Analysis of fluid volumes produced: in the first days of the testing process, the volumes of fluid extracted by the system are higher than the volumes typically produced by the formation until both volumes converge to equilibrium: a "balance point" is reached. During this stage, fluid samples are also recovered in order to track and analyze the oil/water ratio at different depths.

REACTIVATION OF SUSPENDED WELLS



BENEFITS

Soft method for oil recovery

This alternative extraction process increases the potential of recoverable reserves while preserving the natural balance in the formation.

Well proven technology for inverting the oil/water ratio

As it has been verified on the majority of our installed equipment, our system is capable, in most cases, to invert the % of oil vs water in the extracted fluid

Limiting the nuisance of paraffin content

By lifting oil up to the surface in just a few minutes, our technology offers unique advantages on sucker rod maintenance by preventing paraffin and other deposits from crystallizing. Lifting oil at such speed also allows extraction of high-pour-point oils.

Control of sand production

Thanks to the principle of its artificial lift production system, high sand production issues faced with conventional pump-based systems are significantly limited.

Low opex and capex

Low operating and maintenance costs make it particularly relevant for substituting our system for conventional pump systems on wells with marginal production capabilities

Low energy requirements

Low energy consumption makes it easier to be installed in poor energy equipped areas.

Lightweight machinery makes it very versatile

Allowing our system to be an affordable solution for well testing and production index evaluation.

Low cost solution for high water-cuts

Our technology's unique adaptability to well production, together with the small differential pressure caused, enables extraction with low levels of water or sand wherever these problems exist.

Easy and quick to install

Our equipment has been designed to be easily transportable and installed in less than 24 hours enabling the testing of several wells in a very short period of time with a single unit.

Associated gas is controlled by our proprietary wellhead

Our exclusive patented wellhead enables the gas to be fully controlled in accordance with international environmental and security regulations rather than vented in the atmosphere (no flaring).

Fully computerized operations management allows remote monitoring

Our system's fully computerized control system enables the user to rapidly modify working parameters at anytime, and collect complete real-time information to a centralized control unit.

Eligible well typical profile

- ✓ Pumped wells
- ✓ Minimum casing Ø 4"1/2
- ✓ Low viscosity oil
- ✓ Density better than 15° API

CAPABILITIES

The extraction capabilities of our equipment depend on:

EXISTING CASING CHARACTERISTICS

The configuration of our collector tube can be adapted and optimized according to the casing parameters. Its diameter is sized from 2"1/2 inches up to 5" depending on the casing diameter.

The tube length is also sized depending on gas pressure and casing shape and conditions. It is assembled using sections 2 meters long which can allow collector tubes of up to 16 meters long when optimal well/casing/gas pressure conditions are met.

WORKING LEVEL

The number of cycles per day depends on the working level, descent and lifting speeds, dwell and discharge time, which are monitored by means of our special device. Our system works under a skimming effect in the fluid column found in the casing. Once enough energy exists in the reservoir resulting in an oil level above the perforations or open hole part of the well, the working levels will depend upon the parameters programmed in our system. The working level will be determined according to a pre-defined acceptable percentage of water.

WELL PRODUCTION

One of the biggest benefits of our technology is its adaptability to well production in order to recover oil without water. To be able to determine fluid quantities that can be recovered per day, a few days period of trial and error is needed for defining all operating parameters such as working depths, descent and lifting speeds (300 ft/minute max.), filling and draining times.

OIL CHARACTERISTICS

Crude Oils with a pour point of 32° centigrade, 15° API density and 400 centipoises viscosity have successfully been extracted.

DATAS LINKED TO CASING Ø			DATAS LINKED TO WORKING LEVEL DEPTHS			
CASING Ø	TUBE Ø (8 Meters / 26 ft long)		WORKING LEVELS	300 Meters (1,000 ft)	500 Meters (1,600 ft)	800 Meters (2,600 ft)
			Run in + Run out times	7,5 Minutes	12,5 Minutes	20 Minutes
4"1/2	2"1/2	filling up Time	1 Minute	9,5 Minutes	14,4 Minutes	22 Minutes
		Drainage Time	1 Minute			
		Collector Tube Capacity	21,16 Ltrs (5,58 Gal.)			
5"1/2	4"	filling up Time	1 Minute	11,5 Minutes	16,5 Minutes	24 Minutes
		Drainage Time	3 Minutes			
		Collector Tube Capacity	57,76 Ltrs (15,26 Gal.)			
7"	5"	filling up Time	2 Minutes	13,5 Minutes	18,5 Minutes	26 Minutes
		Drainage Time	4 Minutes			
		Collector Tube Capacity	92,16 Ltrs (24,35 Gal.)			
			Number of cycles/day	125	87	60
			Extracted volumes/day	3,2 M3 or 20 Bpd	2,1 M3 or 13 Bpd	1,4 M3 or 9 Bpd
			Number of cycles/day	107	78	55
			Extracted volumes/day	9,9 M3 or 62 Bpd	7,20 M3 or 45 Bpd	5,10 M3 or 32 Bpd

Bpd: Barrels of fluid per day.

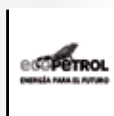
This table shows extracting capacities of our equipments, at certain stabilized levels. At these levels, the oil extracted is practically anhydrous (These levels are always higher than the formation depths).

Main production issues addressed

- ✓ Water cut
- ✓ Sand production
- ✓ Paraffin crystallization
- ✓ High energy & maintenance costs

OUR REFERENCES

Our equipment has been approved and is currently operated in several countries by major Oil companies such as PETROBRAS (Brazil & Peru), REPSOL (Argentina), PDVSA (Venezuela), ECOPE-TROL (Columbia), PEMEX/SLB (Mexico) among others. After having passed through strict quality and safety controls, our equipment has shown exemplary reliability and a proven capacity to respond to complex technical needs.



BRAZIL



VENEZUELA



COLOMBIA



PERU



ARGENTINA



MEXICO

ABOUT US

OPTIMOIL® Technologies is a Luxembourg based company, which owns, develops, supplies and supports a unique and innovative technology designed for mature oil fields. It is the perfect technology for reactivating suspended wells or replacing traditional extraction systems on low production and marginal wells.

OPTIMOIL® Technologies owns full international rights and associated patents (including a US published patent) for this technology which has been conceptualized, developed and designed by highly skilled oil industry engineers with decades of experience at major oilfield equipment manufacturers.

OPTIMOIL® Technologies develops business partnerships with international oil industry players (producers and service providers) in which our equipment is being operated mostly on a service contract business model.

The company relies on significant manufacturing and R&D facilities for the ongoing development of our equipment.

CONTACTS

Michel PAVOINE

General Manager

Email : m.pavoine@optimoil-technologies.com**Laurent GROSPIRON**

VP Business Development

Email : l.grospiron@optimoil-technologies.com**OPTIMOIL**
TECHNOLOGIES

For more information please visit

www.optimoil-technologies.com