

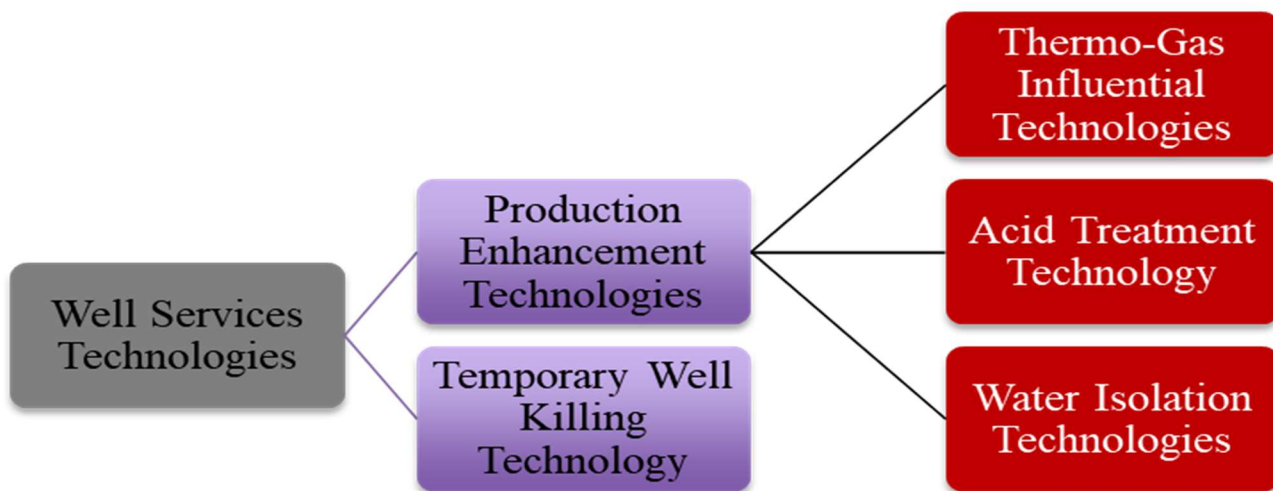
BRIEF INTRODUCTION TO ESPROENKO INTERNATIONAL

ESPROENKO INTERNATIONAL was established in 2007 in Barcelona, Spain. ESPROENKO is specialized in providing unique oil and gas services based on patented technologies that increase the production, efficiency and profitability of oil and gas wells.

All our technologies are patented. We have successfully executed contracts using our technologies in all different oil and gas wells in different parts of the world. We use an individual approach to the wells, acting based on the formation specifics, and adapting our methods to the specific well conditions.

OUR TECHNOLOGIES:

Our technologies can be categorized as the below diagram:



Our technologies can be categorized in two major groups:

1. PRODUCTION ENHANCEMENT TECHNOLOGIES USING PHYSICOCHEMICAL METHODS INCLUDING:

- Thermo-gas chemical and Thermo-gas dynamic methods for influencing both formation and the fluid.

*The main goal of these technologies is to **increase the production rate by injection of special chemicals which cause an increase of the temperature and pressure of the bottom-hole area.***

The mentioned increase in pressure and temperature has both physical and chemical effects:

- *Physical effect: increase in pressure will produce micro-fractures in the strata that will significantly increase the permeability. The tiny micro-fractures open new routes for movement of oil/gas inside the layers of rocks, and as a result we will obtain a significant increase of oil/gas extraction.*
- *Chemical effect: The chemical reaction that happens as a result of the contact between the injected chemicals, has an influence on molecule structure of hydrocarbons. In high temperature and pressure of the bottom hole area, a very active ions of H+ will be produced, which are able to break the carbon ties in the long hydrocarbon molecules and forms lighter Hydrocarbons. It's a micro-cracking process. Such an effect will cause in easy flow of the fluid and consequently more productivity of the well.*

This technology is very often compared with the fracking, due to the approach and to the final effect. The main difference is that our technology uses ten times less chemicals (with the consequent less impact on the environment) and the job procedure is a lot less complicated and time/resources consuming.

The effectivity of the technology is shown in the following table, based on the recorded average results of treated wells:

Typology of the wells	Productivity Change
New or recent wells	20 – 50 %
Old wells in mature fields	100 – 500 %



- Acid Treatment Technology using multicomponent acid solutions.

*In usual acid treatments the hydrochloric acid is used. But using this acid for enhancing the amount of oil recovery has some disadvantages as well. By **using special composition containing phosphoric acid and a mixture of organic acids, with lower reactivity**, not only increases the radius of effect but also avoid many of disadvantages related to using hydrochloric acid. As the reaction time of new acid (which will be called PCC) is lower than HCl, **the radius of penetration is higher** (in dependence on porosity and permeability of the well) it can penetrate between 5 to 10 meters around the perforation area, in comparison to HCl which can reach a penetration rate of 0.5 – 1.3 m as average. On the other hand PCC **DO NOT reacts with formation carbonates, and can be used on Si formations**. Furthermore, in formations with clay, **it doesn't make any hydration in the formation**, in comparison to HCl which hydrates the clay and it would have vice versa effects.*

In the table stated below, are shown the productivity changes resulting of ESPROENKO acid treatment and a comparison to the average results of traditional acid treatment.

METHODS	Productivity change
Traditional (HCL)	-200% - +200%
Esproenko's Acid Treatment, PCC	+100% - +300%
Esproenko's Acid Treatment based on inactive Dispersed System (Powder)	+100%- +600%

- Technologies for Water Isolation and prevention of water flooding of the wells.

*In these technologies we use three new processes to **enhance the amount of oil recovery, overcome the water coning and improve the purity of extracted oil**. These methods can be classified as follows:*

1. Polymers.
2. Formation of Mineral Blockers.
3. Formation of Hydrophobic Films.

In below table the amount of Increasing in productivity and decreasing in water contain in extracted oil/gas after using each of the mentioned method are shown:



Methods	Decrease in water amount	Increase in productivity
TRADITIONAL (OIL-CEMENT)	1% – 5%	-85% - +50%
HYDROPHOBIZATION	25% - 50%	+50% - +300%
MINERAL BLOCS	30% - 100%	+100%- +600%
POLYMER FLOODING	50% – 100%	+100%- +500%
POLYMER FLOODING + MINERAL	70% – 100%	+300%- +800%

2. Technology for increasing the safety of oil and gas extraction:

- Temporary well killing keeping the productivity of the formation.

Temporary well killing is wide used and it's needed for well repairing and well washing.

*Our technology is based on the use of chemicals mixtures, which after injection to the bottom area of the well, and under the pressure and temperature conditions of that area, it will turn into a jelly structure and will **form a dense and strong jelly able to stand with the formation pressure.***

The jelly structure doesn't enter into the formation, due to its high density. After creating the jelly structure, in the next step, a brine will be injected to the well. Both jelly with the upper salt solution have very high density, so the pressure created on the wellbore by using them is very high and these two layers can resist the pressure from the formation.

The durability of the jelly layer is very high (till 12 months). Killing the well by this method can be achieved very easily and this process can be executed in a faster way compared to traditional plugging of the wells. As well as the safety factor in this method is highly enough, the most important advantage of this technology is the conservation of the productive formation after the killing process. Our jelly keeps the productivity of the well, as not any water is injected to the formation, so after the killing process, the amount of water from the well, doesn't increase.

