Six Sigma in oil industry

Six Sigma is a data driven process improvement methodology based on **DMAIC** cycle (Define – Measure- Analyze – Improve – Control). This methodology can be applied successfully in oil industry.

Examples of measurable indicators specifics of this industry can be: tilting the geologic layer, saturation pressure, viscosity (under standard conditions), density of oil, oil type (waxy or not-waxy), type of water from deposit (salinity), porosity of the basic rock, etc.

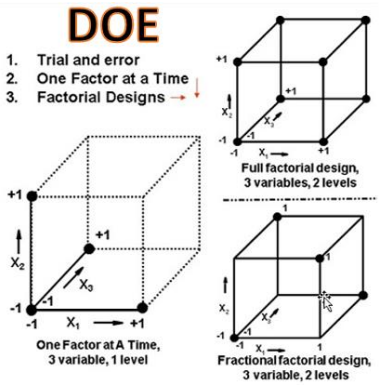
Here is an example of successfully Six Sigma project with purpose to reduce the risk coefficient of drilled wells. It is well known that geological resource depends on several factors and there have been many cases where wells have not led to finding deposits. The key indicator which give the performance of the process was Risk coefficient (R%).

Process was studied, (process map), were studied past failures and success stories and was established the team which will work to this project (**D**efine).

The **M**easurement phase data were collected for cases of failure and of success, parameters such as: porosity of deposit (m), interstitial water saturation (Sai), volume factor of the oil (bp), gross volume of the deposit (Vb), were been measured.

Identification of factors which influence R% was done by Ishikawa, 5 Why? and IPO. Using hypothesis testing was demonstrated these possible influences – **A**nalyze phase. R% was influenced by gross volume of the deposit (Vb), interstitial water saturation (Sai) and porosity of deposit (m).

It proceeds to identify solutions that implemented would eliminate or diminish the negative effects for which it was made the project (**I**mprovement phase).



Were used the following tools: Brainstorming, Poka Yoke. Choosing the most efficient or the fastest solutions were done using Prioritization Matrix help.

Historical data were analyzed and was used DOE (Design of Experiment) to find the best combination and the risk factor to be minimal.

Optimum conditions were found and from next 27 drillings only 2 were failed, so the risk level decreased from 22.5% up to 7.4%. In **C**ontrol phase drilling conditions were changed - Annex 2 to drilling procedure.

We invite you to Six Sigma courses organized by Effective Flux to reap the benefits of this methodology.