“TAICHI” Water Control Completion

The problem of water cut is the most difficult to overcome in oilfield development, once water breakthroughs, the increase of water rate will accelerate, and the well will soon lose production capacity. “TAICHI” water control completion technology is to establish selective channels in the wellbore, so that water will encounter a huge resistance, while oil can pass freely, thus achieving the purpose of controlling water and increasing oil.

ANTON “TAICHI” water control completion technology includes (1) “TAICHI” valve individual design; (2) Selective completion individual design; (3) Matching completion techniques and tools.

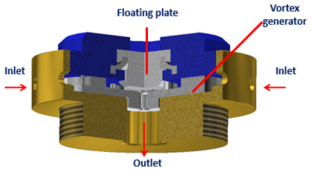
Technical principles and features

- Oil and water can be automatically identified based on the difference in viscosity and density. The liquid will flow through a special flow channel designed similar to the shape of “TAICHI”, which can selectively let oil flow smoothly, while water will encounter great resistance.
- Self-developed simulation software, combined with reservoir analysis and selective techniques to achieve integration of reservoir and engineering.
- Safe and reliable. It can also be used with a tracer screen to achieve the function of sand control and production profile monitoring.
- Independent IP. Obtained Chinese and international patents.

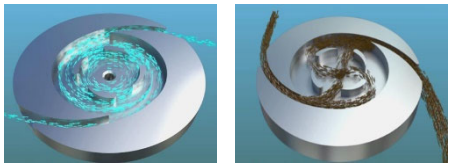
Application scope and effects

In 2016, we started the R&D and application of water control completion technology, leading the development direction in China, and successfully applied it on more than 100 wells worldwide. It can be used for preventive water control of new wells and water control measures of old wells, with significant water cut reduction.

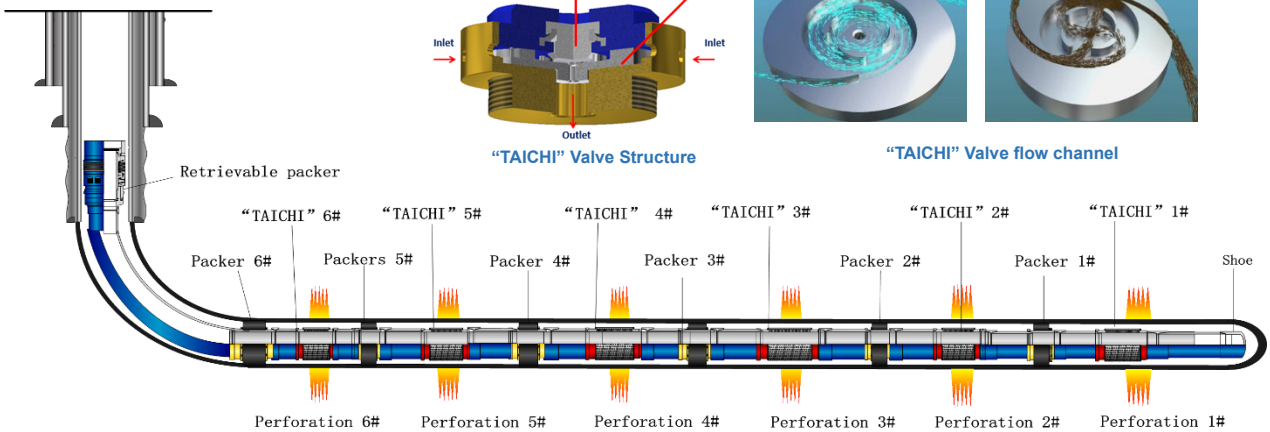
- Preventive water control in new wells has been successfully applied in Jidong. The average water cut decreased from 90 % to 70 %.
- Water control in ultra-deep sandstone old wells has been successfully applied in Tarim Oilfield with 5000 m vertical depth, and the water cut decreased from 80 % to 50 %.
- Water control with low viscosity oil after the fracturing of tight sandstone has been successfully applied in a well with 1.62mPa.s crude oil viscosity in Changqing oilfield, and the water cut decreased from 97% to 85%.
- Water control in old vertical wells has been successfully applied in Shengli Oilfield, and the water cut decreased from 99 % to 93 %.



“TAICHI” Valve Structure



“TAICHI” Valve flow channel



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