

Anton Tai Chi Automatic Inflow Control Devices (AICD)

Technology introduction

AICD can decrease water production and improve oil production based on fluid mechanics theory. The Anton Tai Chi AICD technology employs an engineered system of flowpaths and channels to control downhole fluid flow. Which named for its shape as Tai Chi.

Oil and water have different physical properties, Anton Tai Chi AICD includes a viscosity selector which utilizes a system of flow paths to differentiate between fluids flowing through the device automatic base on fluid viscosity, density and velocity. The fluid selector can restrict the flow of unwanted fluid (water) from entering the wellbore, while provides very little restriction to desired fluid (oil), which enable lower water production and maximum oil output.

It is installed as part of the completion string and highly fit for any long horizontal reservoirs with high permeability variances.

Edge or bottom water reservoir, breakthrough of water or gas, permeability differences, any water or gas challenges in new and workover wells.

Technology states

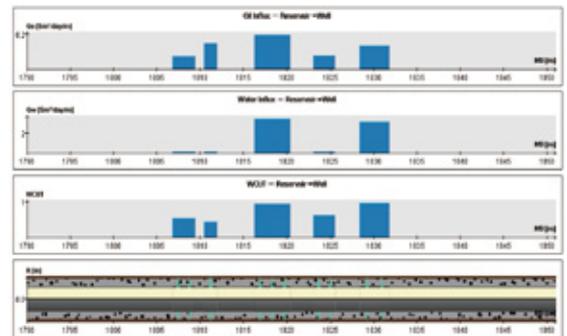
AICD technology has been popularized and applied in China and abroad, and achieved good application results in Tarim oilfield, Sinopec northwest oilfield and Shengli oilfield. After used AICD technology completion, the water cut of oil wells has been reduced, the oil production has been improved, and the comprehensive income of oil wells has been improved.

Application case

① Well information

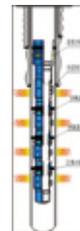
Well X of Shengli oilfield was put into production in May, 2002. At the initial stage, the daily oil production was 40t/d without water cut, but after 10 months of production, the water cut began to rise rapidly. In January, 2015, the daily fluid production was 25t/d, the daily oil production was 1.6t/d, and the water cut was 93.8%.

Through comprehensive geological analysis, professional software is used to predict the distribution of liquid production and water cut in each layer: layers 11 and 13 are the main liquid production layers, with water cut reaching 95% and 96% respectively. Layers 9, 10 and 12 are potential layers with water content of 53%, 44% and 62% respectively.



② AICD completion

Used a Liner hanger to hang Swell packers (or cup packers) + AICD joints as completion string, isolate 4 zones of formations layers 9/10/11/12/13 with packers, the operation date is in 2015.



③ Production data

After the implementation of AICD water control in December 2015, the water content decreased from 94% to 65%, and the daily oil increase was about 10t/d.

