



## Completion Solutions

# EquiFlow® AICD deployment more than triples oil production for major operator in the Middle East

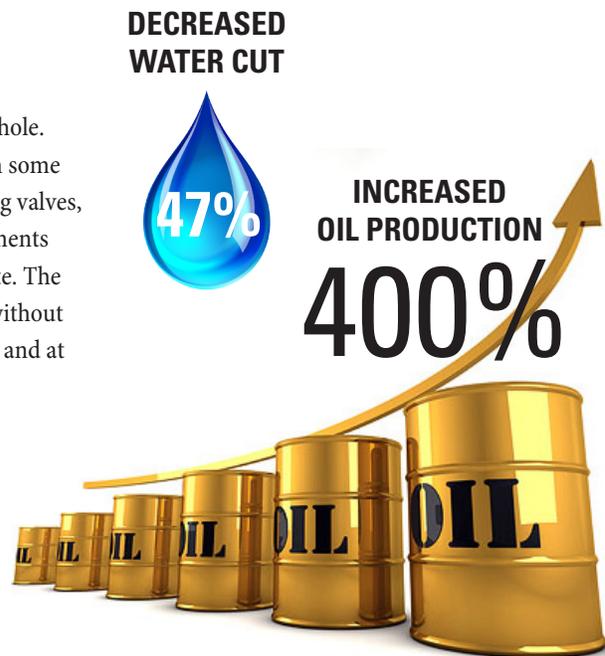
Location: Middle East

### Overview

A major operator in the Middle East had a water control issue in a heterogeneous, highly fractured carbonate reservoir. After it was drilled and completed with electrical submersible pumps (ESPs) in early 2011, the well showed very high water production and fracture behavior with an initial water cut of approximately 65% against 880 bopd. The water cut increased sharply and reached to about 97% with only 200 bopd in less than a year. To get water cut under control and increase oil production, Halliburton installed EquiFlow® autonomous inflow control devices (AICDs), along with 16 Swellpacker® systems.

Several remedial solutions, including chemical placement, were considered. However, the EquiFlow AICDs with openhole Swellpacker systems were chosen as optimum solutions for this openhole horizontal well.

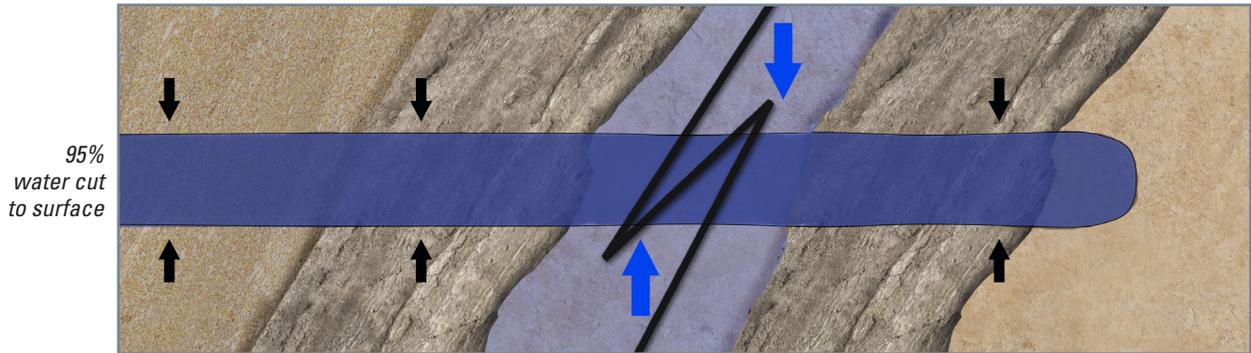
Sixteen Swellpacker systems provided segmentation in the open hole. Eighteen EquiFlow AICDs were placed between the packers, with some segments left blank. The EquiFlow AICDs acted like self-adjusting valves, controlling the flow rate from each segment. High water cut segments flowed at a slow rate, while high oil segments flowed at a high rate. The devices are based on an innovative flow path design that works without any moving parts. More viscous flow (oil) results in a direct path and at a high rate like an open valve. Lower viscosity (water) induces spinning, which slows the rate like a choked valve.



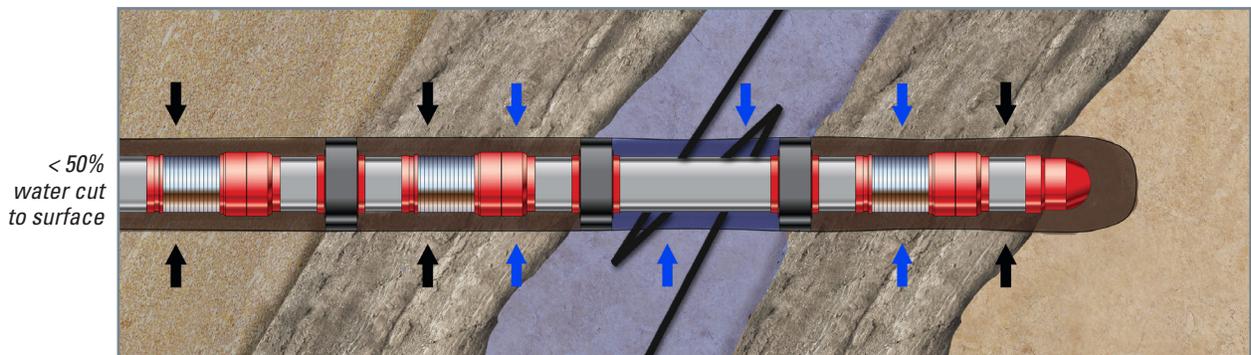
CHALLENGE	SOLUTION	RESULT
Increase production and solve a water control issue in a heterogeneous, highly fractured carbonate reservoir	EquiFlow® AICDs with Swellpacker® systems	Oil production increased by 400% and water cut decreased from 97% to less than 50%

### Benefits

The successful EquiFlow AICD deployment helped increase oil production by as much as 400%, with a significant drop in water cut from 97% to less than 50%. The well is currently on production and has produced three times more cumulative oil over 21 months as compared to the pre-workover cumulative in 2.5 years. This solution overcame the challenges associated with reservoir heterogeneity and improved sweep efficiency with a significant gain in ultimate recovery from the well.



*Prior to the use of EquiFlow<sup>®</sup> AICDs, the open hole offered no control of fractures or water breakthrough. High water cut could be seen at surface.*



*After installation of EquiFlow<sup>®</sup> AICDs, fractures were isolated and the remainder of the well was segmented. The rate of each segment was controlled by the EquiFlow AICDs, which allowed more flow from segments with high oil content.*