

## AICV<sup>®</sup> - Autonomous Inflow Control Valve

Operators face continuous challenges with improving and maintaining oil production as breakthrough of unwanted fluids such as water and gas hamper oil recovery. Once breakthrough occurs, gas or water production can rapidly dominate production resulting in high Gas Oil Ratio (GOR) and/or Water Cut (WC). This results in poorer economics and leads to well interventions in attempts to rectify the ingress of the unwanted fluid or even worse, in many cases, wells shut in and oil left behind.

Selecting the optimal completion to effectively control the inflow of reservoir fluids and manage reservoir uncertainties over the life of a well can significantly accelerate production and improve ultimate recovery. Deploying novel inflow control technologies. Inflow Control Devices (ICD) and Autonomous Inflow Control Devices (AICD) can delay breakthrough, but not stop the production of unwanted fluids completely.

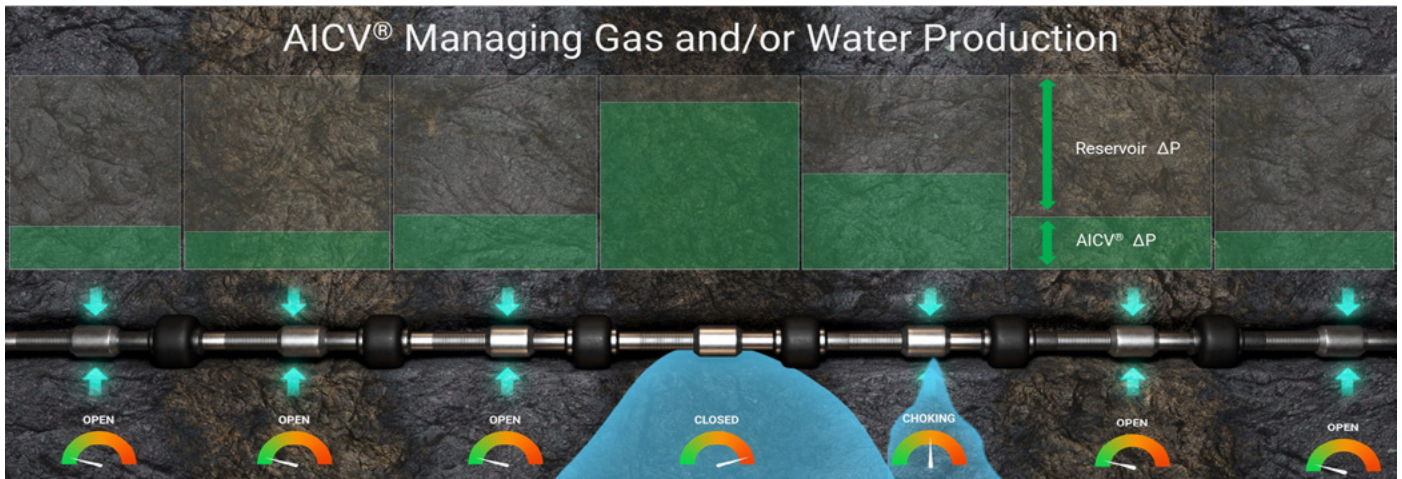
The most advanced generation, InflowControl's patented Autonomous Inflow Control Valve (AICV<sup>®</sup>) is the first and only commercially available technology that can completely shut-off unwanted fluids autonomously and locally in the well making fields 'economical' once again. The AICV<sup>®</sup> balances the inflow of oil along the well and autonomously chokes or shuts-off the gas and/or water breakthrough zones while still allowing oil production from the rest of the reservoir thereby tackling the issues associated with high GOR / WC and optimising production.



The AICV<sup>®</sup> is the most advanced and proven reversible autonomous technology that can shut-off unwanted gas and water inflow and increase oil production and oil recovery

### Features and Benefits

- **Autonomous:** Combines the best from passive Inflow Control Device (ICD), Autonomous ICD (AICD), and hydraulically or electrically controlled smart valves (ICV). Reacts to reservoir uncertainties without external power
- **Optimised Reservoir Management:** Rejuvenates and/or prolongs the life of a well by significantly reducing GOR/WC thereby accelerating oil production and increasing ultimate recovery
- **Effective:** Can choke or completely shut-off unwanted gas/water
- **Ultralight Oil:** can manage unwanted gas down to 0.25 cP oil and unwanted water as low as 0.6 cP oil
- **Modular Products:** AICVs can be equipped with additional products for enhanced pressure Actuated Valve (PAV), Injection Valve, or high pressure Check Valve for closed system, chemical treatment, or stimulation capabilities respectively as well as number of AICVs per joint, and screen type can all easily be configured prior to manufacturing
- **Reversible:** Allows oil production after earlier breakthrough
- **Engineered:** Tungsten Carbide for erosion resistance and purposefully designed to limit sensitivity to scale, and debris
- **Flexible:** Can easily adjust the choking of each phase and design AICVs strength as required for specific reservoirs
- **High Resolution:** No limitation in number of zones
- **Retrofittable:** Can be installed in new and existing wells
- **Robust:** Low-risk, uncomplicated with no additional HSE implications for deployment
- **Accessibility:** Full bore ID for any future operations
- **Environmentally Conscious:** Substantially reduces carbon emissions
- **Cost Effective:** Greatly lowers CAPEX and OPEX costs by reducing water and gas, simplifying deployment, and eliminating risky interventions



AICV® autonomously manage water and gas inflow locally by effectively choking or shutting-off water/gas zones while allowing oil producing zones to flourish, increasing ultimate oil recovery.

### Applications

- Wells with high GOR and/or WC
- Wells that have a strong gas cap and /or gas breakthrough issues
- Ultralight Oil to Extra Heavy Oil
- Old wells or New wells
- Horizontal or Vertical wells
- Sandstone or Carbonate Reservoirs
- Open Hole or Cased Hole



AICVs are designed and tested in multi-phases and must pass stringent quality control process to ensure long-term reliability and functionality. Material selection for robust and proven designs include: 22Cr Duplex or Alloy 625 and Tungsten Carbide

Basepipe Size	2 7/8 in	3 1/2 in	4 1/2 in	5 1/2 in	6 5/8 in	7 in
Screen Type	Wire-wrap screens; Wire-wrap strainer (carbonate applications); Premium mesh					
Tool length	<ul style="list-style-type: none"> <li>• <b>Basepipe length:</b> typically an R2 or R3 joint is utilized with 1, 2, or 4 AICV®'s per joint (determined by inflow design requirements and modelling)</li> <li>• <b>Sand control length/design:</b> determined by application type (sandstone/carbonate)</li> <li>• Lengths are reviewed based on zonal isolation strategy and operator requirements and can be adjusted prior to manufacturing</li> <li>• Operator specific sand-retention testing reviewed where necessary to ensure adequate sand control is utilised</li> <li>• Packer placement and other technical requirements are reviewed and advised in conjunction</li> </ul>					
Max O.D.	4.130 in (3.740 in*)	4.650 in	5.600 in	6.600 in	7.800 in	8.175 in
Housing Material	304L, 316L, or Alloy 825					
Basepipe Material	Designed to operators specifications					

\* Alternative super slim design