

AICV® - Autonomous Inflow Control Valve

One of the major challenges in oil fields is to improve recovery by applying the correct completion for controlling adequate inflow of the reservoir fluids over the life of the wells. Existing fields face growing issues with improving (and maintaining) production due to increased gas and water ingress, the economics of the wells become a growing concern.

For reservoirs with water or gas drive mechanisms, the mobility ratio between oil and water or gas becomes more critical due to lower viscosity of water and gas. Once breakthrough occurs, gas or water production can rapidly dominate production with high Gas Oil Ratio and/or Water Cut. The results are poorer economics and leading operators to react with well intervention to rectify the gas or water ingress or even worse; shutting in the wells and thus leaving oil behind.

The AICV® Autonomously controls Water Cut and Gas Oil Ratio making fields 'economical once again'.

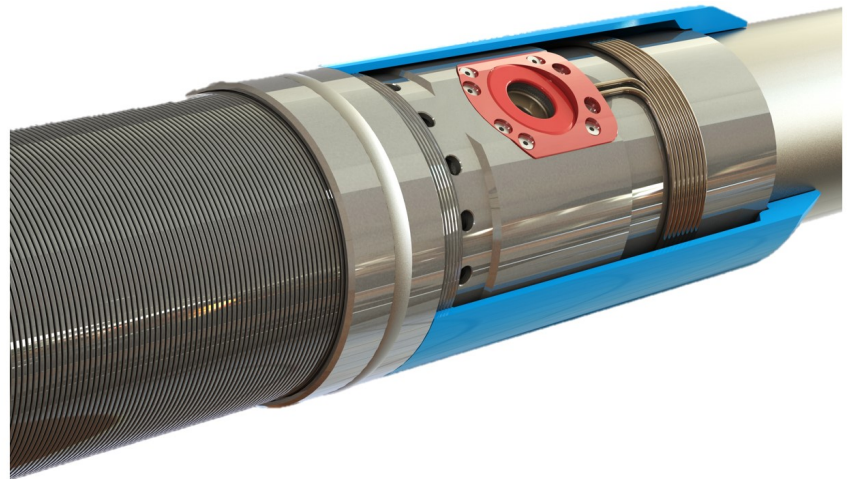
The patented AICV® is the first and only commercially available technology that can shut-off the gas and/or water autonomously and locally in the well.

Applications

- Wells that have High Water Cut.
- Well that have High Gas Oil Ratio.
- Wells that have a strong gas cap and / or gas breakthrough issues.
- AICV® can shut off un-wanted gas or water completely or partially.

Features and Benefits

- AICV® combines the best from passive Inflow Control Device (ICD), Autonomous ICD (AICD) and hydraulically controlled smart valves (ICV).
- Stop Gas and Water: AICV® can significantly reduce the water cut and GOR in wells.
- Flexible Design: the AICV® can be installed in a variety of sand screen types dependent upon the reservoir requirements and also wellbore metallurgy requirements.
- Stimulation: AICV® combined with frac stimulation valves offers effective stimulation capacity without the need to intervene and shift valves.



The InflowControl AICV® is the only known and proven Autonomous Device that can shut off gas inflow, yet still allowing oil production without any well intervention required.

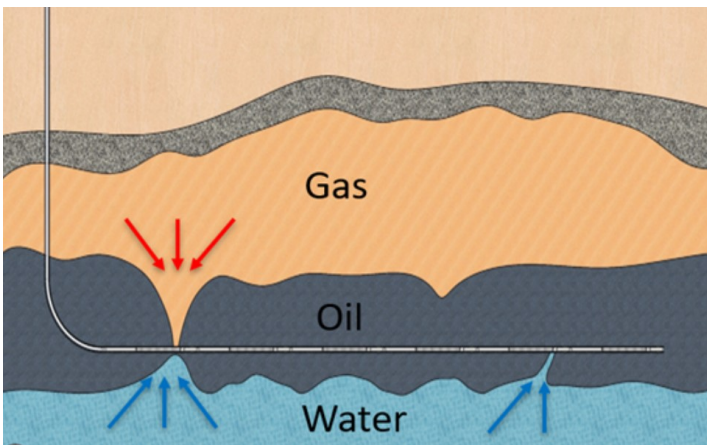
Features and Benefits

- **Autonomous:** Requires no external power or control
- **Effective:** can shut-off gas and / or the water completely.
- **Robust:** Uncomplicated with low risk of failure.
- **Flexible:** Can adjust the choking of each phase and ICD strength easily.
- **Reversible:** Allow oil production after an earlier breakthrough.
- **Distributed:** No limitation in number of zones.
- **Retrofittable:** Can be installed in new and old wells.
- **Cost effective:** Greatly lower OPEX costs by reducing Water and Gas.

AICV® - Tool Description

One of the main challenges for increased oil recovery is major breakthrough of unwanted fluids as water and gas, due to uneven influx along the horizontal section. The problem can be avoided or significantly reduced by deploying novel inflow control technologies. Inflow Control Devices (ICD) and Autonomous Inflow Control Devices (AICD) are able to delay breakthrough, but not stop the production of unwanted fluids completely.

The newest generation of inflow control technology, the Autonomous Inflow Control Valves (AICV®) can optimize the oil production in both new and old wells, and reduce water cut and/or gas oil ratio significantly. The benefit of the AICV® is to provide balanced inflow of oil along a horizontal well, by autonomously choking or closing off the gas and water breakthrough zones yet still produce oil from the rest of the reservoir.



The AICV® effectively manages gas and water inflow control and can effectively shut off gas zones while allowing other zones to produce oil and allowing a better total oil recovery factor when applied in wells.



The AICV® has been designed and tested for long-term, reliable functionality in mind. Material selection for use are robust and proven, 22Cr Duplex or Alloy 625; Tungsten Carbide (wear parts).

Size	2 3/8 in	2 7/8 in	3 1/2 in	4 1/2 in	5 1/2 in	6 5/8 in	7 in
Screen Selection	<ul style="list-style-type: none"> Wire-wrap screens; Wire-wrap strainer (carbonate applications); Premium mesh type. 						
Tool length*	<ul style="list-style-type: none"> Base pipe length is selected by operators requirements; typically a R2 or R3 joint is utilized with 1 or 2 AICVs per joint (as per inflow design requirements). Packer placement and technical requirements are reviewed and advised in conjunction. Sand control: length and type is dependent upon operator requirements (sandstone or carbonate applications) design will vary on sand screen /strainer type selected. Operator specific sand-retention testing will be reviewed if required for the various applications to ensure adequate and correct type of sand control is selected. 						
O.D. (inches)	3.74 in	4.13 in	4.65 in	5.6 in	6.6 in	7.8 in	8.175 in
O.D. Super-slim (inches)	<ul style="list-style-type: none"> 2 3/8 in tubing = 3.23 in o.d. 2 7/8 in tubing = 3.74 in o.d. 						
Material	304L, 316L or Alloy 825						
Basepipe Material	Designed to operators specification						