

FloReg™ Autonomous Inflow Control Device

Automates inflow control and reduces water and gas production without the need for intervention

Applications

- Wells with a strong water aquifer or an active gas cap that present a high likelihood of water or gas breakthrough
- Wells with a large variation in reservoir permeability along the wellbore
- Wells with a large mobility difference between oil and water or oil and gas

Features and Benefits

- The FloReg autonomous inflow control device (AICD) system inhibits the production of high-mobility fluids such as water and gas because the pressure drop in each unit is dependent on fluid properties and mobility, which results in increased oil production.
- The AICD optimizes control of downhole flow profiles to reduce annular flow velocities.
- Each AICD has active flow-resistance functionality that maximizes oil recovery by significantly dropping pressures across zones with high water or gas saturations.



The Weatherford FloReg AICD is an innovative reservoir-management system that reduces water and gas production without intervention in oil wells.

- The movable disk is made of erosion-resistant tungsten carbide for long-term durability.
- The AICD provides compatibility with direct wrap, metal mesh, or MazeFlo™ screens.
- Produced fluid flow between screen and non-perforated base pipe is routed through multiple units of AICDs, which allows only desired fluid production and thereby improves sweep deficiency and recovery.
- Various metallurgy options provide longevity in the most common downhole environments.
- Rigorous flow testing has confirmed the performance characteristics of the AICD. As a result, empirical operating envelopes can be developed to assist with modeling before completion operations.
- The number of AICD units can be adjusted to prescribed settings based on the latest wellbore data.



FloReg™ Autonomous Inflow Control Device

Tool Description

The Weatherford FloReg AICD is an innovative reservoir-management system that reduces water and gas production without intervention in oil wells. Multiple devices create an AICD system that can be configured for pressure drop requirements along horizontal wellbores. The AICD system has proven the potential for extending well life by lengthening the plateau period, minimizing water and gas production, and increasing recovery.

The AICD system is distributed along the well in a similar way to conventional passive ICDs; however, it acts as an active flow-resistance element. The system autonomously affects flow by imposing a relatively strong choke for low-viscosity fluids and only minor choking for viscous oil. The system not only delays gas or water breakthrough, but also reduces the proportion of the breakthrough. Unlike passive inflow control technology, the system improves well performance and increases production after a breakthrough. It can interface with a range of Weatherford well screens.

Specifications

Size	4-1/2 in.	5 in.	5-1/2 in.	6-5/8 in.	7 in.
Suitable screen selection	Metal-mesh and wire-wrap screens				
Overall tool length* (for single valve configuration)	11.13 in. (282.70 mm)				
Outside diameter	5.625 in. (142.88 mm)	—	7.00 in. (177.80 mm)	7.75 in. (196.85 mm)	—
Valve quantity per unit	1 to 4				
Housing material	316L or L80				
Base material and stress intensity (ksi/MPa)	13Cr or L80				
Elastomer material**	FKM 95				

*The overall length varies, depending on the valve quantity and configuration.

**Alternative elastomer material is available.

* MazeFlo is a trademark of Exxon Mobil Corporation and is used under license.

