MultiNode electric flow control valve

Manage water breakthrough and zonal production to improve ultimate recovery

Applications

- Cased and openhole multi-zone completions
- Horizontal wells where early water breakthrough is anticipated

Features and Benefits

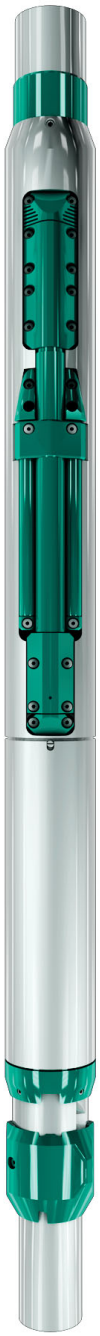
- Compact design
  - Allows for shorter zone spacing
  - Eases transport, handling, and installation
- Carbide choke stem and flow components
  - Offers six choke settings, including open and closed positions
  - Helps reduce and eliminate water production in high-water zones
  - Resists erosion
- Electric actuator with bi-directional choke positioning
  - Offers quick and reliable choke adjustments over the life of the well
  - Provides operational flexibility, extends well testing capabilities, and offers responsive control
- Built-in diagnostics and electronics self-test capabilities
  - Continuously monitors device health
  - Detects potential issues before they become critical

The **MultiNode™ electric flow control valve (eFCV)** functions as part of the MultiNode all-electric intelligent completion system to reduce or increase flow paths in production and injection zones. The system helps balance hydrocarbon flow in long wellbores and combats water breakthrough to improve the quality of production and ultimate recovery.

Particularly in long horizontal laterals, experiencing water breakthrough in the heel of a well can cripple production, rendering large volumes of hydrocarbons unrecoverable. Segmenting the lateral into production zones and deploying an eFCV in each zone enables operators to selectively control the flow in each zone. If water breakthrough occurs anywhere in the lateral, the eFCV in that zone can be choked back or closed on command from the surface to reduce water cut and increase overall hydrocarbon production.

The ability to remotely adjust eFCVs allows operators to balance production without incurring the cost or risks inherent with intervention.

Each MultiNode eFCV contains a four-stage choke stem—plus an open and closed position—that can be incrementally adjusted to increase or decrease flow in each zone. Made of tungsten carbide, the choke stem features a patented design that reduces friction, stands up to erosion, and provides consistent choke performance over the life of the well. The eFCV's compact size can accommodate more production zones



across fewer feet of casing, and it houses a powerful motor and a built-in choke positioning sensor that provides quick, precise choke adjustments.

The MultiNode surface control unit (SCU) can connect up to 27 eFCVs using a single tubing-encapsulated conductor (TEC) cable and is used to monitor and control the devices. With the click of a button, the all-electric eFCV actuates and incrementally adjusts to reduce or increase flow.

Onboard intelligent electronics continuously monitor device health and transmit diagnostic data to the SCU, identifying any issues before they can become problems.

Electronic control of up to 27 eFCVs on a single cable enables operators to deploy solutions that are not possible or practical with traditional hydraulic or electro-hydraulic flow control systems. MultiNode eFCVs enable flow control across a greater number of production zones at a lower overall cost when compared to other flow control systems. They are flexible, reliable, and easy to deploy and use.

Contact your Baker Hughes' representative today to learn more about how you can use MultiNode eFCVs to combat water breakthrough, enhance ultimate recovery, and minimize flow control costs in wells with long horizontals.

Specifications

Description	Specification	
Valve size	3.5-in.	8.89 cm
Minimum casing ID	7-in., 29-lb/ft casing	
Openhole size	6.125-in.	15.558 cm
Maximum OD	5.625-in.	142.875 mm
Minimum ID	2.750-in.	69.850 mm
Tension/Compression rating	140,000 lb/ 95,000 lb	63.503 MT/ 43.091 MT
Maximum differential pressure rating	5,000 psi	345 bar
Maximum absolute pressure rating	7,500 psi	517 bar
Temperature rating	40°F–257°F	4°C–125°C
Maximum number of eFCVs per TEC cable	27	
Choke material	Tungsten carbide	
Number of choke positions	6	
Mechanical backup	Shift closed with mechanical shifting tool	

Baker Hughes™