

Smart Automated Choke

Remotely controlled, adjustable choke with erosion resistance and enhanced protection for reliability

Applications

- Onshore and offshore operations
- Well testing, cleanout, and flowback operations
- Production metering and reservoir optimization
- Exploration and appraisal development

How it improves wells

- Enables automated, remote, and robust control at the wellsite
- Works in harsh environments, such as high flow rates, sand production, and high H₂S
- Reduces maintenance intervention
- Improves controllability and resistance to wear and erosion
- Autoregulates choke based on commands
- Minimizes HSE risk by making it possible to remove personnel from high-risk zones
- Reduces fugitive emissions

Features

- Impact-resistant plug and cage type (optional sliding sleeve type)
- Highest H₂S rating (API Spec 6A EE-NL)
- Electrical and mechanical override
- Choke position data logger for operation even during a power cut
- Multiple control and autoregulation modes
- 3-in bore with 2-in choke opening (4-in bore available)
- High-frequency data acquisition
- ATEX II2 GD Ex d IIB T4 compliant



Smart automated choke.

Greater reliability through automation

The smart automated choke is electrically actuated. It is a production-type plug and cage choke that is lined in tungsten carbide for extended erosion resistance and enhanced protection. This makes it more reliable for sand production operations.

The choke is remotely controlled from a digital response unifying module (DRUM), which is an acquisition and control module designed for surface well testing operations. With the highest data frequency, it facilitates the acquisition of sensor measurements and conducts basic control loops on the remotely actuated systems. Because of its embedded programmable logic controller (PLC), the DRUM ensures a fast closed-loop control of any process parameter acquired at surface.

The choke can be set to a specific value for precise fraction adjustments. It automatically self-regulates based on any given process parameters, such as upstream, downstream, and downhole pressure; differential pressure across the choke; and flow rate (single- and multiphase). This is an advantage in operations

where well control is critical. Besides its automated features, it can also be remotely controlled from multiple sources, including an ATEX tablet, human machine interface (HMI), and any computer in the cloud.

In case of power shutdown or communication loss, the choke retains its last set point position. If the choke is manually operated during communication or electrical power loss, any manual choke operation is recorded via the internal data logger. Functionalities will resume when the power supply returns in a step-by-step method, thus avoiding rapid process fluctuations. Electrical and mechanical overrides are also available directly on the actuator. The smart choke is adaptive and can fit in multiple configurations. It can be installed on the automated well testing trailer (AWTT) where it will be controlled by the central data acquisition and control module (DACM), or it can be used with the DRUM to function as a stand-alone skidded unit or retrofitted on a choke manifold.

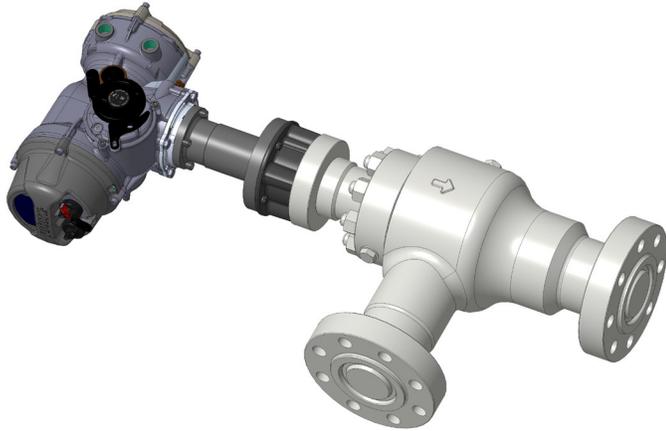
The choke also reduces fugitive emissions by eliminating the need to break containment, with human independent choke adjustments.

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Choke Specifications

Type of choke	Plug and cage, angled body
Characteristics	100% equal percentage
Max. orifice size	2 in [5 cm]
Max. valve flow coefficient (C_v)	64
Fluid	Oil and gas, H_2S , acids
Pressure rating	10,000 psi [68,947 kPa]
Material class	EE-NL
API Spec 6A product specification level (PSL) and performance requirement (PR)	PSL-3, PR2
API Spec 6A temperature class	P+U (-20 degF [-29 degC] to 250 degF [121 degC])
Connections	API Flange 3 $\frac{1}{16}$ —BX154
Certification	CE, PED, ATEX, NACE MR0175, ISO 15156, API 6A

All specifications are subject to change without notice.



Choke overview.

slb.com/well-testing-control-equipment

Schlumberger