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Modum Gas gas metering control system

Reduces injection costs and equipment footprint while maintaining optimal gas injection rate

Flow range:
0.01 to 10 MMcf/d
[283 to 283,000 m^3/d]

Max. working pressure:
up to 10,000 psi [69 MPa]

Applications

Onshore and offshore wells using gas lift for artificial lift

How it improves wells

Modum Gas* gas metering control system manages gas injection rates into a well, maintaining the ideal flow rate with self regulation. This reduces gas lift costs and enables optimization of production. The technology also enables operators to make remote adjustments to accommodate changing well and system conditions.

In gas lift applications, the injected gas reduces the hydrostatic pressure of the fluid column and reduces the density of the hydrocarbons to enable flow to surface. If too much gas is injected, operating costs increase. When too little gas is injected, production suffers. With conventional technology, flow rate changes in one well also affect rates in other wells, making it difficult to optimize all of the wells in a system.

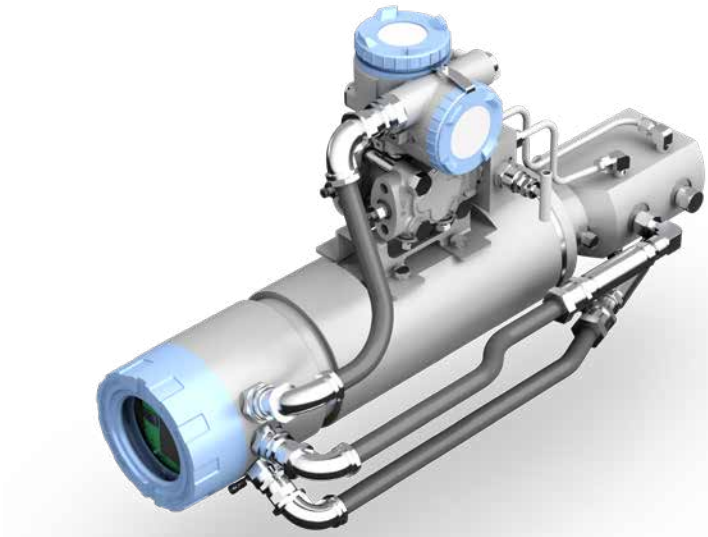
How it works

Modum Gas system is a smart valve integrating sensors, needle valve assembly, flow controller, stepper motor, and LCD. The sensors measure temperature, inlet and outlet pressure, and differential pressure (DP). The flow controller uses the pressure and temperature data and the stepper motor position to calculate the flow rate in real time. If the rate falls outside of the customer-selected drift range, the integrated needle valve is modulated to maintain the programmed flow rate target. Needle sizes can be optimized to suit the application.

The LCD on the valve shows real-time flow rate, valve position, pressures, voltage, and current.

What it replaces

Conventional manually controlled gas lift valves that are difficult to optimize and manage under changing well and system conditions.



Modum Gas system integrates a flowmeter, control valve, and flow controller to maintain optimal gas injection.

Additional information

Modum Gas system design is based on field-proven subsea chemical injection metering technology.

The self-contained device requires no additional modification on the flowline, which limits installation costs and footprint.

The flow controller can be connected to existing customer SCADA system or a Schlumberger AgoraGateway* ruggedized edge computing device to enable remote monitoring. Standard modules use Modbus® protocol; other communication protocols are available. No wireless or hardwired connection is required at the wellsite to view the LCD.

System testing confirms an accuracy of ±1% full scale. The accuracy is largely attributed to the precision needle and seat trim.

Modum Gas

Modum Gas System Specifications	
Flow range, MMcf/d [m^3/d]	Standard 0.01 to 6.00 [283 to 170,000]; available up to 10.00 [282,000] on request
Flow rate turndown ratio	600:1
Accuracy, %	±1 full scale
Pressure rating, psi [MPa]	Standard 5,000 [34]; available up to 10,000 [69]
Differential pressure range,† psi [MPa]	0 to 5,000 [0 to 34]
Temperature rating, degF [degC]	API Class P+U: –20 to 250 [–28 to 121]
Design codes	API Spec 6A, ISO 10423, NACE MR0175, ATEX, IECEx
Design life	20 years
Installation orientation	No restriction
Weight,‡ lbm [kg]	<110 [<50]
Process connections	NPT, autoclave, API flange, or customer specific
Meter type	Variable-area flowmeter (differential pressure based)
Materials	
Body material	316 stainless steel (SS)
Metallic components	316 SS, INCONEL® 718
Nonmetallic components (seals)	Kalrez 0090, HNBR
Valve trim	Precision needle and seat
Actuator	Low-power electric
ATEX enclosure	Certified Ex d
Actuator and Controls	
Power	24 V DC (<27 W)
Control type	Closed-loop control, position mode, and manual mode
Control mode	Closed-loop control, pressure-release mode, and manual mode
Communication protocol	Modbus TCP, Modbus RTC, message-queueing telemetry transport (MQTT), open platform communications united architecture (OPC UA)
Wireless	Optional Bluetooth and WiFi
Local display	Flow rate, valve position, pressures, voltage, and current
Hazardous area certification	ATEX, IECEx Ex d Zone 1
Ingress protection	IP68
Failure mode	Fail as is

All specifications are subject to change without notice.

† For low DP (up to 500 psi), a dedicated DP cell is used. For higher DP (500 to 5,000 psi), two pressure-temperature sensors are used to compute the DP. The uncertainty associated with the DP measurement is included in the overall accuracy of ±1% full scale.

‡ Dependent on valve size, connections, and other customer-specific options.

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