

Reduce Capital Costs

with FlexStream[®] Technology

MOGAS FlexStream Technology saves capital expenditures through fewer valves, less piping, less civil construction and less maintenance.

The gas storage and transportation industry is seeking ways to reduce their costs, while maintaining quality and efficiency. With control valves utilizing MOGAS' FlexStream Technology, this is possible in the underground gas storage and transport industry.

A customer —it could have been you — was able to lower their capital expenditure by reducing the cost of equipment, pipe and infrastructure by incorporating FlexStream Technology in their plan. As an added benefit, they were also able to increase the overall **safety** of the operation.



The original customer specifications sought noise attenuation measures. One valve manufacturer recommended burying the valve underground, which also required coating all metal parts with 16 mils of FBE. In addition, burying the valve would allow the noise to simply regenerate when the pipe comes back above the ground.

Challenging Specifications

Customer specifications requested that the control valve manufacturer had to recommend noise attenuation measures. These included below ground burial of the control valve, acoustical enclosures, or some other means to meet the specified maximum noise requirement of 80 dBA.

The specification called for the weld-end control valves to be provided with 24-inch (610 mm) long, pre-tested pipe pups welded to the valve. If the control valve manufacturer selected a below ground installation, then all metal parts had to be protected with a coating of 16 mils of Fusion Bonded Epoxy (FBE) to ground level.

The specification allowed the control valve manufacturer to recommend a multiple number of control valves or valve runs needed to achieve all different pressure, flow and noise requirements. The control valve manufacturer was also asked to provide optional monitor valves that would ensure overpressure protection for downstream piping, with a maximum allowable working pressure of 1415 psig / 94.5 bar g.

The specification from the customer required the final solution to include a minimal pressure drop across the fully-open valve, with the ability to achieve the maximum flow rate required with about 1200 psia / 80 bar a at the outlet.

Process Conditions

Measurement	Case 1	Case 2	Case 3	Case 4
Flow Rate, MMSCFD	715	40	650	715
ΔP , psig (bar g)	1950 (130)	1950 (130)	1923 (128)	<5 (0.33)
Required SPL at 1 M, dBA	<80	<80	<80	<80

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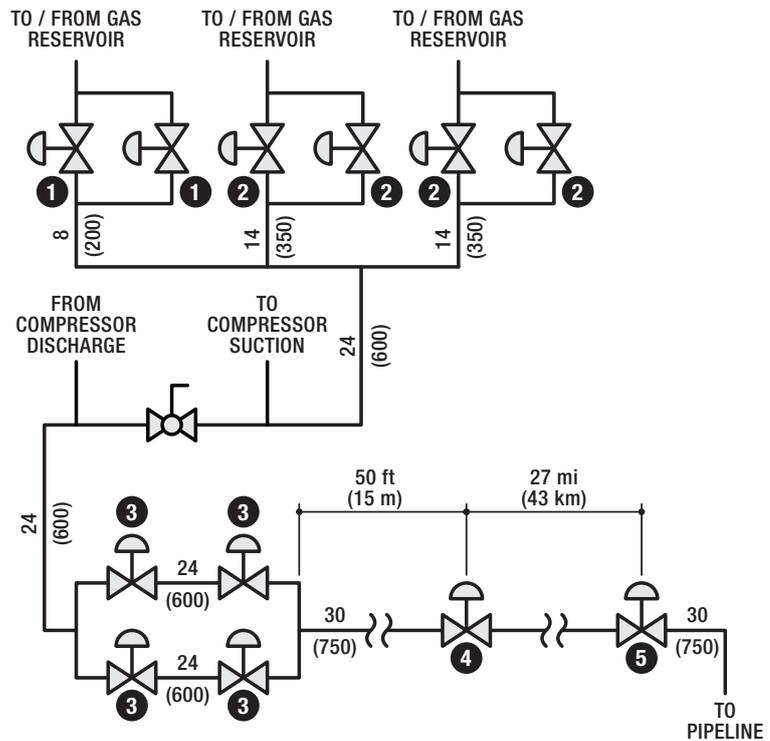
Inefficient Attempt to Satisfy Request

There were several areas of concern about this requested proposal:

- The client was prepared to purchase multiple valves to achieve the flow rates, pressure drops and noise requirements he sought.
- The client was willing to bury the valves at whatever depth the control valve manufacturer recommended.
- Neither the control valve manufacturer nor the client realized or understood that the noise they were trying to eliminate by burying the valves would simply regenerate when the pipe comes back above the ground.
- Bi-directional flow requirements through the cavern inlet/withdrawal valves would become a factor.

In an attempt to achieve what was required, a control valve manufacturer selected twelve [12] control valves (as shown in the illustration) with all pipe work below ground level.

Original Proposal



Pipe sizes shown in inches (mm)

Valve Specification

Valve Number	Valve Description	Valve Size		Class (ASME)	Qty
		inches	dn		
1	Pressure Control	8	200	1500	2
2	Pressure Control	14	350	1500	4
3	Worker / Monitor	24	600	1500	4
4	Back Pressure Control	24	600	600	1
5	Inter-connector Control	30	750	600	1

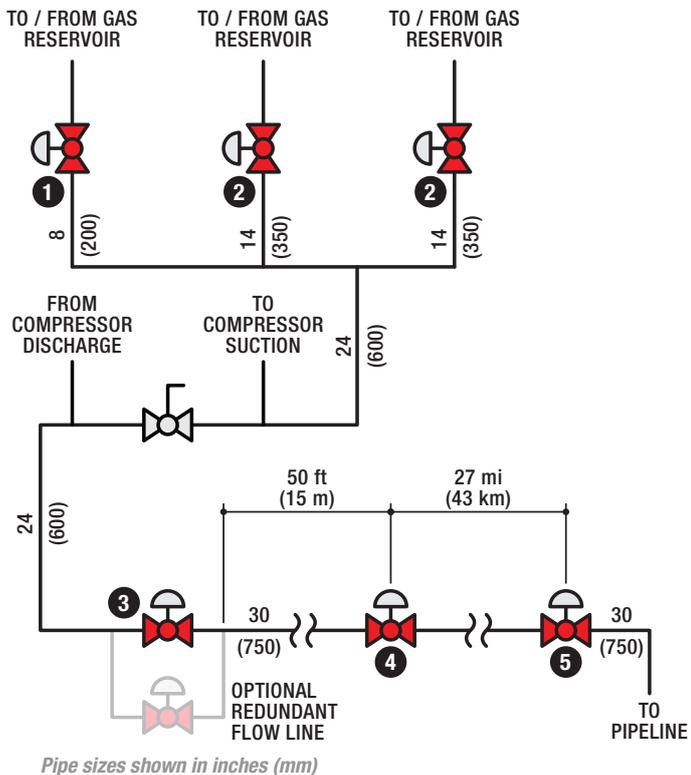
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Efficiently Meeting Customer Requirements

MOGAS recommended six [6] control valves above ground, all with FlexStream trim in the ball, instead of twelve [12], to meet the customer's requirements.

Revised Proposal Using FlexStream Technology



Summary

The utilization of MOGAS FlexStream Technology saved the customer capital expenditures through:

- less piping
- less valves
- less civil construction
- less maintenance

The MOGAS FlexStream Technology achieved the specified 80 dBA noise level with an above-ground control valve solution that significantly lowered the capital cost and increased the level of safety.

Valve Specification

Valve Number	Valve Description		Valve Size		Class (ASME)	Qty
	Duty	Type	inches	dn		
1	Pressure Control	FlexStream VCB	4	100	1500	1
2	Pressure Control	FlexStream VCB	8	200	1500	2
3	Pressure Control	FlexStream VCB	24	600	1500	1
4	Back Pressure Control	FlexStream VCB	16	400	600	1
5	Inter-connector Control	FlexStream VCB	30	750	600	1