

API-Cecom Group *n'fo*

Technical & Application Note A169

Application: Isolate and control the signal to a hydraulic control valve

Type of Company: Oilfield Services

Location: Texas

Problem: The customer is a leading oilfield services company. Their customer has an older induced hydraulic fracturing system that has to be upgraded. Hydraulic fracturing is a process used in natural gas wells in the United States, where water, sand and chemicals are pumped underground to break apart the rock and release the gas. The technique of hydraulic fracturing is used to increase or restore the rate at which fluids, such as petroleum, water, or natural gas can be produced from subterranean natural reservoirs. Hydraulic fracturing enables the production of natural gas and oil from rock formations deep below the earth's surface where there may not be sufficient permeability or reservoir pressure to allow natural gas and oil to flow from the rock into the well-bore at economic rates. Thus, creating conductive fractures in the rock is pivotal to extract gas from shale reservoirs. The upgrade uses a PLC for automatic control and a potentiometer for manual control. Both the PLC and the potentiometer output a 0-10 VDC signal but the hydraulic control valve requires a 4-20 mA input signal. The valve also needs isolation for the input signal.

Note: for additional information on this process see http://en.wikipedia.org/wiki/Hydraulic_fracturing

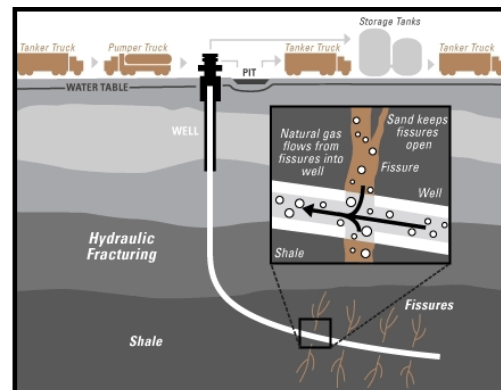
Solution: API furnished the customer an API 4385 G D. The API 4385 G D accepts the 0-10VDC control signal from either the PLC or the potentiometer and converts it to a 4-20 mA signal for the valve. The unit also provides full 3 way isolation so the end result is more accurate control of the valve.

Note: An alternate solution is to use the range specific API 4300 G



API 4385 G

Field Rangeable DC to DC Isolated Transmitter



Benefits of API's solution:

Availability of a standard unit to fit the customers application

Lower cost

API Unique Feature



LoopTracker

The API *LoopTracker* LEDs indicate the level of the input and/or output signal by varying its intensity. As the process signal increases, the brightness of the LED increases, and as the signal decreases the LED brightness decreases. Should a problem develop in the loop, such as a faulty device in the loop causing an incomplete path for current, the *LoopTracker* detects this and ceases to illuminate. This function works on both the input and output loop allowing the technician to diagnose the cause of the problem quickly and efficiently therefore minimizing system down time.

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