Application description AD/NATURAL_GAS_TZIDC Rev. A

ABB Positioners
TZIDC Positioner for the Natural Gas Industry

Economic use of natural gas as supply energy for valve control in gas compressor and distribution control stations

Increasing demand for natural gas as a clean, low cost energy has driven the need for more pipelines with compressor stations and distribution control stations as well as increasing capacity in existing facilities.

The control and regulation of the gas in these facilities is accomplished in part with control valves, typically using the natural gas as the supply energy to modulate the valves according to demand. The ABB Model TZIDC Intelligent Valve Positioner is the ideal device for such application avoiding the need for air compressors.

Natural gas pipeline networks rely on compressor stations along the lines to maintain continuous flow of natural gas between supply and consumers. The purpose of the compressor station is to boost the pressure in the pipeline and to remove any liquids or contaminates from the gas to provide sweet natural gas. The control of gas flow through the cleaning and boosting process is done by the local controls in the compressor station, positioning the control valves for suitable gas pressure and flow regulation.

Typical compressor station with scrubber plant

Distribution is the final step in delivering natural gas to customers. Most users receive natural gas from their local gas utility also known as a local distribution company (LDC). The LDC is responsible to accurately monitor and control the flow of the natural gas to end users to ensure efficient and effective service at all times.

Most compressor and distribution stations are fueled by a portion of the natural gas flowing through the station. The same natural gas is also used as the compressed energy needed to control the valves, instead of using compressed air. It is in these applications that the ABB Model TZIDC Positioner is ideally suited using this sweet natural gas as the supply energy, at pressures from 20psi to 90psi to control the valve actuators.

The added advantage of the TZIDC is the very low consumption during steady state position control, the consumption is best in class at only 0.015scfm ensuring lowest energy use.

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TZIDC positioner shown on rotary actuator

The TZIDC is suitable for Single Acting or Double Acting type actuators with an integrated safety function to move the valve to a safe position; either open or closed (referred to as fail safe) or hold last valve position (referred to as fail-in-Place) in case of loss or failure of the 4-20mA control signal. The selection of this option is depending on the application requirements.

User friendly installation and AUTO-CALIBRATION programming of the TZIDC ensures fast and easy setup and commissioning via local pushbuttons and clear LCD display providing visual indication of valve position. A comprehensive selection of kits is available from ABB to mount the TZIDC to the Actuator.

The following material provides more details of the Positioner and installation:

Document	Description
10/18-0.22-EN	TZIDC Data Sheet
42/18-84-EN	Operating Instructions
45/18-79-EN	Configuration Instructions
SD-10-4099	Installation Control Document

The TZIDC positioner is only FM Intrinsically Safe approved for: Class I/II/III Div 1 Group A, B, C, D, E, F, G. Consult factory for more information on approval and certification.

To comply with the installation requirement according to Factory Mutual (FM) the TZIDC need to be installed according to the guidelines as provided in the Installation Control Document SD-10-4099

The following list provides recommended TZIDC models for use in application when Natural Gas is used as supply energy.

TZIDC Model Options:

Single Acting Fail Safe with 4-20mA valve position feedback. Model: V18345-2022121001

Single Acting Fail-in-Place with 4-20mA valve position feedback. Model: V18345-2022221001

Double Acting Fail Safe with 4-20mA valve position feedback. Model: V18345-2022421001

Double Acting Fail-in-Place with 4-20mA valve position feedback. Model: V18345-2022521001

Note: Consult factory for more options that includes proximity limit switches for valve travel verification and/or ESD (Emergency Shutdown Device) module for process safety interlock function.

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