

SPARTAN

• 50777 •

DANGER

NITROGEN

* (1.16)H *

DANGER

NITROGEN

SpartanPRO™ Surge Relief

The next generation nitrogen pressure control system for liquid pipeline surge relief

spartancontrols.com

SPARTANPRO™ SURGE RELIEF

Nitrogen Pressure Control System



Providing the oil and gas industry with a more accurate and reliable nitrogen loading system for liquid pipeline surge relief control valves.

Liquid pipeline surge events during normal operation are caused by rapid changes in flow rate due to opening or closing valves, starting and stopping pumps, or the activation of emergency shutdown (ESD) devices. It is therefore imperative to have reliable surge relief in place to prevent leaks, damages, and injuries.

The purpose of a surge relief loading system is to control the nitrogen gas used to operate the relief valve. These valves need to be fast acting and relied upon to open fully in the event of a surge. Nitrogen gas is used to pressurize the valve piston and keep it in the closed position during normal operation. As pipeline pressure increases, the spring and gas pressure is overcome, and the valve opens.

CHALLENGE

Most loading systems are affected by changes in ambient temperature and are often susceptible to significant variations in pressure loading setpoints due to regulator drift, lockup issues, sensitivity to supply pressure, and leakage. These issues can result in substantial fluctuations in loading pressures and high nitrogen consumption.

SOLUTION

The SpartanPRO[™] Surge Relief system was developed to meet these industry needs. It consists of an electronic pressure controller, colour touchscreen HMI, digitally-controlled solenoid valves, a single stage high-pressure letdown regulator, pressure relief valves, high-pressure nitrogen gas supply cylinders and plenum cylinders, all installed within a heated and insulated NEMA 4 cabinet, certified for Class 1, Zone 2 hazardous area locations.

VALUE

SpartanPRO[™] Surge Relief enables you to: • Maximize product throughput by enabling operation closer to pipeline

- pressure limits
- •
- Reduce operating costs by lowering nitrogen consumption •
- Lower maintenance costs by reducing site visits
- system components

3

2

Eliminate setpoint drift associated with regulator-based systems Minimize unnecessary relief events by using reliable and fault-tolerant

Advantages

Very high accuracy of nitrogen pressure control

- Reliable surge overpressure protection, even at pipeline pressures close to • maximum allowable operating pressures
- No setpoint drift normally associated with regulator-based designs
- Advanced dual PID pressure control •
- Fully digital setpoints, alarm limits, and deadbands •

Extremely low nitrogen consumption

- Up to 1 year per nitrogen supply cylinder •
- Continuous monitoring of remaining nitrogen •
- Alerts and alarms on abnormal nitrogen supply and plenum pressures or • excessive consumption

Robust and fault-tolerant design

- Redundant high-cycle solenoid valves •
- Solenoid valve cycling duty optimization •
- Abnormal event alarms
- Automatic preservation of plenum pressure on loss of power, loss of nitrogen • supply, and system fault detection

Full colour touchscreen operator interface

- Intuitive graphic-based operation •
- Fully configuration capability from screen no laptop required •
- Real-time and historical trends
- Low ambient temperature and bright sunlight display •

Advanced remote connectivity

- Cellular connectivity, including smart cell phones •
- Monitoring for operation, events, trends, nitrogen consumption
- Alarms and alerts •
- Remote troubleshooting •
- Downloadable historical data and alarm summary •



EXPERIENCE INDUSTRIAL INNOVATION

SpartanPRO[™] Surge Relief



Specifications

SpartanPRO[™] Surge Relief leads the industry in performance, functionality and reliability. Designed, manufactured, and supported by Spartan Controls.

Pressure control accuracy N2 loading setpoint (digitally adjustable) Configurable deadband (digitally adjustable) Ambient temperature Number of N2 supply cylinders N2 supply cylinder water volume N2 supply cylinder pressure Number of plenum cylinders Plenum cylinder water volume Max plenum cylinder pressure Nitrogen consumption (1) Cylinder life (1) Power requirements (2) Hazardous area classification

Electrical certification Cabinet type Cabinet dimensions Weight Process connection to surge relief valve HMI display History collection sample rate History storage size Digital communication outputs Remote communications

6

>	+/- 3.5 kPag (+/- 0.5 psig)
>	70 to 4950 kPag (10 to 720 psig)
>	3.5 to 175 kPag (0.5 to 25 psig)
>	-40°C to 60°C
>	2
>	44 litres (1.55 ft3) (K-type)
>	15,180 kPag (2,200 psig)
>	2
>	66.8 litres (2.36 ft3) (Norris 10BC100)
>	12,420 kPag (1,800 psig)
>	Typically less than 30 SL per day
>	Typically 6-12 months
>	120 VAC, 8 amps
>	Class 1, Zone 2, EX 11A/11B T3
>	(Class 1, Div 2, Groups C, D T3)
>	CSA
>	12 GA steel, white powder coat epoxy paint
>	64" W x 32" D x 78" H
>	Approx. 1,000 lbs (excluding cylinders)
>	¾″ Swagelok tube fitting
>	7" LCD touch screen
>	5 seconds
>	6 months
>	Modbus RTU, RS485, and Ethernet IP
>	Cell modem



Call us or request a quote online 24/7

+ 1 (877) 278-6404 | +1 (403) 207-0700 | info@spartancontrols.com

