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Wire & Cable

High-Pressure Gas Injection System

Overview

Davis-Standard's unique high-pressure gas injection system functions as a precision pressure and flow control system. It is designed for 7,500 psig operation and is composed of two elements: a two-stage gas booster system with controls and an electronic gas delivery system. Advantages include a compact footprint, advanced pressure capabilities, ease of operation, and multiple safety features.

Features

- The pressure can be adjusted from 500 psig up to 7,500 psig, depending on the pressure feature chosen
- The system includes an injector body, injector filters, gas injector flow restrictors of various flow rates, a Dynisco pressure transducer, and stainless steel high-pressure tubing and fittings to interconnect the gas system with the extruder
- Equipment is PLC controlled
- Equipment is fully assembled in a compact, wall or floor mounted enclosure
- The PLC adjusts the pressure to maintain a preset pressure differential or a direct pressure
- Assembly of the complete package is functionally tested and calibrated prior to shipment

High-Pressure Gas Injection System

Features

The compact equipment enclosure (36" high by 48" long and 12" deep) has double doors for front access and sound attenuation panels to reduce noise levels. The package incorporates pressure and cycling speed control as well as convenient termination for on-site connection of drive air, inlet gas supply and discharge gas connection. Other system components are:

- Drive air filter for protection of the drive section of the booster
- Drive air regulator for controlling drive air pressure
- Drive air pressure gauge to monitor drive pressure
- Drive air speed control, isolating valve to control the booster's cycling rate
- 5 micron inlet gas particle filter for protection of the gas system components including the gas sections of the booster
- Inlet gas pressure gauge to monitor supply pressure
- Outlet gas particle filter
- Safety relief valve to protect pipe work and components downstream of the boost from over-pressure
- Outlet gas pressure gauge to monitor discharge pressure from the booster

Benefits Of Gas Booster Packages

The gas booster system consists of an air-driven two-stage booster with self lubrication PTFE seals, stainless steel components, and integral check valves. The maximum output pressure is 7,500 psig.

- No contamination. Booster gas sections are dry piston, non-lubricated and hydrocarbon free. They are also fully separated from the gas sections via three sets of dynamic seals.
- Drive sections require no airline lubrication
- Control to stop and hold at any preset pressure and restart under full load
- Easy installation with only three connections: drive air supply, inlet gas supply and outlet gas
- No special foundations required
- Automatic controls adjust to any pre-selected maximum outlet pressure and minimum supply pressure
- Safety relief valve prevents over-pressurization of downstream pipe work, vessels or components
- Reliable. No metal to metal contact and minimum number of moving parts

Benefits Of Electronic Control

The electronic control package includes all equipment downstream of the gas booster with the outlet pressure controlled by a PLC controlled pressure regulator. The PLC enables two operating modes:

Mode 1 – Pressure Differential

The PLC automatically adjusts the pressure to maintain a preset pressure differential at the output of the system. This differential is the difference between the gas pressure and the polymer pressure at the point of injection.

Mode 2 – Direct Pressure

Sets a constant gas pressure. The pressure differential or direct injection pressure is entered via panelview HMI. Pressure can be varied from 500 psig up to 7,500 psig depending on the pressure feature chosen

DESIGN PARAMETERS

Air Temperature	5° to 50° Celsius
Humidity	10% to 90% non-condensing
Elevation	Less than 1,200 meters above sea level
Commercial/Technical Language	English
Documentation Language	English
Panel Labels Language	English
Quantity of Technical Documents	2 sets, final
Meters and Gauges	Imperial
Base Paint Color	Davis-Standard Blue, PT1000021