paladon
TOTAL VALVE CONTROL

ODOURISERS

For Oxygen & Natural Gas Lines

COMPANY

For over 30 years Paladon Systems has been supplying valve actuators and control systems on a global basis.

Since its inception in 1981, Paladon Systems has continuously developed its design, engineering, organisational, quality and management capabilities. Today Paladon Systems designs and manufactures many valve automation technologies that lead the industry in terms of cost efficiency, operational performance and environmental responsibility.

Paladon Systems' vast experience with supporting the Oil, Gas and Power industries with valve automation solutions for the most critical applications in extreme operating environments has resulted in product designs that offer unsurpassed quality and reliability across all industries and applications.

Holding ISO 9001 certification for over 20 years, today Paladon Systems hold accreditation and approvals from almost all major institutes, engineering companies and end users.

Headquartered in England, Paladon Systems has offices and facilities in Scotland, Italy, Malaysia, the Russian Federation and the United States. With a comprehensive suite of valve automation solutions backed by a dedicated team of field service engineers, Paladon Systems is **Total Valve Control**.

INTRODUCTION

Oxygen and natural gas are naturally odour free and therefore will often remain undetected in the event of a leak. Since both gases are highly flammable, undetected leaks can often result in serious and often fatal fires and explosions.

By adding odourants to oxygen (Di-Methyl Sulphide (DMS)) and natural gas (Mercaptan) supplies, leaks can be detected well before concentrations reach levels at which they could ignite.

Paladon Systems oxygen and natural gas odourisers are supplied as turn-key and fully tested systems and therefore installation is quick, simple and inexpensive. In addition, Paladon Systems Service Technicians are available to assist with all aspects of installation and commissioning.

OXYGEN ODOURISERS

Overview

Paladon Systems oxygen odourisers are the only systems approved in the UK by the Health and Safety Executive (HSE). They are fully automatic dosing systems and operate using the injection principle. A solenoid driven membrane pump injects the odourant into the main oxygen line operating up to 20 Barg. The dosing frequency is controlled by an electronics package that analyses the output of an oxygen flow meter. The pump circuit is certified intrinsically safe, and is suitable for operation in a Zone 1 area.

Construction

Manufactured as a small skid assembly fabricated from steel section, the systems include all internal piping, wiring and control components. The side walls are panelled with expanded mesh. Globe valves are used to isolate the skid unit from the main oxygen line, and a check valve prevents odorised oxygen returning to the vaporiser and bulk storage area.

A single or three phase AC power supply is required to operate the system, and is connected directly to the control unit which is mounted in a weather-proof housing. The control unit is mounted in a safe area at least three metres from the injection skid.

The receiver vessel for the DMS supply is permanently installed on the skid, and has a capacity of 40 litres. The DMS is supplied in 10kg containers, and the tank filled via a unique filling system designed by Paladon Systems to ensure that that no DMS escapes during the filling process.

NATURAL GAS ODOURISERS

Overview

Paladon Systems Natural Gas Odourisers have a proven track record on a global basis for over 30 years. Operating in widely varying environments on high pressure transmission lines down to low pressure domestic distribution systems, the units remain maintenance free for extremely long periods of time. Using only the mainline gas as the energy source, and being fully automatic, the systems are ideally suited for unmanned and remote locations.

Injection Odourisers

Injection odourisers are typically used on large diameter pipelines operating at medium to high pressures and at high flow rates. Measurement of the gas flow rate is usually by means of an orifice plate in the mainline which results in a pressure differential. The flow proportional signal is converted within the odouriser to a standard pneumatic control signal. The control system is then used to drive a reciprocating plunger type pump, and so the frequency of operation is directly proportional to the flow rate. Odourant is drawn from the storage vessel through the pump to the mainline injector and the injector incorporates a check valve to prevent gas feeding back to the odouriser system. The odouriser is supplied as a fully assembled and piped and skid mounted unit and requires only three connections to the main gas line. These systems give operators the following advantages:

- Standard construction, well proven standard components, giving long service life
- No external energy requirements
- No gas meters required
- Constant concentration of odourant in gas over a wide range of flow requirements (temperature and pressure compensation can also be included to cover fluctuating and operating conditions)
- Single skid mounted construction

NATURAL GAS ODOURISERS

By-pass (Absorption) Odourisers

By-pass odourisers are typically used on small diameter low pressure pipelines with low flow rates. By-pass odourisers operate using the absorption method. A differential pressure is developed in the main gas line by throttling the gas flow so that the by-pass flow generated by the differential pressure is proportional to the flow in the main gas line. The by-pass flow passes into the vessel containing the odorising agent, and becomes saturated with it.

The complete odouriser system is mounted onto a common baseplate, and equipped with all piping necessary to allow quick and easy connection to the main gas line. The odourising vessel is manufactured from carbon steel in accordance with the customer's required pressure vessel code and to a pressure rating of 16 Barg (232 psig). The odourant is supplied from a storage tank to the odourising vessel where it is absorbed into the by-pass flow from the main gas line. Shut-off valves are arranged so that the unit can be completely isolated from the main gas line and to allow the odourising vessel to be recharged whilst the system is in normal operation. These systems give operators the following advantages :

- Proven reliable design
- Simple construction easily maintainable on site
- No external energy is required as the throttle valve generates the necessary differential pressure
- No gas metering is required
- The unit is supplied pre-assembled and tested ready for installation
- There are no moving parts

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