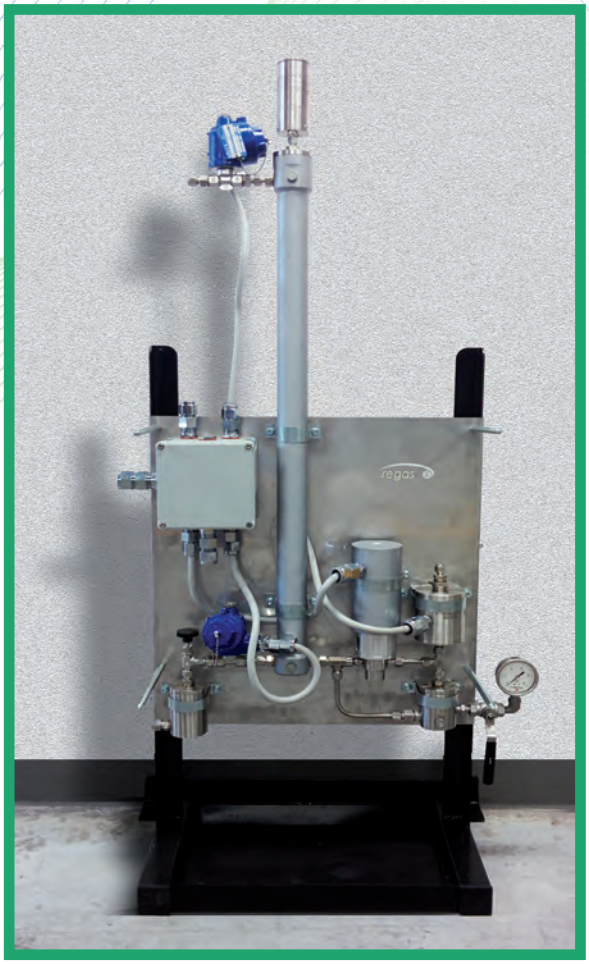
OMNICUBE INGRID

Automatic direct injection odorant dosing system

Patented PD 2006 000270 direct injection odorisation



Omnicube Ingrid

It replaces the traditional mechanical bypass type odorisation and improves on existing automatic odorant dosing systems through:

- Automatic adjustment of odorisation rate through high resolution injection
- Continuous control of the amount of product injected
- Measurement of the amount remaining in the service tank in mass or volum
- Proprietary or third party remote control for real time remote monitoring of:
  - Odorisation rate
  - Residual level in tank
  - Machine blocking
  - Amount of odorant injected

The system is based on the MODBUS protocol and allows full interoperability with different SCADAs

Omnicube can be powered from the mains (220V) or by off-grid PV systems and UPS

Advantages of the system

- Homogeneus odorisation even with fluctuating and low flow rate
- High precision, direct measurement of the amount of product injected and remaining in the tank
- Compatible with a variety of remote control systems
- Can be used on various types of tanks and existing installations
- Robust and compact design

Main features

Pneumatic Section

2 +1 liquid phase filters
Liquid phase solenoid valve
Gas phase solenoid valve
Magnetostrictive level sensor and surge tank
Bypass mode automatic switching valve

Materials

Panel: stainless steel A304 and A316
Seals: PTFE and Viton
Injector unit: stainless steel A304
Surge tank: stainless steel A304
Electronic level: transducer housing A304, sensor tube and float A316
Solenoid valves: stainless steel A304
Bypass switching valve: A316
Fittings: stainless steel A304 and 316

Weight

30 kg

Pressure Resistance

Standard: PS 16 bar (g)
HP: PS 85 bar (g)

Max odorisation capacity

1 injector: 2 l / h
2 injectors: 4 l / h
HP version: up to 40 l / h

Operating temperature

-10°C ÷ +60°C

Installation

Wall mounted
Frame mounted
In both cases the collection tank is incorporated

Liquid phase filter

Cartridge: stainless steel A305 printed
Filter capacity: 60 µm
Filter surface: 3 x 2050 sq mm

Integrated electronic level

Magnetostrictive technology
Accuracy: up to ± 0.5 mm
Resolution: up to 0.1 mm
Power input

Liquid phase and gas phase solenoid valve

Phase surface:
- Standard version: 5 sq mm
- HP version: up to 200 sq mm

Type: Solenoid valve
Power: 12V DC

Pump motor

Magnetic drive pump
Seal free
Gears in Peek
Power: 12V DC

Injector unit

Variable openings
Up to 130 cycles per second
Power: 12V DC

Bypass mode valve

On / off mixed operation
Operation without gas motor
Power: 12V DC

Connections

Tank:
- Liquid phase: 10 mm with Twin Ferrule fittings
- Gas phase: 8 mm with Twin Ferrule fittings

Gas pipe: 1/2" male thread gas

Procedure

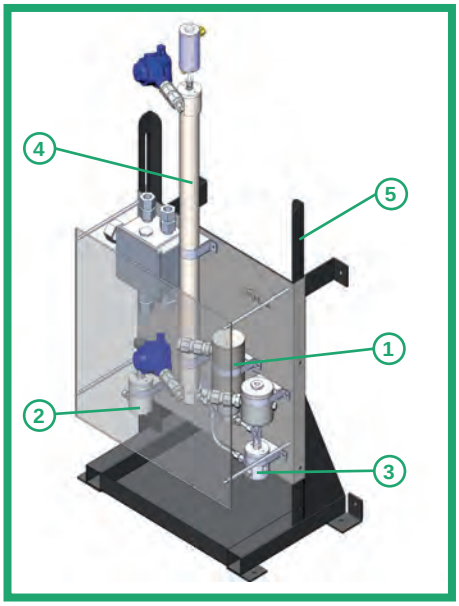
Running
Lapping
Washing

Compatibility

Pneumatic: Zone 1 Class 2
Control electronics: area not classified

Regulatory Compliance

EN 60950, EN 61000-3-2, EN 61000-3-3, EN 55022, EN 50082-1, 73/23/EEC, 89/336/EEC, 1999/5/EC, UNI-EN 12186:2006

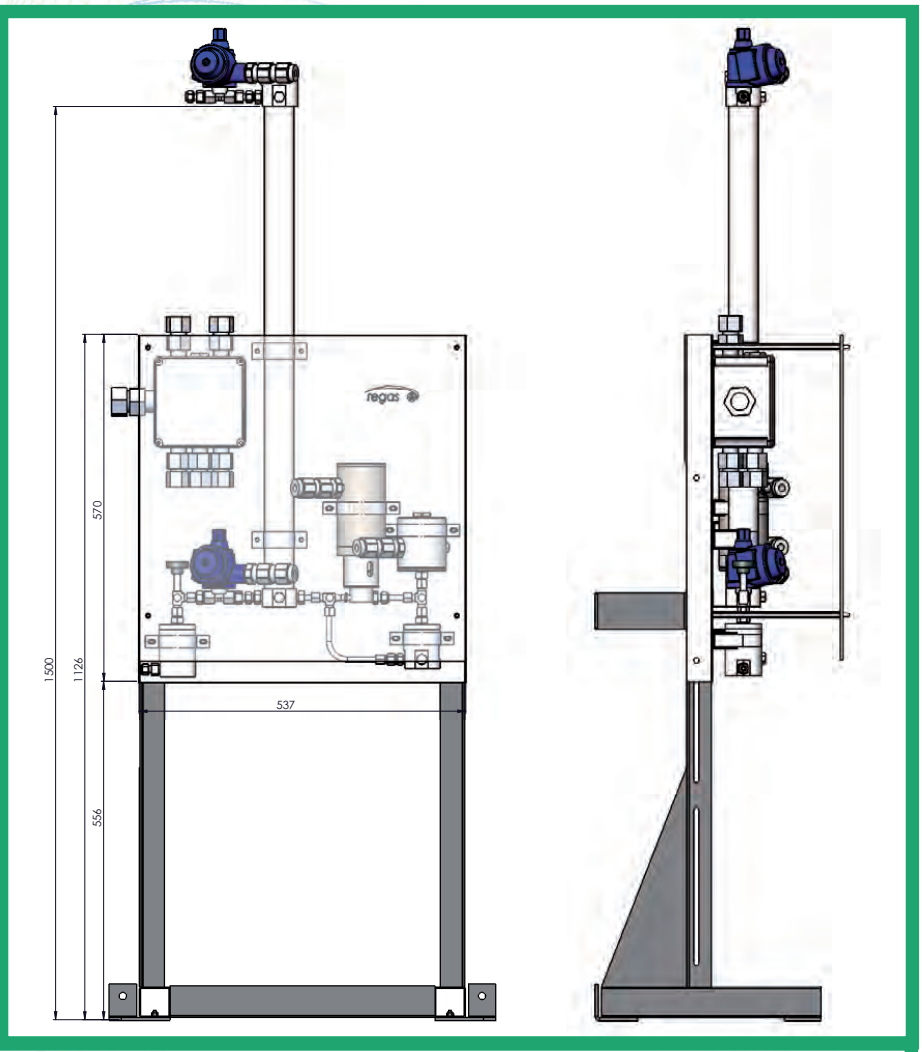


Omnicube Ingrid: 1. High efficiency magnetic drive pump - 2.3. Double liquid phase active filtering - 4. Integrated elettronic level - 5. Compact and versatile frame

Control Systems Available for Standard and HP

	ISI	ISI pro	UPTLC
COMPATIBILITY	Proprietary system inputs / outputs open collector mode	MODBUS-based multi-compatible system	Dedicated system for communication to Itron / Actaris / Schlumberger SCADAs
INPUTS	1 analogue input 4-20 mA odorant level 1 configurable analogue input 4-20 mA 1 input flow corrector (pulse or analogue 4-20 mA) 1 iconfigurable digital input of which 3 as counters		1 analogue input 4-20 mA odorant level 7 iconfigurable analogue inputs 4-20 mA 1 digital input opto-isolated flow corrector not powered 2 ÷ 5 mA 11 configurable digital inputs of which 3 as counters
DIGITAL OUTPUTS	1 output +24 V DC 50 mA to power supply to isolators and sensors 3 opto-isolated digital outputs: • Repeat gas flow • Amount injected • Programmable		2 outputs +24 V DC power supply for sensors and isolators 2 outputs 24 V DC 100mA power supply for sensors and isolators not current limited 2 remote control outputs 1 opto-isolated digital output 3 opto-isolated digital outputs: • Repeat gas flow • Amount injected • Programmable
ANALOGUE OUTPUTS	2 analogue outputs: • Odorisation rate • Odorant level		
CONNECTOR	1 RS-232 port for local connection 1 port for external modem DCE		
CONTROLS	1 Pump motor 2 Injectors 2 Solenoid bypass mode valve 2 Liquid phase solenoid valve 2 Gas phase solenoid valve		
POWER INPUT	Main: 230V AC 50 Hz RTU Power: 12 V DC (11 to 14V) 2A Odorant panel: 12 V DC (11 to 14V) 2A Power fail detection: from main 230V AC 50 mA		
VIRTUAL CHANNELS (measured variables)	Gas volumes: instantaneous, daily total, monthly total Odorant dosage: mg / smc Odorant tank level: 0 to 100% Odorant concentration: mg per single injection Odorant Count: pulse / g		
CAPACITY STORAGE	Local storage of 96 daily values and for each variable for a maximum time of 15 days		
INTEGRATED UPS	Lead-acid battery 12V 7.2 Ah Life: variable		
LOCAL INTERFACE	4x20 backlit LCD display with adjustable contrast 21 key membrane keyboard		
RECORDING TREND	Variables: • Gas volume times • Odorant dosage • Odorant level • Odorant concentration Recording Frequency: every 15 minutes		

Dimensions



Omnicube Ingrid :
Front and side view with different position