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VERTICAL GAS SEPARATOR

LRQA CERTIFIED
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UKAS MANAGEMENT SYSTEMS
0001

REPCo
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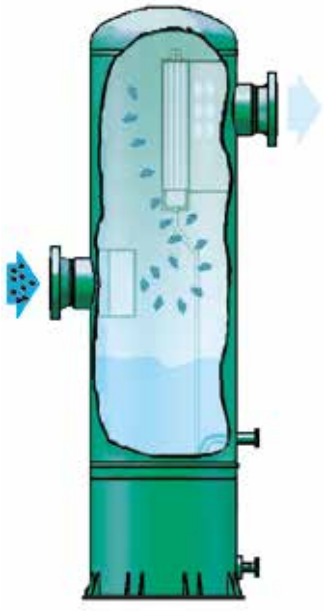
General Principle of Operation



REPCo's Vertical Vane Type Gas Separators are designed to handle both high and low gas-liquid ratios. They are especially recommended for applications where heavy liquid entrainment causes a slugging problem.

In addition to the vane bundle, these separators employ many physical features to separate the liquids from gases. The resulting separation forces are: centrifugal, gravitational, impingement and surface tension.

Inlet Baffle

The first stage of separation is performed by the Inlet Impingement Baffle, which acts to eliminate liquid slugs or excess amounts of liquid within the gas stream. As the liquid slugs come into contact with the baffle, they are deflected, broken down and collected in the reservoir at the bottom of the vessel. After the removal of the majority of the entrained liquid or slugs, the gas moves upward to the vane bundle located above the inlet baffle. During the rise, a centrifugal and gravitational action takes place, separating more of the entrained liquid (large droplets).

Mist Extractor (Vane Type)

REPCo's Vane Type Mist Extractor operates on impingement, centrifugal motion and surface tension to obtain its high efficiency. As the gas enters the unit, it is subjected to multiple changes of direction and compression as it passes through the vane bundle. The liquid droplets, being heavier than the gas, are therefore subjected to inertial forces, which throws them against the walls of vanes. The entrained liquid adheres to the vane surfaces and moves into the vane pockets and therefore out of the gas stream. This liquid is then drained via gravity from the vane elements into the liquid reservoir.

NOTE: Vanes differ from wire mesh meaning that they do not drain the separated liquid back through the rising gas stream. They are also not effected by flooding, blocking or loss of performance as experienced by their cyclone equivalent when operating outside its intended design parameters. A cross section of the bundle showing the associated pockets is shown in cross section view (Fig A).

Fig. A
Cross section view of REPCo vane unit

Efficiency

REPCo's Vane Type Mist Extractor is guaranteed to remove 99% of all liquid particles from 5 microns and larger. This efficiency approaches 100% as particle sizes increase and is maintained from virtually zero flow to maximum rated capacity. For extremely fine particles, it is possible to install/add coalescing elements (demister type) in order to increase the microns droplets size (from below 5), so that they can be easily removed by the Mist Extractor.

Pressure Drop

The configuration of REPCo's Vane Type Mist Extractor ensures a large open area so that the pressure drop is kept very low. The typical average value of pressure drop across the vane bundle is approximately 150 mm H2O at recommended operating conditions (standard design).

Separation (and/or recovery) of the liquid occurs continuously and consistently under full process operating pressure and remains unaffected by varying flows and conditions that are induced by reciprocation, pulsation, or centrifuge equipment upstream and/or large turndowns that are often experienced by multi gas turbine power plants.

The range of service applications and uses are virtually unlimited for all industrial plants where efficient liquid separation is required, taking place under any temperature, pressure, or erosive, corrosive, flammable, toxic, volatile, or similar conditions where entrained liquids must be separated.

Instructions

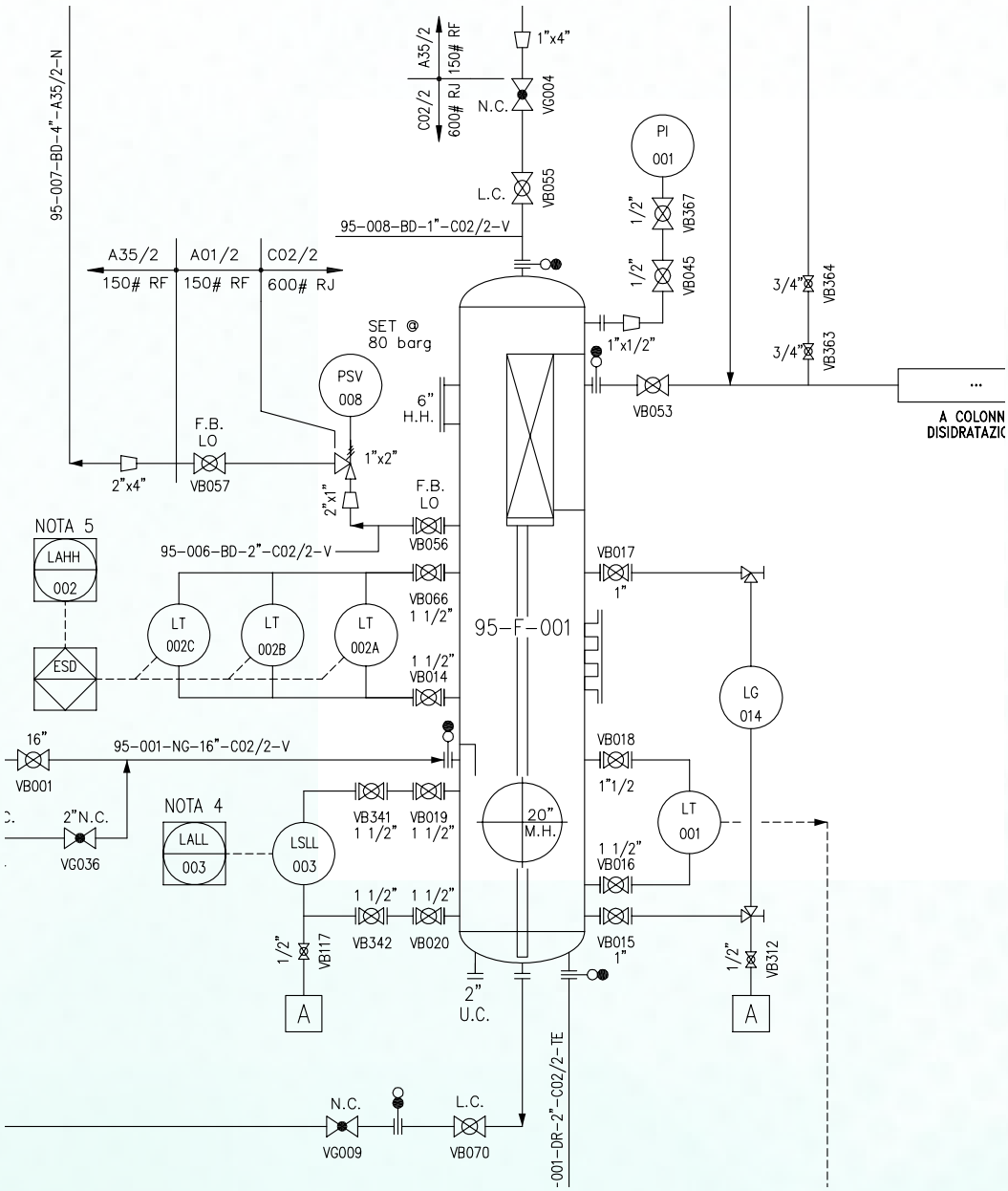
These instructions are valid for all of REPCo's Vertical Vane Type Gas Separators.

A) Installation

- Connect the separator to the relevant piping, observing the correct inlet/outlet positioning, as indicated in the drawings and in the separator itself.
- Verify that all the pressure indicator connections, vents, drains, etc. have been assembled in the correct way and are ready for use.
- Give pressure to the separator and verify the total absence of leaks.
- Place the separator into service.

B) Maintenance

One of the most advantageous aspects of the equipment is the need for very little maintenance operations.
There are no moving parts, no valves... and therefore no maintenance.
In presence of very thick fluids, it may be necessary to steam-clean the vane bundle.
In this case, the separator will be equipped with a suitable access port.



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