IN-LINE INTRUSIVE AND NON-INTRUSIVE SPARGER INSTALLATION AND OPERATION NOTES

mott
MISSION CRITICAL PRECISION

OVERVIEW

The in-line intrusive sparger element and/or non-intrusive GasSaver® sparger allows introduction of tiny bubbles into a turbulent flowing stream of liquid. The bubbles are produced by forcing gas through micron sized holes in the Mott porous metal diffuser element while flowing liquid across the porous metal surface. The surface flow ensures fine bubble propagation by shearing off surface bubbles as they are forming. Porous metal, while quite strong, can be damaged by abrasion, contact with a hard object and contaminants. The effect of the damage and contamination is to close surface pores that reduce gas flow through the porous metal.

TAKE THESE PRECAUTIONS

- Handle the element with clean, oil free hands or clean gloves
- Do not rub the element across hard edges during installation
- In aqueous application, prevent the use of oil on the porous metal. Oils have a great affinity for porous metal and is difficult to remove with compressed gases
- Ensure that the gas is filtered to the Media Grade of the element
  - Mott Media Grade 2 (2 micron nominal)

INSTALLATION NOTES

The element inlet should be fitted with a suitably sized gas pressure gage, check valve, shut off valve, flow meter, flow controller, pressure regulator, and filter.

The liquid process line should have a valve upstream of the sparger element and another one downstream of the sparger. There should also be dissolved gas monitors downstream of the element to aid in monitoring the gas levels.

Prior to any liquid flow, a low pressure pneumatic leak test should be performed prior to start-up.

Note: Gas flow should be maintained at all times when there is liquid present. Always start gas flow before introducing liquid. Do not stop gas flow until liquid is no longer present. This prevents liquid backflow through the porous element, which could result in fouling of the element.

Sparging Process

TYPICAL START-UP AND OPERATING PROCEDURE

Adjust to application as required -

- All valves should be closed
- Open downstream liquid process valve
- With no liquid in pipe line, open the gas valve and adjust the flow to the operating conditions
- Open upstream liquid process valve and adjust to the operating conditions
- Adjust gas flow to achieve the desired mixing results

FOR SHUT-DOWN

- Close upstream liquid process valve
- Close downstream liquid process valve
- Close gas inlet valve
- Note: element will still be under pressure
- Relieve pressure and remove liquid from isolated pipe line if feasible

TROUBLESHOOTING

Insufficient Gas Flow:

- Undersized gas regulator or supply. Gas system should have sufficient capacity.
- Low gas pressure. Gas pressure should be greater than the liquid system pressure and pressure drop of the gas through the element.
- Liquid system pressure is too high. Liquid pressure should be lower than gas pressure plus the pressure drop of the gas through the element.
- Plugged element. If increasing gas pressure does not increase gas flow substantially, the element may be plugged. In this case the element should be removed and cleaned.

Ineffective Gas/Liquid Mixing:

- Liquid flow may be too low for adequate shear for fine bubble propagation (Liquid flow should be a minimum of 5 ft per second at the element).
- Insufficient gas flow and gas pressure. See notes above.
- Insufficient length of straight pipe downstream of element. Reposition sparger or install a residence tank to allow time for gas to dissolve in the liquid.