

APPLICATION NOTE - VAPORIZER SYSTEM FOR GLASS SURFACE TREATMENT

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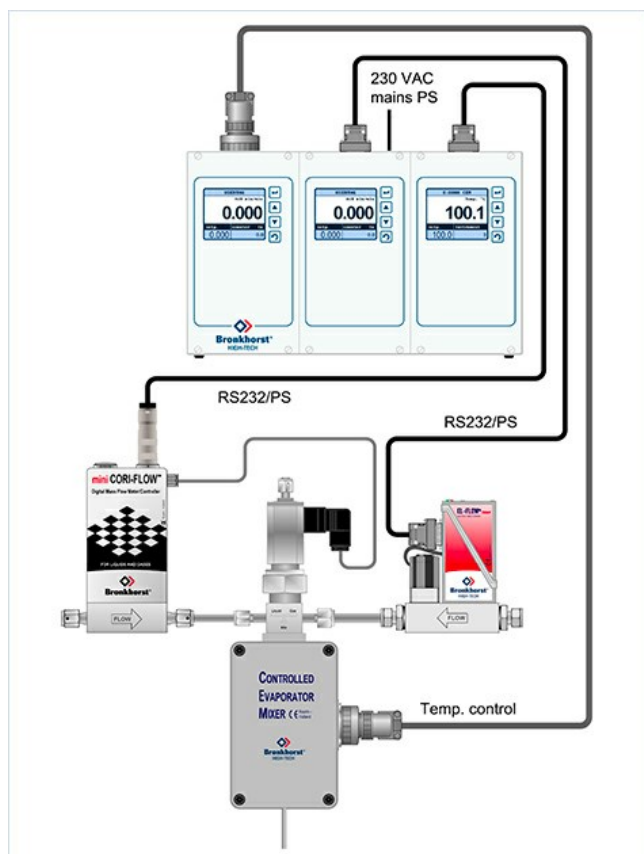
The application of paint or labels to surfaces can be trickier than one would expect. Just as in applying paint to a wall in one's home, if the surface is not properly prepared the result will be less than perfect. A leading manufacturer of glass coating equipment was looking for a way to improve their coating process and increase their competitive advantage.

The process involves driving HMDSO (Hexamethyldisiloxane) vapour through a flame for surface treatment of glass. The end result is obtaining a hard SiO_x-like (Silicone Oxide) thin film leading to a more wettable surface prior to painting or labeling. Initially the customer had tried using a syphon tube in the liquid HMDSO source that sucked up liquid into the fuel stream and into the burner. This was unsuccessful as it resulted in a very unreliable liquid flow because liquid draw was based on gas velocity. Next, the customer tried using a bubbler system. With the bubbler the customer found that the vaporization changed with bubbler liquid depth, delta P, temperature, and other uncontrollable factors. Also, neither of these two processes provided recordable data feedback, so variations in surface treatment could only be detected at final product QC.



Application requirements

The Bronkhorst® solution was to provide a system where the HMDSO vapour added to the flame could be accurately and precisely controlled. This was done through using a mini CORI-FLOW mass flow controller for the control of HMDSO liquid, an EL-FLOW Select thermal mass flow controller for the carrier gas, a Controlled Evaporator Mixer (CEM) to completely vaporize the HMDSO, and an E-8000 readout/control unit to power and control the vaporizer system. Since implementing the Bronkhorst® CEM system this customer has reduced the cost of materials as they are using precisely what is needed in the process, improved product quality as any variations can be seen and adjusted early in the process, and now has archived data for documentation and review.



Recommended Products



EL-FLOW SELECT F-201CV

Min. flow 0,16...8 mln/min
Max. flow 0,5...25 l/n/min
Pressure rating 64 bar
Compact design
High accuracy and repeatability



MINI CORI-FLOW™ M12

Min. flow 0,1...5 g/h
Max. flow 2...200 g/h
Pressure rating 200 bar
Independent of fluid properties
High accuracy, fast response



CEM EVAPORATOR W-102A

Max. 30 g/h liquid;
Max. 4 l/n/min gas
Pressure rating 100 bar
Very stable vapor flow
Flexible gas/liquid ratio



E-8000 SERIES

Digital Readout / Control Systems

Bright, wide angle, 1.8" display (TFT technology)
User friendly operation, menu driven with 4 push buttons

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