FLOW METER ACCURACY, REPEATABILITY AND LOW BLOW BY FOR LOW VISCOSITY REFRIGERANTS AND BLOWING AGENTS

Background:

Freon® and other fluorocarbons share the characteristic of being a low viscosity liquid. To accurately measure these fluids with a positive displacement meter requires both tight machining clearances within the meter and a minimum pressure differential to reduce internal blow by. Max Machinery's line of piston flow meters achieves both of these requirements and is used extensively in the urethane foam industry as well as the refrigeration charging industry.

In the Urethane foam industry, fluorocarbons are used as blowing agents to create open cells within a urethane matrix. The density of the foam is based on a precise amount of blowing agent. This agent must be evenly distributed throughout the foam so as to provide a homogeneous final product. Lack of on-the-fly control or the inability to measure the amount of blowing agent that is being added to the mix will destroy hundreds of feet of foam and waste thousands of dollars in raw materials and production time. To prevent inconsistency in the final product, foam manufacturers use Max meters to measure and control their foaming process.

In the refrigeration industry, the fluorocarbon liquid is used as the heat transfer medium. Achieving the stated cooling capability of the compressor requires that the proper amount of refrigerant be placed into the unit during assembly. The filling application adds an additional challenge in that the process calls for the starting and stopping of the flow stream with each filling cycle. Positive displacement meters are well suited to batching applications and are not affected by On/Off flow or changes in flow profile. The high resolution of the Max meter also aids in the ability to achieve accurate shut off of the flow and precise determination of the amount dispensed into the product.

MAX Equipment Specified: The *MAX-214* meter, with its 10 ml/revolution displacement is the industry standard for accurate filling over a wide flow range (0.008 to 8.3 kg/min). When combined with the 294 Series of transmitters, the Model 214 can provide 75 pulses/gr or produce a fully linearized 0 to 10 Volt or 4 to 20 mA output for more steady state flows.