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## TECHNICAL BULLETIN: Utilizing McMillan Liquid FLO-SENSORS in Copper Sulfate Applications

McMillan flow sensor and controller products utilize McMillan's patented microturbine design. The microturbine wheel features 8 small evenly spaced around the center of the wheel. As the wheel spins and infrared beam is projected through a PTFE window and onto the wheel. A sensor on the other side of the wheel detects each hole and translates those signals into pulses. Thus, as the wheel spins faster, more pulses are generated. When the wheel stops, no pulses are generated. The pulse output is then processed and converted to a non-isolated analog output, either voltage or current.

This design works well with transparent liquids, acids, slurries and other liquids used in the semiconductor Industry. Certain chemicals, such as copper sulfate, have physical properties that tend to absorb McMillan's standard frequency of infrared light.

McMillan has developed a custom version of their microturbine technology with altered optics to compensate for this IR absorption. This is accomplished using a different emitter, which projects a beam of another frequency, in conjunction with a detector that has a higher level of sensitivity. The circuit board has been modified to automatically adjust these components as the concentration of copper sulfate changes. Whether the liquid is DI Water or concentrated copper sulfate, the automatic gain compensates to assure that sensor performance is not affected.

McMillan has hundreds of sensors with this feature in the field with years of reliable service on copper sulfate lines. These altered electronics can be specified on any 106 (analog output only), 106S (analog only), 108 (analog only), U702, U706, or U802 product by adding the "CS" suffix. Additional costs may be incurred.