

Micro Motion® Transducer Improves Repeatability of Solvent Density Measurement

BENEFITS

- Precise solvent composition
- Improving quality of the final product (insulin)

APPLICATION

Precise density measurement helps in solvent preparation in HPLC (High Performance Liquid Chromatography).

CHALLENGE

An accurate and extremely repeatable density measurement was required to achieve exact solvent composition used in HPLC (High Performance Liquid Chromatography) at a human insulin production plant. The requirement was for isopropanol/water composition to vary in a constant, preprogrammed way during batch production to get the best possible results on the end of the production line. Live density measurement is compared with a time-scaled composition database to provide feedback to the regulating system.

SOLUTION

A Micro Motion® 7847 density transducer combined with 9000 Series pressure transmitter and 7951 signal converter were chosen to meet the customer's requirements. The density measurement is temperature and pressure compensated to give the most accurate results. The process temperature is very stable so no external temperature measurement is required. The medium is pressurized to 1.1–1.2 bar-g to avoid any possible gas entrainment (despite the degasser installed before the inlet to the density transducer). All signals are delivered via shunt diode barriers into the 7951 signal converter and the live compensated density value is forwarded via Modbus RTU to the customer's system. The overall performance of the system with standard factory calibration is more than



Accuracy of 0.00005 g/cm³ and repeatability of 0.00005 g/cm³ were reached.

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Figure 1. Installation of 7847 tube densitometer



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satisfactory: accuracy of 0.00005 g/cm^3 and, what is more important in this particular application, repeatability of 0.000005 g/cm^3 were quite easily reached. In other words, the end product is claimed to be one of the cleanest in the world—with a little help from Micro Motion.



Figure 2. Installation of 9000 Series pressure transmitter.

