

Application News

Magnetic Flow Meter Measures Juice Flow From Grape Presses

Industry: Food/Beverage

Service: Batching

Fluid: Grape Juice/Wine

Overview

For wineries, the production of wine, champagne and other juice-based products requires precise fluid flow measurements. Grapes arriving in bins are weighed before going into a stainless steel press. The press is a rotating drum with a bladder inside. As the bladder inflates, it presses the grapes against the side of the drum and squeezes out the juice in the process-leaving behind varying quantities of dissolved solids.

Situation

Modern wineries require sanitary flow meters that can be connected to large grape press operations. Grape pressing is done in batches, and the different grapes (and juices) are separated for use in producing various wines. The juice is put into storage tanks, with a known type and quantity of juice contained in each vessel.

A large Napa Valley, California, winery needed to know the precise volume of juice it had pressed in order to forecast its wine production for the season. The winery also wanted to use flow meters to accurately measure the amount of juice or wine transferred from tank to tank, or from tank to barrel, after the pressing process was completed. This situation required meters equipped with mating flanges and hose barbs, allowing the instruments to be used with flexible lines in order to move product from tank to tank.

The winery's previous flow measurement system was not particularly accurate, nor did it work well for juice/wine transfer. Furthermore, the old meters were difficult to remove from the grape press piping for cleaning and routine maintenance.

Solution

Flow Technology's EL 2400 Series Electromagnetic Flow Meter was ideally suited for the winery application. This new generation of sanitary meter covers a temperature range from -40 to 284°F and is available in line sizes from 1-inch through 4 inches. The EL 2400 Series is manufactured from 304 stainless steel and internally lined with PTFE. The meter can be supplied with either Tri-Clamp or DIN 11851 end connections.

With the EL 2400 Series, the winery's maintenance engineers can flush the grape press system without removal or disassemble of the flowmeter—a great time saving benefit. The ability to easily remove the meter from the grape press piping and connect it into a mobile transfer stand in a matter of minutes is an added bonus. The EL 2400 is tolerant of dissolved solids in the grape juice, and its accuracy of $\pm 0.2\%$ of reading, and repeatability of $\pm 0.1\%$, are much better than the $\pm 0.5\%$ provided by the old system.

System Description

The EL 2400 Electromagnetic Flow Meter was selected because of the winery's sanitary production requirement. The EL2400-080, a 3-inch meter, was suitable for the flow rate in this application. The MC 308C transmitter was chosen due to its display capability, as well as standard features that included 4-20 mA analog output and RS-485 data communications for use in historization.

The EL 2400's transmitter display and analog output to the winery control system made the entire operation as automated and versatile as possible, given the circumstances of the production process.

Technical Information

Flow Meter: EL2400-080ATCXPLCA electromagnetic flow meter
Transmitter: MC308CCVM2D3C21N
Flow Rate: 16 to 800 Gallons-per-Minute (GPM)
Fluid: Grape Juice/Wine



8930 S. Beck Ave., Suite 107 • Tempe, AZ, 85284 USA
Tel: 480.240.3400 • Fax: 480.240.3401 • Toll-free: 800.528.4225
E-mail: ftmarket@ftimeters.com • Web: www.ftimeters.com
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