



APPLICATION NOTE

INDUSTRY: FOOD

MARKET NICHE: JUICE

PRODUCT: DCF SANITARY FLOWMETERS

FLUID: ORANGE JUICE CONCENTRATE

SERVICE: LOADING AND UNLOADING TANKERS • VISCOSITY: 11,000 cP

OVERVIEW

Orange juice concentrate is an especially difficult application due to the pulp in it and its high viscosity. A Flow Technology positive displacement flowmeter's simple design allows material such as pulp to pass through it. Pulp would jam and possibly destroy a multiple-rotor positive displacement flowmeter. In addition, the high sugar content makes frequent cleanings necessary on systems running juice concentrate. Flow Technology PD meters are built with materials that can withstand a variety of cleaning processes.

SITUATION

A processor in central Florida loaded and unloaded juice concentrate from tankers. It was critical that the loading process be accurate for several reasons. First, they wanted to avoid overloading since they were liable for fines when their trucks were beyond the legal weight limits. Secondly, they wanted to avoid wasting time from having to "drum off" any excess product when they did overload. Lastly, they did not want to waste space by underfilling the tankers.

The processor had not been able to find a flowmeter that could handle the application. They had therefore resorted to using poles or visual estimates to gauge how much of the tanker was filled.

SYSTEM DESCRIPTION

A tanker pulled up to the loading area. Then, using a positive displacement pump, the product was transferred to or from the tanker. The sampler system, using a Flow Technology flowmeter, pulled a certain amount of product every 50 gallons. Given the high degree of repeatability Flow Technology PD flowmeters possess, a certain number of pulses was expected from the meter during each sample. If there was a variation from the normal count, the system automatically shut down and a new brix reading was taken.



ANALYSIS

The difficulty with the juice concentrate was the "brix level" (60–70 brix) or variance of the concentration of sugar in the product. As the brix changed, the amount of product going through the meter (by weight) changed. So it was important to know if the brix were consistent from load to load and within each load. Otherwise, the customer might have paid for more than he received.

A Flow Technology PD flowmeter provided the solution. The flowmeter was the centerpiece of a new sampler system which allowed the processor to accurately measure the amount of juice concentrate that was transferred.

SALES INFORMATION

The sales representative discovered the tanker filling problem during one of his periodic calls on the processor. Using the positive displacement flowmeter's previous performances on juice as a base, the representative convinced the processor that Flow Technology was the solution they needed.

TECHNICAL DATA

Flowmeter: DC40F-6113-5440000 (was FD40F-6113-3440-000)

Flow Rate: 60–100 gpm

Fluid: Orange juice concentrate at +10° F to +25° F (-12° C to -4° C),
11,000 max. cP viscosity, CIP at 165° F (74° C)



8930 S. Beck Avenue, Ste 107, Tempe, Arizona 85284 USA
Tel: (480) 240-3400 • Fax: (480) 240-3401 • Toll Free: 1-800-528-4225
E-mail: ftimarket@ftimeters.com • Web: www.ftimeters.com

DB 65111 Rev A © 2000 FTI Flow Technology, Inc. Printed in USA