Application Note

Industry: Automotive
Market Niche: Polyurethane
Product: DC-I Positive Displacement Flowmeters
Fluid: Methyl Diethylene Isocyanate
Service: Totalization • **Viscosity:** 150 cP

Overview

The durability and toughness of polyurethane make it a popular material for wear-resistant coatings and parts. This material can become very hard if it is allowed to sit in the processing lines for too long. Therefore, one of the major challenges during processing is keeping the fluid moving and cleaning the equipment. Flow Technology meets these challenges with its simple, durable design. With only two moving parts, a Flow Technology positive displacement flowmeter can be run for long periods of time without the worry of breakdown. Its thermoplastic impellers are more wear resistant than stainless steel and will not be damaged by solids that may get into a fluid. The simple design of the Flow Technology meter allows it to be disassembled and cleaned quickly and easily.

Situation

A Northern manufacturer of headboards for automobiles was having difficulty getting accurate totals of the Methyl Diethylene Isocyanate (MDI) it was using. As part of the process, the headboards were dipped into vats of the urethane-type coating to bind and seal the material. The manufacturer had tried using a copper nutating disk water meter, but the performance had been unacceptable.

System Description

The MDI was stored in a tank with four lines coming out of it. The one-inch lines led to a recirculating system which kept the MDI moving, so that it could not set up in the lines. A valve opened the recirculating system to a trough where the headboards were dipped. As the trough emptied, a worker would manually open the valve to fill it again.

The manufacturer uses a flowmeter between the recirculating system and the trough to monitor the amount of MDI used. A check valve was installed in front of the flowmeter to prevent it from counting fluid that was pulled back through it by the recirculating system when the trough valve was closed. The flowmeter sent a signal to a remote totalizer.

Analysis

The nutating disk meter failed to handle the application well because it was not accurate enough and it was difficult to maintain. The manufacturer then tested a mass coriolis meter. The mass coriolis was accurate when it was calibrated, but it would occasionally give false readings due to the vibrations in the piping. Furthermore it strained the system since it had such a high pressure drop. Finally, the mass coriolis was rejected because it cost twice as much as a Flow Technology flowmeter which could do the job better.

The Flow Technology positive displacement flowmeter proved to be ideally suited for the application. It delivered an accuracy of better than ±0.5%. It was not effected by vibrations, and its simple design allowed it to be easily maintained.

Sales Information

The customer contacted the factory to ask about the capabilities of Flow Technology positive displacement flowmeters. The factory gave the customer some information and referred them to the local sales representative. The local representative made the sale after a few calls.

Technical Data

Flowmeter: DC10I-6113-5110000
Flow rate: 10–15 gpm at 68° F to 80° F, 75° F normal
Fluid: Methyl Diethylene Isocyanate, 150 cP at 77° F

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