

THE OIL DAILY

By Marvin Murphy

CARSON, Calif. - With an obsolete lube-mixing system on its hands and economy on its mind, Shell Oil Company recently went ahead and installed a new Pulsair pneumatic blending system at its refinery here.

The old mechanical mixer had been there 10 years and "it was starting to go." observed Bob Rose-man, in charge of the operating staff and maintenance.

"It was obsolete and we couldn't get parts for it," he recalled. "And a new mixer was going to cost us \$5,800. not counting maintenance."

Roseman figures purchase of the Pulsair unit saved one labor unit "close to \$175 a week" When Shell got its last electricity bill, it had saved an additional \$3,750. "Steam costs are hard to measure. but I'm sure about the electricity savings."

Woe Begone

Shell lost approximately \$75,000 worth of additives from overheating in a 40,000 gallon tank when its old side-entry mechanical mixer failed. Lack of agitation in the tank and the fact that the steam heat remained "on" led to the misfortune.

Pulsair went in with its new FT-2D. an improved pneumatic blending system, replacing the mechanical mixer. It was installed through the same access as the mixer. However, this time two air lines were welded to a flange, eliminating the rotary seal and any potential leaks.

As a safeguard against future additive losses and as a safety feature. the Pulsair system was connected to the heating steam supply solenoid valve. using a pressure switch. Now. if the system is turned off. or if the compressed air supply is interrupted. the heating steam is automatically shut off. eliminating the possibility of overheating.

Shell ordered two Pulsair units for its 40,000 gallon additive mixing tanks, used for formulating motor oil, about six months ago. It took shipment on two others at the end of March. By year end. Roseman hopes to have six in place.

Has 16 Tanks

The additive tank farm has twelve 40,000 gallon tanks and four 80,000 gallon tanks. All are located within a few feet of one another and contain about the same amount of additive.

Therefore, it was possible to operate two tanks from one Pulsair Controller by modification of the original FT-2 system. This modification also included a new safety feature for the second tank.

Development of the FT-2D thus was an evolutionary process, incorporating ideas from Pulsair and Shell's safety requirements.

Roseman describes the system as a "unique way of blending," in which large bubbles or pulses about 12 inches across rise to the surface from the bottom of the tank, creating a rolling motion. Six evenly-spaced radial outlets and one in the center, at the bottom, are "fired" at timed intervals-- evenly mixing a variety of fluids.

"It's like a bottle of sparkling water," he said, "only the bubbles are much larger."

Compared to propeller-type mechanical mixers, Roseman finds that pneumatic blending "gives us better heat transfer and better mixing."

VI (viscosity index) improvers, which are extremely viscous--almost like honey--must be kept hot to thin them, but tend to stratify (stay on the bottom) if not evenly mixed with lighter fluids.

This problem is eliminated with pneumatic blending, in which "pulses" of air fan out to the edges of the tank, move down along the sides and across the bottom. At the same time, new bubbles are being fired toward the surface.

As a result, he added, Shell realizes labor savings and less maintenance costs. Pulsair estimates this will reduce energy requirements by more than 80 percent

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