

## Safety no accident at nylon fiber plant

In 1991, a Monsanto Chemical Group plant (now Solutia), near Pensacola, FL, became the company's first facility to receive the OSHA Volunteer Protection Program Star site award. Since then, it has won awards from the Florida governor's office and the state chamber of commerce, plus the company's President's Safety Award for 3 years running.

Safety is no accident in Pensacola which, at 2000 employees and 2200 acres, is the largest manufacturing plant within the Monsanto Co. and the largest wholly unified nylon plant in the world. Teams have worked for years to improve safety records, and a recent re-engineering of the chemical mixing process is no exception.

The company, which makes nylon fibers for use in Monsanto's Wear-Dated® and Vydyne® carpets, had been mixing its chemicals in open vats by hand. The mixture would then drip from a head with numerous holes and be blown dry as it dropped to the floor. The fiber then went through a hole in the floor and was wrapped like yarn on spools.

Using this method, the plant, in operation since 1953, would produce half a billion pounds of nylon per year. For comparison, a typical home uses 600 lb of fiber in its carpeting.

Before re-engineering the system, plant workers used a manual system for delivering additives to the nylon mixture, according to Bill Hanvey, nylon technology team leader at the plant who, along with three others, designed the new system. "We poured liquids into pots, weighed the chemicals and dispensed them. All of the piping had manual valves. Once we got the correct weight of the additives, we piped them to the machines. The pot was open, and it took 3 to 4 people to do the job."

Harry Stover, process coordinator for carpet and the primary link between team leaders and the technical staff, described the old system as difficult. "We had individual systems for each machine, 11 in all. It physically took a lot more time and it exposed our people to chemicals because we were using an open vessel. The area was also cluttered, so there could have been some mistakes."

To increase plant safety, Hanvey and his team designed a portable dispensing station that uses a drip-free dry disconnect hose coupling assembly called Dry Link®. The system prevents spills and worker exposure to the chemicals.

"The manual additive station is a small buggy with a leader," Stover said. "The manifold accepts 9 flexible lines. One header goes through a flowmeter. After the chemicals have been metered, they go to hard pipes that feed the tanks that feed these machines. We change the couplings from line to line to fill the machines."

"We have nine circulating loops with these chemicals in them," Hanvey said. "We drop a loop down to where you can tie into it, put a connec-



Operator disconnects a 1" hose from an additive manifold. No catch bucket is needed since the disconnect is dripless.

tion there and use a loop breaker to distribute this to the individual machines. We need to have drops at every machine. Every place we had a

drop, we had 9-15 valves. We used to have 250-300 valves; now we have 6. We have achieved major savings in maintenance costs. A process that took three or four people now takes one person."

Stover said without the dry disconnect system, the re-engineering project would not have been possible. "In order to use any other type of coupling, we would have had to put catch pans under these lines and dispose of the chemicals whenever we changed the line," he explained. That would have been environmentally unfriendly, and waste would go down the drain.

The drip-free assembly uses a quarter-turn disc to control flow. When the hose coupler and mating adapter on the isolation vessel are separated, the disc splits into two identical halves. Each half acts as an automatic cap that seals the end of the hose before it is disconnected, preventing drips. A mechanical interlock prevents the connection from opening unless the two halves of the disc are closed. Equipped with a coupler-end swivel to facilitate alignment, the assemblies are light and easy to handle. The assemblies are available in 1 1/2", 2", and 3" sizes with Teflon®, Viton®, or EPDM seals. Operating pressure is 150 psi for temperatures ranging from -20°F to 230°F. The Pensacola plant uses the Teflon seals.

Further information on the DryLink drip-free assembly system is offered by

Dry Link, Inc. ([www.drylink.com](http://www.drylink.com))

Circle 546



New additive stations use a cart-mounted portable dispensing system.