Trickier Than it Looks

Proper hydrostatic testing is vital for safe hose assembly

BY PHIL KIMBLE

Most of us have tried to do something that at first glance seemed easy. Assembling a child's toy, no problem. Solving Rubik's cube, piece of cake. Testing an industrial hose assembly, child's play—or so some think. When something appears quick and easy, more times than not, it usually turns out to be anything but.

When the two shop guys at one industrial hose distributor got the "build sheet" to make an assembly, there was one line item on it they had not seen before: "hydro test." The guys were not happy about making this assembly because of its size: 10 inches. Getting the custom-made flanged fittings inserted and the clamps installed was not going to be an easy task. Even though they had never hydrostatically tested a hose assembly before, how hard could that be? Cap off one end, fill it with water, cap off the other end, pressurize it, done! Compared to making the assembly, the hydro test would be a breeze.

The guys set about working their plan. They filled the hose with water, then laid it out in the parking lot. They connected an air line from the compressor to a valve they installed on one flange. Because the hose had "150 PSI WP" in the lay-line, they figured that was to be their test pressure, which was perfect since their air compressor put out 150 psi. Just as a precaution, they placed a forklift at each end of the assembly. With the fittings and flanges weighing about 100 lbs. apiece, if they came out, how far could they go? And besides, it was only 150 psi!

With the sound of canon fire, both fittings simultaneously ejected less than a minute after the air valve was opened. The end with the valve struck the forks on the lift, splitting them both and bending them back. It then careened about 40 feet across the parking lot, taking what was left of the air hose with it. Somehow missing all the vehicles, it came to rest in a ditch next to the road. The other end glanced off the forks, then traveled up and struck and bent the hydraulic cylinder that raises and lowers the forks. It continued airborne about 30 feet, landing on the roof of a coworker's car, doing considerable damage.

Hydrostatically testing an industrial hose assembly is a vital part of ensuring the assembly will perform satisfactorily when placed in service. When done properly by trained technicians, hydrostatic testing can be performed safely even if the assembly does not remain intact after it has been pressurized. Air or other compressible products should never be used to pressurize an assembly. With few exceptions, water is to be used as the test medium. Vent one end to bleed off any remaining air and pump additional water into the assembly to increase internal pressure. A typical test will consist of increasing the pressure to 150 percent of the assembly working pressure and holding it for five minutes. The assembly working pressure is the lowest pressure rating of either the hose or couplings.

If there is ever a question about any facet of building or testing an assembly, contact the hose or coupling manufacturer for guidance. Failing to do so can have costly consequences.