

CASE STUDY

Plastics: Elimination of Elbow-Wear

RheTech, Inc.

REVISITED

 **HammerTek**
CORPORATION



It's been close to five years since HammerTek did a case study on the 120 Smart Elbows® installed at RheTech, Inc.'s Whitmore Lake, Michigan plant. That first case study presented the drastic difference in how operations had changed after the June 1997 installation of our Smart Elbows.® Recently we did a status check with Gary Wright, Director of Plant Engineering, who told us that after almost six years of operation, no elbows have worn out or been replaced.

RheTech is a designer, manufacturer and marketer of proprietary thermoplastic polyolefin alloys and compounds which are sold to the transportation and consumer durable goods markets. RheTech uses additives such as minerals and fiber reinforcements in their products. These additives can make the plastic pellets highly abrasive, and fiberglass is the worst, says Gary.

Like most other plants, to provide optimal service to customers, downtime at RheTech must be avoided at all costs.

In the main transport lines of the finished-material side of the process where they convey 30% glass-filled poly pellets, RheTech had been wearing through long-radius sweep elbows about every 90 days. The solutions they tried are all too familiar — patching the holes with everything from ceramic tiles to duct tape in an attempt to control the leakage until the elbow could be replaced. At one point they even tried plugged-tee elbows with welded caps, and admittedly, they did last a bit longer than the sweeps, but they also caused damage to the exit pipes.

On RheTech's exterior silos, which are loaded 24 hours a day, when an elbow failed during the night, it often went undetected immediately. This caused a major product spill requiring man-hours and clean up to get the material back into

the storage or operating system. Eventually RheTech had to give in, shut the line down and install new sweeps. Over the course of a year, the cost of elbows, the man hours to change them, and the maintenance involved had become fairly substantial.

About a year after installation, RheTech pulled one of the Smart Elbows® from its most severe application for the sole purpose of checking for signs of wear. "A few days shy of one year in service, and we could still see the casting marks. By now, we would have been through four to five sweep elbows and 12 rolls of duct tape. We're impressed," Gary says.

Four months after the initial installation, 50 more Smart Elbows® were installed, equipping the Whitmore Lake plant with a total of 170 HammerTek Smart Elbows.®

COST ANALYSIS

	4" Pipe Size Schedule 40	
	Smart Elbow® (Hard Ductile Iron)	Long Radius Sweep (Stainless Steel)
Elbow lifespan:	60 months minimum	4 months
Cost per elbow:	\$629	\$155
Initial cost for 100 elbows:	\$62,900	\$15,500
Elbow replacement costs	\$0	\$217,000
— 5 years		+ Labor
		+ Lost product
		+ Downtime/Cleanup
		+ EPA compliance, etc.

HammerTek Smart Elbow® Savings \$154,100

This information is from an actual installation.



In July of 1998, RheTech launched a new plant at Fowlerville, Michigan with 65 Smart Elbows® specified right from the start. The mix of elbows at the two plants consists of 2 1/2", 3", 3 1/2", and 4 1/2" tube-size, and 5" pipe-size Smart Elbows® in a hard ductile iron alloy.

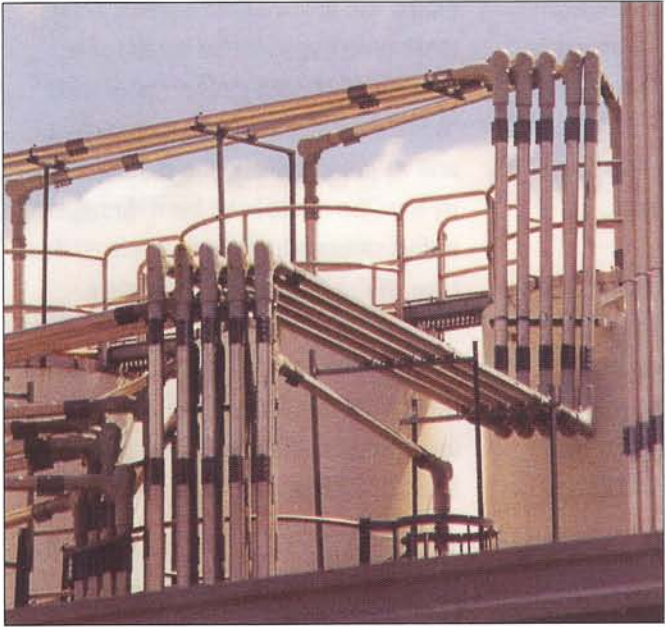
Gary says the Smart Elbow® initially costs more than the long-radius sweep elbow, however, the HammerTek elbows paid for themselves in less than one year. This means that the past 5 years of a maintenance-free Smart Elbow® installation has resulted in substantial savings of money and time, by reducing and/or eliminating system downtime, replacement elbows, lost product, labor, and clean-up costs for RheTech Inc. Also, Gary notes that there had been no change in operating conditions of the pneumatic



A common sight at RheTech before the HammerTek Smart Elbows® were installed was an attempt at patching with ceramic tiles and duct tape.

system after the HammerTek Smart Elbows® were installed and elbow-generated streamers have been eliminated by the Smart Elbow.

In addition, during the 2002 holiday season shut down, a new 400 ft. long conveying line was installed that utilizes HammerTek Smart Elbows®.



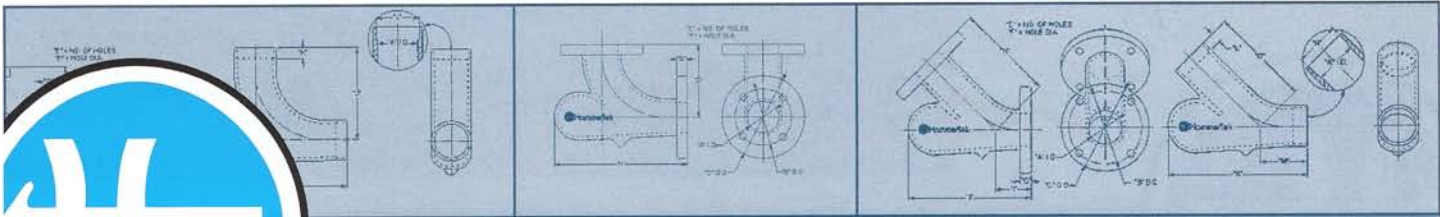
Since June 1997, not a single elbow has worn out or been replaced at RheTech.

Form #621



- Available Alloys**
- Aluminum Socket Weld & Flanged
 - Carbon Steel Socket Weld & Flanged
 - Cast Iron Flanged Only
 - Ductile Iron Socket Weld Only
 - Hard Ductile Iron Socket Weld Only
 - HammerLast Series 300™ Flanged Only
 - HammerLast Series 400™ Flanged Only
 - HammerLoy™ Flanged Only
 - Stainless Steel 304 Socket Weld & Flanged
 - Stainless Steel 316 Socket Weld & Flanged

Note: Flanges to ANSI specifications. I25# flat-faced flanges on pipe size schedule 10 & 40, and tube-size elbows. 150# and 300# raised-face flanges on pipe size schedule 80. Other alloys available by request.



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