Products Pipeline Boosts Throughput Switching From Gel To Suspension Flow Improver

An 8-inch products pipeline serving the New York City market achieved a volume increase of 10-15 thousand bpd when operators switched from gel flow improver to suspension flow improver. The switch postponed a pipeline expansion project that would have cost $8 million and reduced barging cost by millions. It's proof that although nothing was broken, it can always be fixed.

The East Line, owned by ConocoPhillips and operated by Buckeye Pipe Line Co., carries refined products from the Trainer, PA refinery to Chelsea, Philadelphia and Woodbury terminals, ending in New York City. Volumes that can't be moved through the pipeline are barged out of the refinery into New York Harbor.

The pipeline, which runs approximately 20 miles, was capacity constrained and had scheduling issues. This prompted the ConocoPhillips Regional Strategy Integration Team to study options, including an expansion project. Greg Constien, East & Gulf Region Refining Optimization Lead for ConocoPhillips, and Mike Baker, Director, Commercial Development and Asset Utilization, identified the constraint and set the research into action.

The LiquidPower™ Flow Improver injection skid injects RP™ II Flow Improver into ConocoPhillips' East Line at the Chelsea Terminal in Trainer, PA.

"The first thought was to see if we were running drag reducing agent (DRA) on the line and it turned out we were using a gel product," Constien said. "From experience, I've seen that suspension flow improver products have a better performance than gel products, so I knew we had an opportunity for improvement by using CSPI's suspension flow improvers."

Once ConocoPhillips Energy Management personnel found out about the potential switch to LiquidPower™ Flow Improvers, the answer was clear. "It's common knowledge in the industry that suspension technology is inherently better than gel technology in DRAs," said Richard Jewell, Director of Energy Management for ConocoPhillips Pipeline. "Time and again we've seen that Flow Improvers can achieve higher drag reduction performance within the accepted polymer limit guidelines, making its value per dollar quite higher."

Constien and Jewell called in CSPI to create a hydraulics model, simulating RP™ II Flow Improver utilization on the line. The results convinced the entire team that switching drag reducing agents was the answer.

Two Skids Installed

CSPI installed two LiquidPower™Flow Improver injection skids on the line — one at the Chelsea pump station and one at the Trainer refinery.

"The result is an extra 10-15 thousand bpd and this is only the beginning; I see an even greater improvement to this result in the near future. Running RP™ II Flow Improver on this line has led us to even more constraint improvement opportunities, and has opened everyone's eyes to the possibilities Flow Improvers can bring to a constrained pipeline," Baker said.

The additional barrels moved by pipeline generated a hefty cost savings from reducing the amount of product being barged. This switch is saving the company approximately $2.3 million annually and presented a viable alternative to the pipeline expansion project. The reduced barging also lessened environmental exposure by moving more products through the pipeline rather than over water.

"RP™ II Flow Improver is overall more effective in achieving drag reduction performance," Baker said. "In this case, using fewer gallons of RP™ II Flow Improver gave superior performance than using a substantially greater amount of the gel product it replaced. This switch saved our pipeline operators money by using fewer gallons of flow improver and it moved more barrels out of the refinery because of the dramatic improvement in flow performance."

The East Line operators also saw a relief with CSPI's injection equipment. "The ease of CSPI's flow improver injection brought a sigh of relief to the operators at the pump station who were struggling with the gel product's injection system," said Baker. The former gel injection system required a period of downtime with each instance of product refill. With CSPI's injection system, there is no loss of injection time at deliveries, making the flow improver injection continuous.

"CSPI offers such customer-friendly equipment that the switch was effortless. Martin Guillory (of CSPI) and his team trained our people on the equipment and upkeep, but also about DRA in general, which gave our operators peace of mind for the change and an eagerness to try something new," Baker said.

Guillory, Senior Technical Representative for CSPI, visited the Trainer refinery and explained how the DRA would work, addressed concerns about achieving the desired flow rate within polymer limit guidelines, trained the team on equipment maintenance and advised on the replacement of the gel product and equipment with CSPI's suite of RP™ II Flow Improver and equipment.

The project team then joined together for a wrap-up session to share goals, concerns and the path forward to get the results necessary. At this point, they committed to move forward with scheduling the greater number of barrels.

"We were confident that we would see the increased performance immediately, so it was really just a question of 'What are we waiting for?'" Baker said. "The results from this effort are changing the way constraints are looked at. People are no longer assuming that DRA helps just a little bit. It's amazing the magnitude of impact the right DRA can make." ***P&GJ***