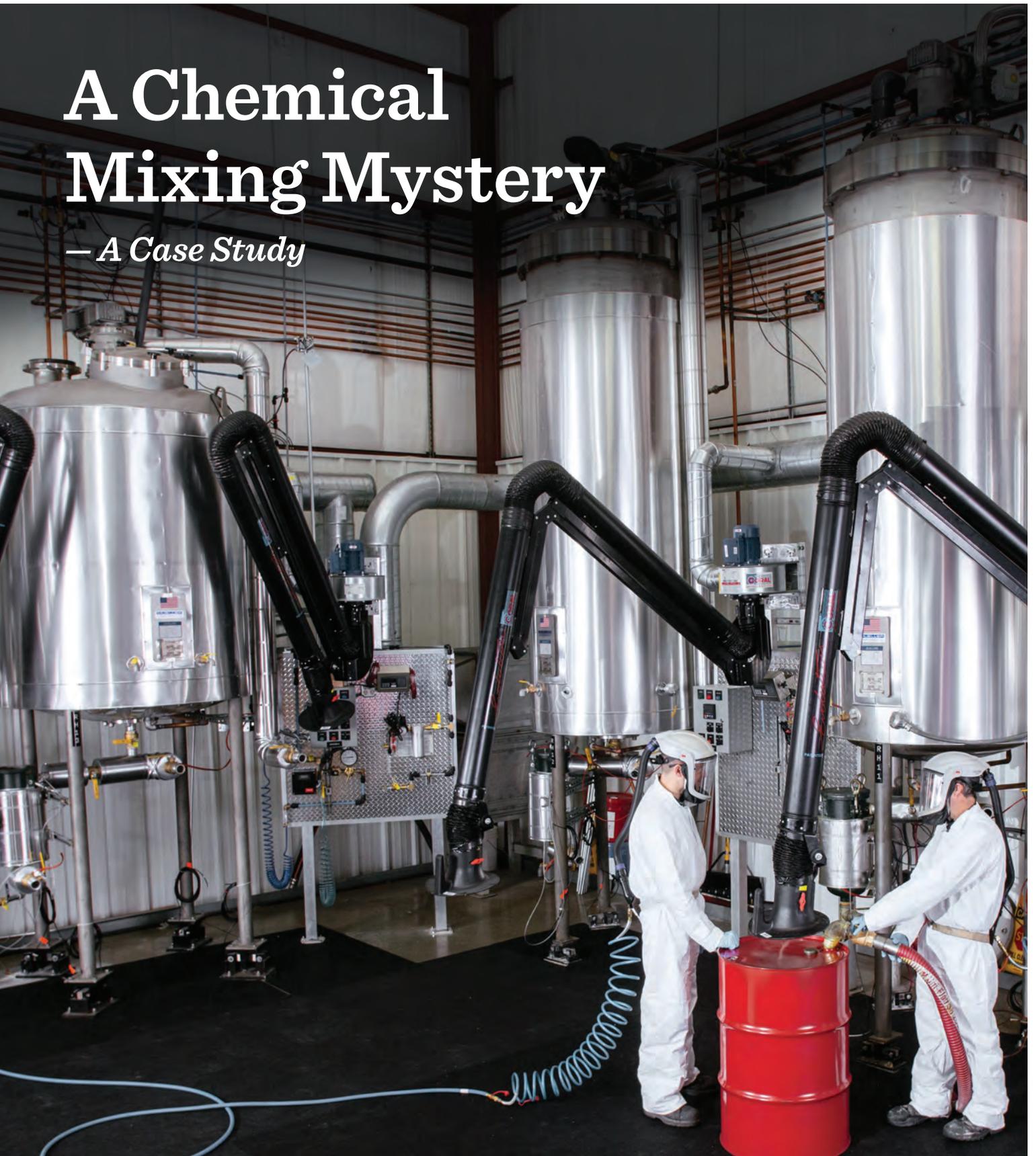


A Chemical Mixing Mystery

— A Case Study



CHEMICAL PROCESSING EQUIPMENT

MUELLER

A Chemical Mixing Mystery

How a \$50 Fix Saved Thousands

As one of North America's largest privately held manufacturers of polyurethane resin technologies, Chemline in St. Louis, Missouri, is growing at a record pace. When a routine chemical reactor began producing unexpected results, the hard-driving employees needed a solution fast.

"Like most manufacturers, we are on constant deadlines with our customers and we don't have time for equipment problems," said Kevin McCullough, Vice President of Operations for Chemline.

Chemline has purchased high-end/premium reactors from Paul Mueller Company in the past; the Springfield, Missouri, equipment manufacturer is well-known for having reliable products and service expertise. Chemline recently purchased four more reactors for their process of producing high-performance, urethane pre-polymers. The difference in the equipment was that two of the four reactors would be of a slightly different design than what Chemline ordered before. The new reactors arrived in 2016 and were put right to work.

"The first couple of batches in the newly designed reactors processed fine; however, we eventually encountered a problem batch that wasn't behaving properly, suggesting the product was stratifying," said Kevin.

Even in a world of instant "Googled" solutions, the fix Chemline needed was not a simple online search.



"They clearly added value beyond the machine."

**KEVIN MCCULLOUGH
VP OPERATIONS, CHEMLINE**

The manufacturing process involved adding a number of raw materials to the reactor while mixing. Some of the raw materials are room temperature and some must be heated before adding. The problem batch indicated materials were not blending uniformly, causing stratification in the reactor.

"In an effort to resolve the problem we contacted another company that specialized in agitation methods and they convinced some members of our team that the agitator in the new reactors was not correct. They said we needed a different mixing foil. Their fix was a new agitator priced in the tens of thousands of dollars," said Kevin.





So, he contacted Paul Mueller Company Project Manager Lori Steinbach and explained the problem. He said they were considering buying the mixing foil recommended by the other company. Lori was confident in the reactor's engineering and pulled the team together on the call to see what they could do to resolve the issue.

"We spent almost two hours on that call talking through every possible option. The Mueller team worked the whole process backwards and took the mystery out of the problem," said Kevin.

Lori's team determined one of the heated ingredients was cooling just enough to adhere to the pipe walls as it moved through the charge line. The reactor wasn't getting the full amount of the ingredient and Chemline wasn't getting the expected result. It was a big relief that the issue had nothing to do with agitation; the solution, it turns out, was a quick one.

The quick solution was a \$50 pipe wrap and heating element to keep all of the ingredients warm and moving. Simple. A new agitator would have cost tens of thousands of dollars and created an extended delay.

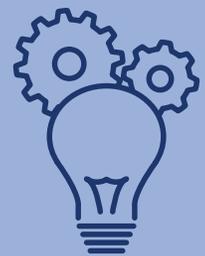
"Vendors often say they add value in the way of customer service, but Paul Mueller Company took that a step further. They provided something beyond the original purchase, they provided their expertise in the form of consulting and a solution to our process problem," said Kevin. "They clearly added value beyond the machine."

Kevin said Chemline has processed many batches since the simple but elusive fix, and it is working perfectly.

"We haven't generated any non-conforming material since," said Kevin. "I recommend Paul Mueller Company to other companies all the time. I always feel like they're on my side."

"As a company, we are fortunate to have customers like Chemline trust our team to come up with solutions to tough problems," said Lori. "Everyone's due diligence saved Chemline downtime and money, and gave our team a problem to solve and we love doing that!"

FIND YOUR CHEMICAL PROCESSING SOLUTION



To start down your solution path for any challenging chemical processing needs, please contact Paul Mueller Company's Chemical Processing Equipment Team at chemical@paulmueller.com or call one of our Regional Sales Managers:

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PAUL MUELLER, OUR FOUNDER

At Paul Mueller Company we are united by a belief that the only quality that matters is quality that works for life. With every piece of processing equipment we build, our goal is to have lasting impact. This collective vision has led us from a small sheet metal shop to a global supplier of heating, cooling, processing, and storage solutions. Our equipment allows engineers, pharmaceutical companies, and chemical manufacturers to keep their products pure and their inventory strong. Whether our equipment mixes a vital coating to protect the life of concrete or helps manufacture medicine with broad health benefits, we are making an impact across the globe.

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