

PROJECT BRIEF - CHEMICAL PROCESSING

Chemical Plant Saves Money and Time Using New Lining Technology

BACKGROUND

Although most people instantly think of petroleum producers and refineries when they think of big Texas industries, chemical processing companies are also major contributors to the state's economy.

One such company has been a client of RMB Products since 2013. This chemical plant uses piping lined with PTFE (a synthetic fluoropolymer) to provide ethylene dichloride and vinyl chloride monomer chemical service to its equipment. Lining the pipe helps to prevent corrosion from ruining the piping.

In 2013, this company needed a 16' x 12' tee pipe lined within a short amount of time. Because there is a long lead time to line with PTFE in large diameter piping, the manufacturer's representative suggested lining the pipe with **ETFE (a fluorine-based plastic)**, provided by RMB Products. The team at RMB used a process called [rotational lining](#), which equally distributes an ETFE resin throughout the inside of the pipe. RMB was able to deliver the lined pipe to the chemical company in 2 weeks, which was well within the time constraints.



CHALLENGE

During an inspection in 2017, the company discovered 90 pieces of piping lined with PTFE were beginning to blister and needed to be replaced. When a liner fails, the harsh chemicals running through the pipe can begin to corrode the steel itself, causing chemicals to leak out of the pipe.

The engineers planned to replace the pipe during the next two-week plant outage, which required meeting a **tough schedule of 10 weeks** for the replacements. If there was a delay in installation during that window of time, the chemical plant could lose hundreds of thousands of dollars for every day that it was shut down.

Working through the manufacturer's representative, the engineers from the chemical processing company set out to find a company to provide replacements for the 90 PTFE-lined pipes. The representative contacted PTFE lining companies, but no companies were able to deliver the product before the plant outage.

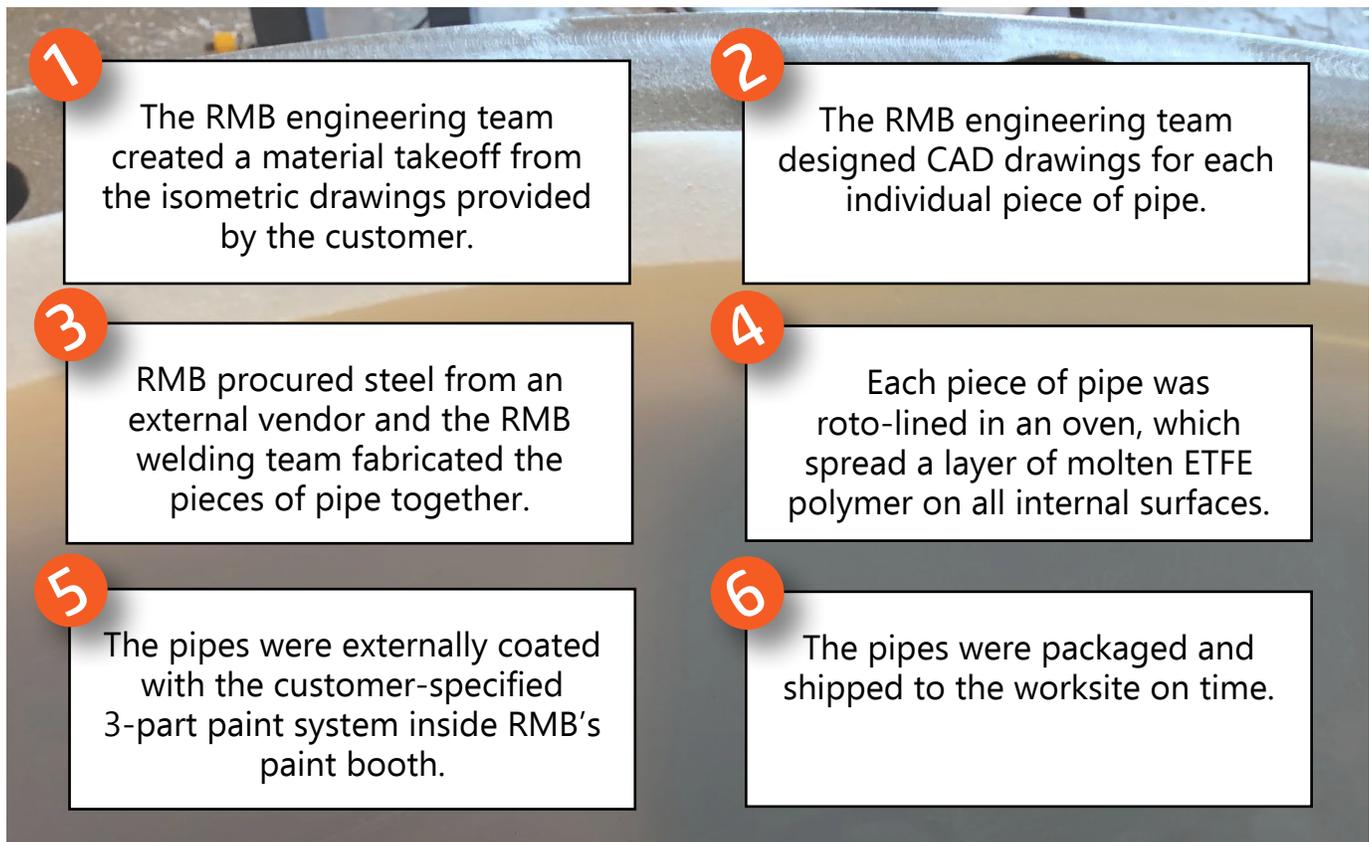
SOLUTION

Remembering that the **5-year old ETFE-lined piping looked brand new** during the inspection, the engineers also requested a quote from RMB Products for the 90 pieces. The RMB sales team responded with an estimate for ETFE-lined rotationally-lined pipe that guaranteed that not only could they produce the ETFE-lined pipe and fittings **on time**, but that they would be **less costly** than manufacturing more PTFE-lined pipe.

Because ETFE was not listed in the specifications for the piping, there was additional work that had to be done before the chemical company could sign off on purchasing the pipe lining from RMB Products. With help from the chemical plant engineers, the sales team at RMB worked diligently to provide detailed information about the process and the product. This information was presented to the plant managers and they agreed to purchase ETFE-lined piping from RMB Products.

PROCESS

The entire process from start to finish took **10 weeks to complete**. Below are the steps RMB used to rotationally line the 90 pieces of pipe.



RESULTS

The engineers and chemical plant managers were very satisfied with the entire process, and were happy that they could install the new pipe during the scheduled plant outage. All said and done, the RMB Products team was able to deliver the ETFE-lined pipe **on time** and with a **\$100,000 savings** compared to PTFE-lined pipe.



PRODUCT COMPARISON

Rotationally lined ETFE is more cost effective than PTFE liner in this application due to the process differences, production flexibility, and materials available on-site.

To line large diameter piping, PTFE is extruded through sleeves then pulled through pipe and flared around the flanges. Isostatic molding is used for complex geometries, which involves creating a mold with PTFE and sintering it in an oven. Large diameter pipes are considered a custom size and require a long lead time from the manufacturer.

In RMB's rotational lining process, a pipe is rotated in an oven, allowing gravity to spread a layer of molten ETFE polymer on all internal surfaces. This creates a seamless lining that fully bonds to the metal substrate and is virtually free of any stresses. Since no adhesive is used in the process, chemicals cannot seep behind the ETFE liner, **reducing the risk of pipe corrosion**.

RMB specializes in **custom solutions** for customers and has the production line flexibility to handle large projects. For this reason, and because the ETFE resin is available on-site, RMB can offer a **short lead time** to manufacture ETFE liner.

ETFE FACTS -

- Fluorine-based plastic
- Rated up to 300°F
- High melting temperature
- High corrosion resistance
- Chemical, electrical, and high-energy radiation resistance properties

