

# WILBARA 550-STPD AND HIGH-PRESSURE STEAM PLANT

DULANY INDUSTRIES, WILMINGTON, NC

Prime Engineering significantly increased client Southern States Chemical's production capacity and efficiency by designing a state-of-the-art greenfield sulfuric acid and high-pressure steam plant. The new plant exceeds all established benchmarks, furnishing Southern States with the following benefits:

**Increased Capacity:** Sulfuric acid ( $\text{SO}_2$ ) is the most widely traded commodity in the world and a key component of nearly all manufactured products. Prime's design produces 550 short tons per day (STPD) of  $\text{SO}_2$  – nearly quadruple the facility's original capacity of 150 STPD, making it one of the highest-capacity plants in North America.

**Secondary Revenue from Waste Steam:** To support the client's business payback model, Prime designed systems to capture high-pressure steam byproduct produced during the  $\text{SO}_2$  production process, then package and sell the steam to a neighboring plant for use as an energy source. By doing so, the plant converts a waste product to an additional saleable commodity – doubling the plant's marketable goods.

**Recovery of Decommissioned Equipment:** Prime Engineering recovered and converted equipment from a decommissioned spent acid generation plant in Wisconsin. The single-absorption sulfuric acid plant equipment was transported 1,100 miles, converted for use in a sulfur burning and double-absorption sulfuric acid plant, and reinstalled. This process reduced construction costs by approximately 20%.

**Sophisticated Operating System:** The process solution centered on replacing the plant's obsolete, manually operated marshalling cabinets with the DeltaV process automation system's electronic marshalling and character module (CHARM) technologies. Installing CHARM reduced wiring costs by 40%; cut engineering, construction, and startup costs; and increased reliability and workflow by providing a control system that highlights production bottlenecks as they occur.

**Low Industrial Emissions:** The steam-recovery system described above, combined with installation of the XLP low-pressure drop and SCX-2000 super cesium catalyst, reduces air, water, and solids industrial emission rates to less than 50% of mandated thresholds.



## SERVICES

Civil and mechanical design, permitting, and construction administration.

## COST

\$31 million (construction)

