

# ULTRAFAB™ SOLUTION USED TO MEET EMISSIONS REGULATIONS



## SITUATION

An operator in California was using solution gas as a fuel source for steam generators. The California emission limit for SO<sub>2</sub> in the burners and H<sub>2</sub>S emissions is zero ppm. As H<sub>2</sub>S concentration in the solution gas began to increase with time, the operator was forced to use ever increasing volumes of scavenging chemical to eliminate the H<sub>2</sub>S.

## CHALLENGE

Attempts to optimize the existing H<sub>2</sub>S removal equipment were ineffective and operations personnel were spending inordinate amounts of time replenishing the chemical supply. Fluctuating H<sub>2</sub>S concentrations complicated the situation, making it even more difficult to meet California's stringent requirements.

Gas flow ranged up to 1 MMscfd with an H<sub>2</sub>S concentration between 1,200 ppm and 1,500 ppm with occasional peaks near 1,700 ppm. Gas volume flowing through the field gathering system and H<sub>2</sub>S concentration were both expected to increase in the future.

## SOLUTION

UltraFab delivered a cost effective solution that effectively removed all H<sub>2</sub>S from the increasing and fluctuating gas flow, and minimized chemical scavenger cost. The UltraFab Sweet 100 process uses a patent protected process to remove all H<sub>2</sub>S. The flexible technology enables the system to treat a range of gas flow rates at very low pressure and to operate with a wide range of H<sub>2</sub>S concentrations. The technology minimizes H<sub>2</sub>S scavenger usage by approaching the chemical's stoichiometric limit while also preventing chemical "overspending," which precipitates a detrimental solid material that can damage downstream equipment.

The compact UltraFab system was quickly installed and optimized by UltraFab personnel after initial operation. The majority of UltraFab piping and controls is integral to the compact, self-contained skid, so installation cost was reasonable and confined to making gas-in and gas-out connections. UltraFab systems are self-regulating and automated so minimal intervention is required by the operator. This enables operations personnel to focus on field-wide management and optimization tasks rather than monitoring well-specific H<sub>2</sub>S removal challenges.

## RESULTS

The patented UltraFab Sweet 100 process ensured California regulatory compliance, effectively removing all H<sub>2</sub>S from the fuel gas. The Sweet 100 process also reduced chemical consumption by approximately 70% - equating to a savings of more than \$1,000 per day in chemical cost alone. After installation, the gas conditions changed and the H<sub>2</sub>S concentration increased to over 7000 ppm. The quantity of chemical required increased but the process continued to reduce H<sub>2</sub>S to 0 ppm and the gas continued to be used for fuel. The process did not need to be modified. Other operational and downtime savings were significant, but not specifically measured.

## THE ULTRAFAB ADVANTAGE

UltraFab Flooded H<sub>2</sub>S Removal Systems offer operators an operationally efficient, cost effective solution. Superior UltraFab design, coupled with Nalco Champion's technical expertise and wide-ranging field experience result in greater operational efficiency and lower chemical cost.

UltraFab solutions are available in a wide range of sizes and variations, treating gas volumes ranging from a few MMscfd to several hundred MMscfd and reducing H<sub>2</sub>S concentration to virtually any outlet specification, including zero ppm. The UltraFab Flooded H<sub>2</sub>S Removal System is designed to handle the fluctuations in gas flow and H<sub>2</sub>S concentration that occur throughout the life of a well and "continuously self-optimizes" when properly installed and calibrated. The compact design also means UltraFab equipment can be moved from location to location, as necessary.

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## GOALZERO

SAFETY MATTERS

The safety of our associates, customers and communities is vitally important. From the way we operate, to the products we develop, to how we partner with customers, our goal is zero: zero accidents, zero incidents and zero environmental releases.

At Nalco Champion, safety is more than a metric, it's a mindset. It's how we conduct ourselves, every day, everywhere it matters.

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