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MERICHEM COMPANY

## LO-CAT® II PROCESS OXIDATION SYSTEM FOR WELLHEAD CASING GAS

Mobil Exploration's North Midway Facility in Kern County, California, needed a new desulfurization unit for a wellhead producing 0.5 MMCFD of casing gas containing 3% H<sub>2</sub>S.

The unit chosen would produce effluent gas with less than 150 ppm H<sub>2</sub>S, reduce Mobil's costs for chemicals compared to the existing desulfurization system, and be delivered within eleven weeks.

A new LO-CAT® II Hydrogen Sulfide Oxidation System, designed to remove hydrogen sulfide from wellhead casing gas, met Mobil's criteria. LO-CAT provided engineering and fabrication services for the LO-CAT II system and Mobil personnel installed the unit.

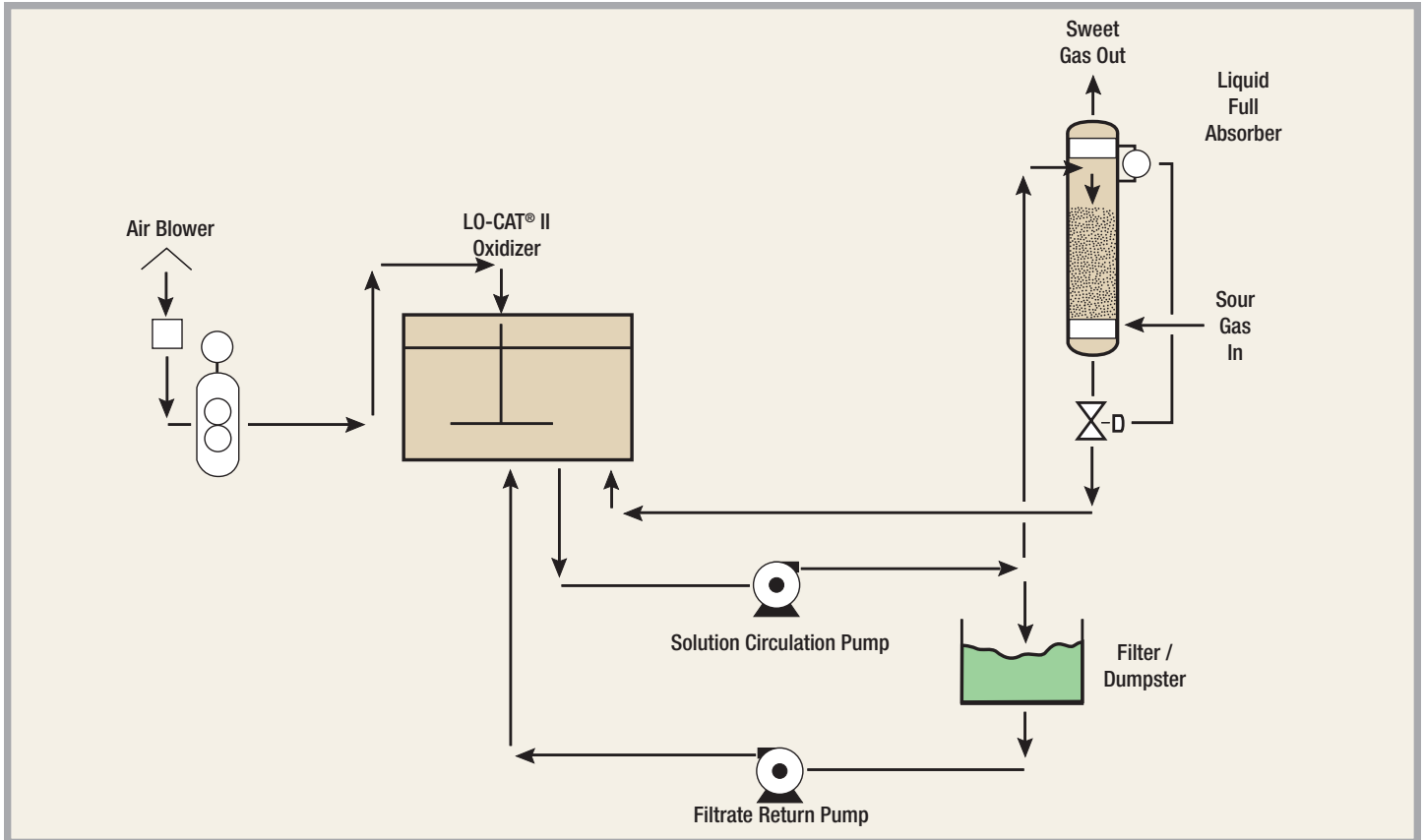
The LO-CAT II unit has consistently produced gas with less than 10 ppm H<sub>2</sub>S, well below the 150 ppm requirement, and at gas rates up to twice the design flow.



# LO-CAT® II PROCESS

## OXIDATION SYSTEM FOR WELLHEAD CASING GAS

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### LO-CAT® II Process

The wellhead casing gas was previously treated in a scavenger-type desulfurization unit which was costing Mobil approximately \$7,000 per day in chemicals. The LO-CAT® II unit has substantially reduced this daily expenditure.

The LO-CAT II system was delivered just eleven weeks after the purchase order was issued. Mobil installed the unit shortly after delivery.

By providing standardized equipment and utilizing in-house fabrication facilities, Merichem was able to furnish the unit within the time frame specified by Mobil. The use of well-designed, skid-mounted modules facilitated field installation.

In the LO-CAT II process, the H<sub>2</sub>S is converted to innocuous, elemental sulfur by the use of an environmentally safe, chelated iron catalyst in accordance with the following equation:



Consequently, the primary chemical consumptions are replacement of chelated iron, lost in the sulfur removal process, and caustic addition to maintain the pH of the catalytic solution in the mildly alkaline range.

To treat this sour gas stream at elevated pressure, separate absorber and oxidizer vessels were used. The catalyst solution is pumped from the atmospheric oxidizer to the absorber.

This is the first commercial demonstration of the LO-CAT II process, which incorporated numerous modifications to the original LO-CAT system. The expected reductions in chemical and power costs were achieved. While maintaining high H<sub>2</sub>S removal efficiencies.

After the first year of operation, Mobil was able to expand the gas treating capacity by simply installing a larger liquid full absorber and updating the spargers in the oxidizer.