



Sweet Solutions.™



MERICHEM COMPANY



## LO-CAT<sup>®</sup> PROCESS

### FOR COST EFFECTIVE DESULFURIZATION OF ALL TYPES OF GAS STREAMS

The LO-CAT<sup>®</sup> II process provides cost effective H<sub>2</sub>S removal for all types of gas streams in many different industries.

The LO-CAT and LO-CAT II processes have achieved H<sub>2</sub>S removal efficiencies of 99.9+% in many different applications and industries. These applications include natural gas production, oil refining, biogas, landfill gas, coke oven gas, geothermal steam power production, CO<sub>2</sub> production for beverage use, lube oil production, and many others. These applications range in size from a few SCFM to several hundred MM SCFD and from a few pounds of sulfur produced each day to greater than 20 long tons of sulfur produced each day. The sour gas entering these LO-CAT systems contain anywhere

from 100 ppmv H<sub>2</sub>S to 100% H<sub>2</sub>S. The sour gas pressure ranges from a few inches water column up to 300 psig.

The LO-CAT custom designs each LO-CAT system for each application providing the user with the most cost effective solution to their H<sub>2</sub>S removal needs.

For treating either combustible gases or valuable product gas streams, the LO-CAT system is designed with separate absorber and oxidizer vessels. The LO-CAT environmentally safe, chelated iron catalyst is pumped between the vessels. The absorber removes the H<sub>2</sub>S from the sour gas, converting it to elemental sulfur. The oxidizer regenerates the catalyst. The absorber design is determined by the sour gas flow and pressure, as well the H<sub>2</sub>S removal efficiency required.

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For treating amine acid gases and other non-explosive, low pressure gas streams the patented Autocirculation system may be used. In the Autocirculation design, the absorber and oxidizer vessels are combined into a single vessel eliminating one of the vessels, the solution circulation pumps, and all associated piping and instrumentation. This design lowers both the capital costs and the operating costs when compared to conventional desulfurization systems with the two vessel design.

The sulfur produced in the LO-CAT<sup>®</sup> process is removed from the system in a variety of ways. Current users dispose of their sulfur as a 15 wt% slurry, a 30 wt% sulfur cake, a 60 wt% cake and as molten sulfur. The sulfur filters range from low cost bag filters to high efficiency vacuum belt filter systems. The type of filtration is matched to the amount of sulfur produced and the users requirements.

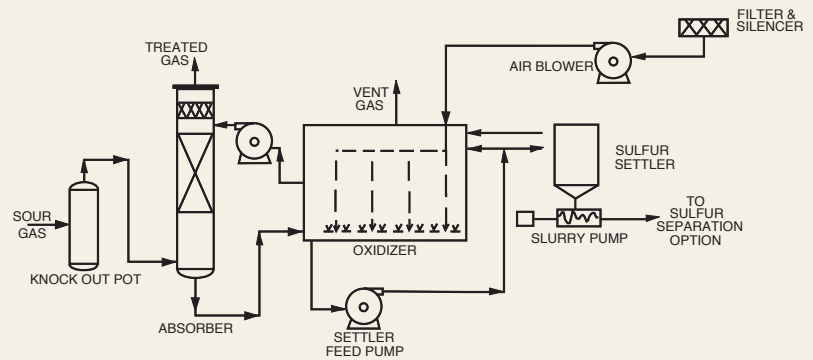
The LO-CAT provides the LO-CAT unit with guarantees for H<sub>2</sub>S removal efficiency, unit capacity, and chemical consumption, as well as materials and workmanship. The LO-CAT provides the engineering design and the fabricated equipment for the LO-CAT process. Installation services, start up training, and on going laboratory support are also offered.

The LO-CAT process converts H<sub>2</sub>S to innocuous, elemental sulfur using a patented, dual chelated iron catalyst which is environmentally safe. The overall process reaction is:



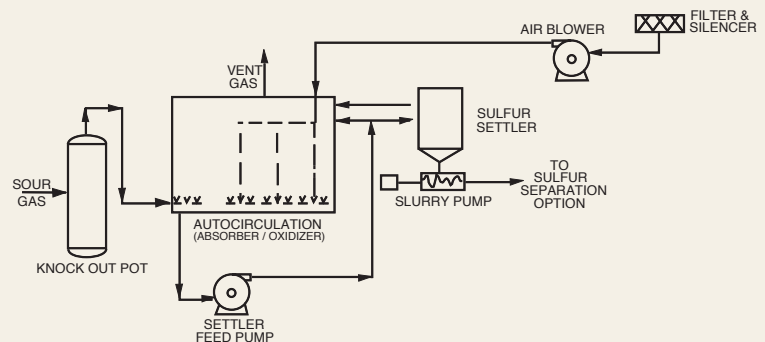
Oxygen used in the process comes from air which is bubbled through the catalyst solution. Because the chelated iron catalyst is not consumed during the reaction, only modest amounts of catalyst are added to the process to replace mechanical losses. A small caustic addition is required to maintain the catalyst solution in the mildly alkaline pH range. Also, additional chelates are added to replace chelates that degrade over time.

### Conventional LO-CAT<sup>®</sup> II Unit



LO-CAT II system setup for conventional sour gas desulfurization, with separate absorber vessel and oxidizer.

### LO-CAT II Autocirculation Unit



LO-CAT II autocirculation arrangement. Simple design makes these systems highly reliable and economical to build, install and operate.