

SULFUR-RITE® SYSTEM

SOLID H₂S REMOVAL SYSTEM FOR
SPECIALTY CHEMICALS PRODUCER

H₂S



Cytec Corporation handles a multitude of processes to produce specialty chemicals for worldwide use. Their facility in Niagara Falls, Ontario, Canada, produces a number of different products, including one chemical that produces H₂S as a byproduct during the process run.

The employees complained that they could smell H₂S in and around the building while this particular product run was in operation. Cytec was also notified by the Ontario Ministry of the Environment that emissions legislation was changing. Cytec decided to install a scrubbing system to ensure that the H₂S leaving the building would always meet or exceed government standards.

Cytec considered three processes for removing the H₂S from the process air stream. Cytec did a trial run on the air stream using one of these processes. But then they read about SULFUR-RITE® and contacted Merichem to learn more about the process. At that point, Cytec did a second trial run with SULFUR-RITE® and

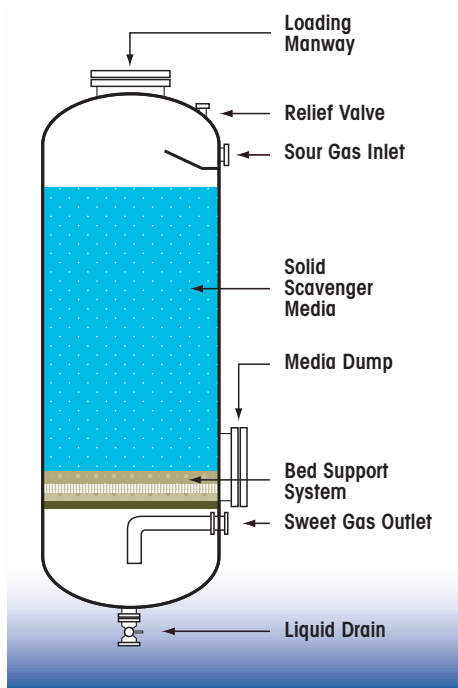


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determined that, compared with the previous process, SULFUR-RITE® was easier for the operators to use, easier to install, and less complicated overall. The SULFUR-RITE® process required less equipment to install, required less monitoring, needed only a small footprint when installed, and was cheaper to run over the three-year evaluation period.

Cytec contracted Merichem to perform the engineering design for a full-scale SULFUR-RITE® unit to treat the H₂S in the air stream. Since the chemical process runs for a one month period only three or four times a year, the vessel was sized to give a year



Typical Solid Scavenger Bed Arrangement

of run length before the media would require change-out. A single vessel was installed in November 2006, with start-up in December 2006. The SULFUR-RITE® system has performed as expected, keeping H₂S down to undetectable levels in the outlet vent.

The SULFUR-RITE® product is an iron-oxide media impregnated onto a ceramic base, with supplemental chemicals added to promote the reaction. This dry free-flowing granular material:

- is non-hazardous both in fresh and spent form
- operates at low pressure drop
- requires minimal operator attention
- provides predictable performance

The reaction is specific to H₂S and partially effective for methyl and ethyl mercaptans.

The general reaction is:



The primary reaction product is iron pyrite (fool's gold), which is stable and completely non-hazardous. Disposal is handled at a local non-hazardous landfill.

SULFUR-RITE® provides very flexible operation with up to 100% turndown. If H₂S loading is reduced due to lower concentrations or gas rate, the run length becomes longer. As H₂S loading increases, the media will require more frequent change-outs. Systems can be designed for either batch processes (Single Vessel Operation) or continuous operations (Lead-Lag Configuration).

Merichem offers a portfolio of technologies in custom designed systems for removal of H₂S from virtually any gas stream. With over 190 units licensed over the past 25 years, they have proven experience in optimizing H₂S solutions around the world in a wide variety of industrial applications.



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