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Abstract: Treatment Options for Molten Sulfur Storage and Transfer Vents

Merichem Chemicals & Refinery Services LLC

Molten sulfur is finding an ever widening presence in many industries. The presence of hydrogen sulfide and sulfur dioxide in most sources of molten sulfur further complicates its handling, storage, and transfer, already complicated by its unique physical and chemical characteristics.

What would seem to be a simple task has several choices to select. Tank or pit? Sweep or sparge? Air or nitrogen? Vent treatment or incineration? The how's and why's are determined by the quantity, source, and end use of the sulfur being stored, environmental regulations, and existing plant infrastructure, so there is no set answer that works for every situation. Instead, the user must take what they know, both in terms of what they have, and what they want, and design a system that best fits the characteristics of the molten sulfur they will be handling, how it will be brought into, and sent out of, the storage system, and what contaminants must be handled, in designing the molten sulfur storage and transfer system.

In considering the treatment of the molten sulfur storage vent, options will be considered for the different types of processes available for removing the most problematic of the possible contaminants; hydrogen sulfide. Again, many options are available, most depending on what systems are already in place around the storage system, as well as the actual amount of H2S required to be removed. In some cases, the vent stream can simply be burned or recycled to contain it, in others, a more complicated treatment system will be required to destroy or convert the H2S to an innocuous compound. In the case of vent handling systems, suppliers can often be found that can design the entire system and provide equipment packages to meet the end users needs.

In the end, it is critical that the user define their requirements, and work closely with a provider that can design and implement a system that meets the economic, safety, regulatory, and process requirements in an integrated package.