

APPLICATIONS

The Shell Sulfur Degassing Process has been developed to remove H₂S and H₂S_x from liquid sulfur eliminating potential toxic and explosion hazards associated with handling, transport and storage of liquid sulfur. Elemental sulfur produced by the Claus process contains both physically dissolved H₂S and chemically bound H₂S in the form of hydrogen polysulfides (sulfanes): H₂S_x. Liquid sulfur produced typically contains 250-350 ppm wt H₂S as H₂S and polysulfides.

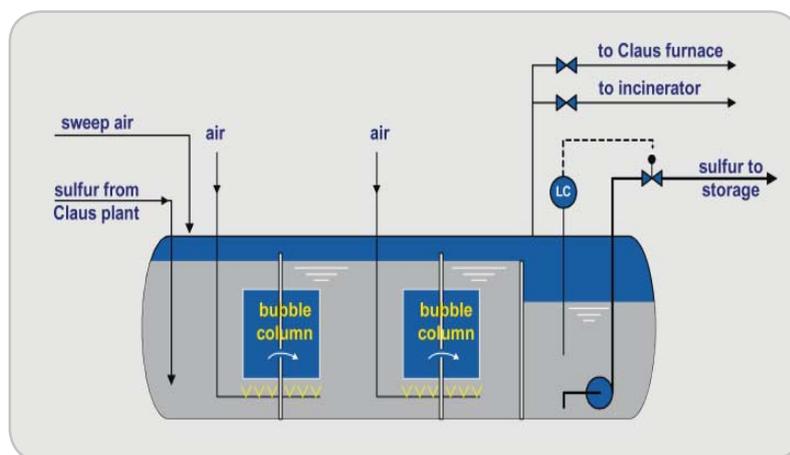
The principle of sulfur degassing is to accelerate decomposition of the polysulfides according to $H_2S_x \leftrightarrow H_2S + S_{x-1}$ and to remove the dissolved H₂S from the liquid sulfur. In the Shell Sulfur Degassing Process, the sulfur is degassed to less than 10 ppm wt H₂S/H₂S_x.

DESCRIPTION

Degassing is carried out as a continuous process in the degassing compartment of the Claus plant dedicated vessel. The actual degassing takes place in the bubble column where sulfur is vigorously agitated by bubbling air through the liquid sulfur.

As the bubble column, provided with separation baffles, is open at the bottom and the top, the sulfur can circulate through the bubble column and a thorough mixing with the total content of the degassing compartment is achieved.

The process does not use a catalyst and has no moving parts.



FEATURES

- » Safer working conditions for handling liquid sulfur
- » Reduced corrosion in transport and storage equipment
- » Reduced fugitive emissions from the sulfur vessel
- » No chemicals present in the product sulfur
- » No moving parts

OPERATING CONDITIONS

In the Shell Sulfur Degassing Process, air stripping is applied without addition of chemicals. Air is supplied to the stripping column at a pressure of approx. 1.5 bar either as a slipstream from the Claus air blower or by a dedicated blower. Vent gas is charged to an incinerator or can be recycled back to the sulfur plant. The degassed sulfur flows over a weir to the pumping compartment and is pumped on level control to storage. The Shell Sulfur Degassing Process is an inherently safe system that prevent the formation of an explosive H₂S/air mixture.

UTILITIES

Utility consumption for the degassing of 100 t/d sulfur.

Electricity for compression of stripping air	5 kW
LP Steam for air preheater and plant heating	200 kg/h
Chemicals	not required

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REFERENCES

More than 350 Shell Sulfur Degassing systems ranging in capacity from 5 to 4000 t/d sulfur production are in operation or are under design/construction through-out the world, demonstrating the reliability, simplicity and flexibility of the process.