

## APPLICATIONS

The SUPERCLAUS® process recovers elemental sulfur from H<sub>2</sub>S-containing gases originating from gas treating and sour water stripper plants. Yields up to 99.2% overall sulfur recovery, without any further tail gas cleanup, are possible.

## DESCRIPTION

The SUPERCLAUS® process consists of a thermal stage followed by minimum three catalytic reaction stages, with sulfur removed between stages by condensers. The first reactors are filled with standard Claus catalyst, while the final reactor is filled with selective oxidation catalyst.

In the thermal stage, the acid gas is burned with a sub-stoichiometric amount of controlled combustion air, such that the tail gas leaving the last Claus reactor contains typically 0.8-1.0 vol.% of H<sub>2</sub>S. The selective oxidation catalyst in the final reactor oxidizes the H<sub>2</sub>S to sulfur at an efficiency of more than 85%.

If a sulfur recovery rate of more than 99% is required, a third Claus reactor stage can be installed upstream of the selective oxidation reactor.

## FEATURES

- » Application in both new and existing plants
- » Sulfur recovery up to 99.2%
- » Long catalyst lifetime
- » Simple continuous operation
- » Low additional investment costs
- » NH<sub>3</sub> destruction
- » High turndown
- » High reliability - less than 1% unscheduled shutdown time

## OPERATING CONDITIONS

Two main principles are applied in operating the SUPERCLAUS® process:

- » Operating the Claus plant with excess H<sub>2</sub>S to suppress the SO<sub>2</sub> content in the Claus tail gas
- » Selective oxidation of the remaining H<sub>2</sub>S in the Claus tail gas by means of special catalyst which efficiently converts the remaining H<sub>2</sub>S in the presence of water vapor and excess oxygen to elemental sulfur only

Other operating features that apply to Jacobs' Comprimo® Claus process are applicable for the SUPERCLAUS® process as well. These include NH<sub>3</sub> destruction up to 30 vol.%, the capability to process heavy hydrocarbons and aromatics (BTX) up to 2 vol.%, turndown ratios of 100-15% and production of 99.9% pure bright yellow sulfur.



## UTILITIES

Basis: 100 t/d, two Claus reactors, one selective oxidation reactor, 71 vol.% H<sub>2</sub>S and 11 vol.% NH<sub>3</sub> feed gas, thermal incineration with heat recovery, and sulfur recovery of 99%.

		Consumption	Production
4 bar(g) steam	t/h	-	2.7
40 bar(g) steam	t/h	-	12.8
Pre-/Reheat 40 bar(g)	t/h	1.7	-
Electricity	kW	310	-
Fuel gas	t/h	0.28	-
Boiler feed water	t/h	16.4	-
Steam for plant heating	t/h	0.9	-

## REFERENCES

Since the first commercial demonstration of the SUPERCLAUS® process in 1988, more than 190 units with a total installed capacity of over 48,000 t/d have been licensed. The biggest single unit in operation has a capacity of 1,500 t/d.

## LICENSOR

Jacobs Comprimo® Sulfur Solutions, a member of Jacobs Engineering Group Inc.

### For any information:

Mr. Frank Scheel  
 Tel: +31 71 582 7366  
 E-mail: frank.scheel@jacobs.com

Mr. Dennis Koscielnuk  
 Tel: +1 403 692 2950  
 E-mail: dennis.koscielnuk@jacobs.com

[www.jacobs.com/comprimo](http://www.jacobs.com/comprimo)

