

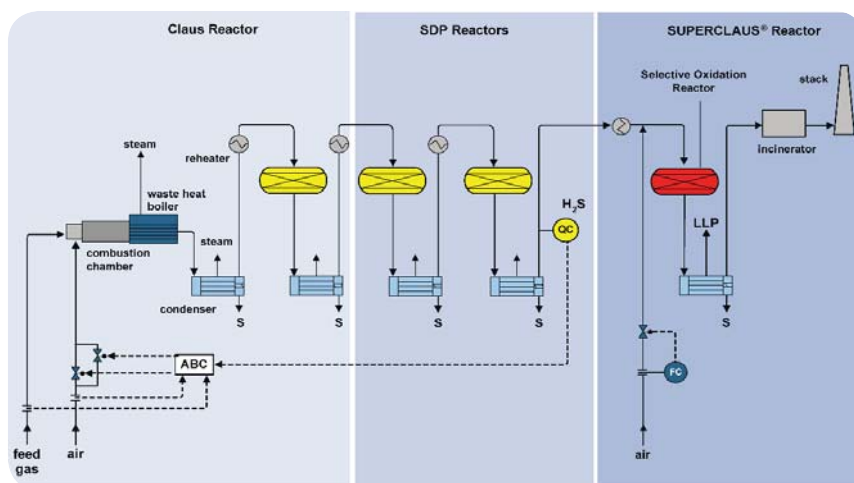
APPLICATIONS

The SubDewPoint (SDP)-SUPERCLAUS® combi-process is a convenient solution for existing SDP units to increase the overall sulfur recovery to at least 99.5% without any further tail gas clean up.

DESCRIPTION

The SDP-SUPERCLAUS® process adds the selective oxidation stage and the main burner combustion air control of the well-known SUPERCLAUS® process to the existing SDP unit. The subdewpoint part consists of a thermal stage followed by two or more catalytic reaction stages (reactors are filled with standard Claus catalyst) with sulfur removed between stages by condensers. The SUPERCLAUS® selective oxidation stage is added downstream the SDP unit; its reactor is filled with proprietary selective oxidation catalyst.

In the thermal stage, the acid gas is burned with a substoichiometric amount of controlled combustion air such that the tail gas leaving the last subdewpoint reactor contains an increased H₂S concentration of typically 0.2 to 0.3 vol.%. Under these conditions, hardly any SO₂ leaves the subdewpoint part. Because the proprietary catalyst neither oxidizes H₂S to SO₂ and H₂O nor reverses the reaction of sulfur and water to H₂S and SO₂, a sulfur recovery efficiency of at least 99.5% can be obtained.



REFERENCES

Since the first commercial demonstration of the SUPERCLAUS® process in 1988, more than 190 plants with a capacity up to 1500 t/d have been in operation or are under construction. The technology can easily be added to any kind of SDP unit.

OPERATING CONDITIONS

Three main principles are applied in operating the SDP-SUPERCLAUS® process:

- » Operating the SDP-Claus part with excess H₂S as in the SUPERCLAUS® process to suppress the SO₂ content in the SDP-Claus tail gas. This principle makes the recovery of the plant less sensitive to the amount of air supplied than in (conventional) Claus plants.
- » Operating the last Claus reactor below the sulfur dewpoint to maximize the sulfur recovery.
- » Selective oxidation of the remaining H₂S in the SDP-Claus tail gas by means of SUPERCLAUS® selective oxidation catalyst, which efficiently converts the remaining H₂S in the presence of water vapor and excess oxygen to mainly sulfur.

UTILITIES

Basis: 100 t/d 1 Claus reactor, 1 MCRC plus 1 SUPERCLAUS® stage, 71 vol.% H₂S and 11 vol.% NH₃ feed gas and thermal incineration with heat recovery, sulfur recovery 99.5%.

		Consumption	Production
4 bar(g) steam	t/h	-	2.8
40 bar(g) steam	t/h	-	13.0
Pre-/Reheat 40 bar(g)	t/h	2.1	-
Electricity	kW	330	-
Fuel gas	t/h	0.30	-
Boiler feed water	t/h	16.9	-
Steam for plant heating	t/h	0.9	-

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FEATURES

- » Easy retrofit for existing SDP units
- » Long catalyst lifetime
- » Low additional investment costs

LICENSOR

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