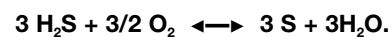


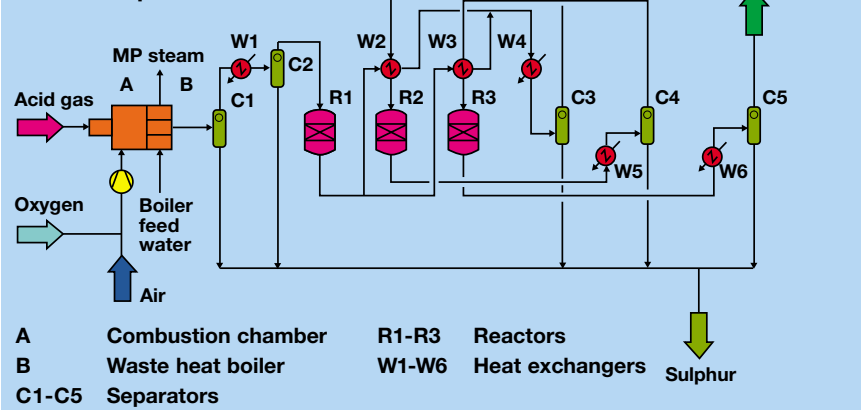
# Increasing the capacity of Claus systems through oxygen enrichment

## Intention

Hydrogen sulphide produced, for example, in the desulphurisation of mineral oils, is converted to sulphur in Claus plants. The main reaction equation is:



Basic flow diagram of a Claus plant

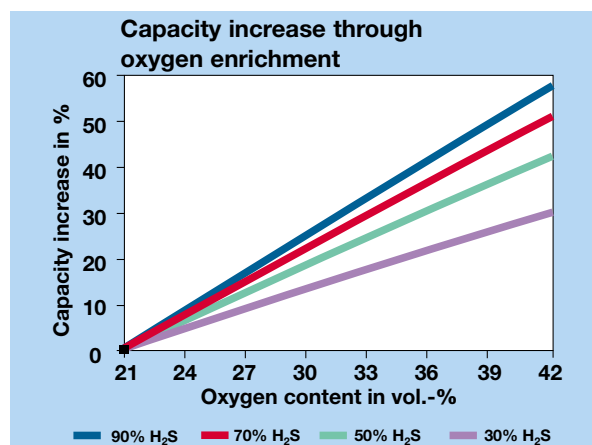


Due to legal regulations regarding the reduction of sulphur content in fuels, the amount of hydrogen sulphide is increasing and Claus plants are becoming bottlenecks. Enrichment of combustion air with oxygen enables the hydrogen sulphide capacity to be significantly increased, thereby overcoming the bottleneck.

## Benefits

The following benefits can be achieved by oxygen enrichment of the combustion air:

- Increased plant capacity
- Increased combustion chamber temperature
- Increased productivity without increasing the pressure drop
- More effective combustion of ammonia-containing gas flows
- Reduction of the waste gas purification, as the nitrogen flow is reduced.



## Oxygen supply

### Process requirements for various oxygen levels

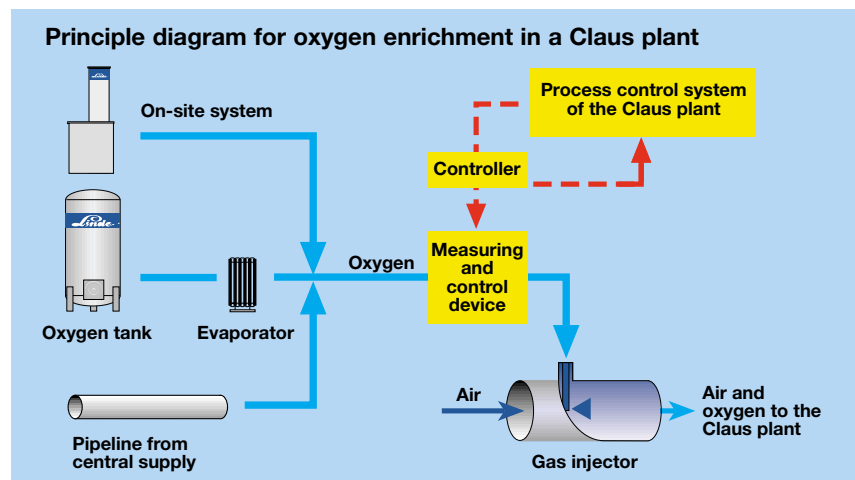
1. Oxygen content up to 28 vol.%
2. Oxygen content up to 40 vol.%
3. Oxygen content over 40 vol.%

### Range of services



Linde AG  
 Werksgruppe Technische Gase  
 Export Head Office  
 Seitnerstraße 70  
 82049 Höllriegelskreuth/Germany  
 Phone: +49/89/74 46-0  
 Fax: +49/89/74 46-12 30  
<http://www.linde.com/linde-gas>

Depending on the quantity and the refinery infrastructure, the oxygen may be supplied as a liquid from a tank, an on-site plant or from a pipeline. The liquid tank supply is used when the oxygen requirement fluctuates greatly. In the case of continuous use of oxygen and throughputs of over 300 Nm<sup>3</sup>/h, it is more economical to use a vacuum pressure swing adsorption plant which supplies oxygen purity from 90 vol.% to 94 vol.%.



- Incorporation on the pipeline side of the specially designed oxygen injector
- Incorporation of the oxygen supply via a measurement and control unit in the process control and safety system of the plant
- Oxygen supply.

The use of special burners is necessary in addition to the measures outlined under point 1.

In most cases, complete revamp of the Claus furnace is necessary in addition to the measures outlined under points 1 and 2.

- On-site demonstrations
- The simulation of oxygen use in Claus plants employing a proprietary software program
- Carrying out feasibility studies
- Delivery and installation of gas mixing unit including measurement and control system
- Selection of the most economical oxygen supply
- Installation of the oxygen supply equipment and start-up assistance
- Reliable oxygen delivery
- Ongoing technical support.

Printed information on all Linde products and services is available from our sales offices. Our specialist staff are on call to advise you.