

# Training - H2S Removal and Sulfur Recovery Processes



PFCS-EN-P



Face-to-face only



3 days

This course provides a deeper understanding of the operation and the monitoring, including HSE considerations, of common processes for elimination of H2S and for sulfur recovery

## Level

Skilled

## Public

Engineers and supervisors involved in operating, troubleshooting, optimizing or revamping sour gas treatment and sulfur recovery facilities

## Objectives

Attendees will be able to implement the following skills:

- Identify environmental issues related to sulphur impurities
- List operating parameters of sulphur treatment units
- Specify rules of conduct to optimize processes

## Pedagogical & technical resources

- Use of a dynamic simulator for amine and Claus units to simulate operating conditions
- Parts of or the whole session customizable to a virtual remote classroom

## Assessment of achievements

- Trainees are assessed throughout the training through practical application phases and interactions with the trainer
- A final on-the-spot evaluation may also be carried out at the end of the course and/or at the end of each module using tests designed to verify the learners' understanding and assimilation of the knowledge linked to the training objectives

## Prerequisites

No prerequisites are necessary to follow this course

## Responsible

IFP Training instructors, with expertise in the field and trained in modern teaching methods adapted to the specific needs of learners from the professional world

## Program

### OVERVIEW OF SULFUR REMOVAL & RECOVERY

0.25 day

Amine washing and sulfur recovery units role in refineries.  
Nature, origins and compositions of the streams to be treated, ammonia content.  
Determination of the sulfur balance for a typical refinery.  
Environmental aspects, treatment justification.

### AMINE UNITS

0.75 day

Chemical reaction between amines and H2S.  
Process flow sheet and equipment review: absorption, regeneration, pumps and filtration.

Process control: pressures, temperatures, amine solution optimization, steam flowrate to regenerator optimization.

Regeneration quality: objectives, follow-up methods, and performance impacts.

Troubleshooting: amine solution degradation, foaming, corrosion, washing quality follow-up.

Safety issues.

Application: what you can learn from your amine analysis (routine and detailed).

## **SULFUR RECOVERY UNITS**

1 day

Chemical reactions: required and undesired ones, thermodynamics and kinetics.

Process flow sheet: thermal stage, catalytic stage, sulfur recovery, tail gas incineration. Operating parameters and impact on sulfur yield.

Process control: H<sub>2</sub>S/SO<sub>2</sub> ratio control, air flowrate optimization, tail gas analyzer, warming up techniques and temperature control at the converters.

Troubleshooting: hydrocarbons presence, sulfur behavior as per temperature, H<sub>2</sub>S degassing from sulfur product, safety.

Shutdown situations and consequences, safety issues, ISS.

Use of a dynamic simulator to illustrate the impact of parameter changes.

## **TAIL GAS CLEAN-UP PROCESSES**

0.75 day

Process flow schemes: sub-dewpoint Claus or amine route.

Operating parameters and impact on process and sulfur yields.

Influence of the H<sub>2</sub>S/SO<sub>2</sub> ratio.

Sources of usual operation troubles for each process: improper regeneration, catalyst ageing...

Impact on the CLAUS unit optimization.

## **SOUR WATER STRIPPER OFF-GAS TREATMENT**

0.25 day

Sour water characteristics. Ammonia content. Ammonia conversion and NO<sub>x</sub> monitoring.

Principle, main equipment, operating parameters, water quality follow-up.

To French entities : IFP Training is referenced to DataDock ; you may contact your OPCO about potential funding.

Please contact our disabled persons referent to check the accessibility of this training program : [referent.handicap@ifptraining.com](mailto:referent.handicap@ifptraining.com)