



# Olin Engineering

## Document: Project Execution Plan

**Project Name: Oxygen based approach to Claus process**

Revision	Date	Description		Prepared by	Checked by	Approved by
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## Executive Summary

The objective of this document is to give an outline of the study that will be carried out within a time span of next 3 months. The study is based on the Claus process, which converts the acidic hydrogen sulfide into stable and environmentally neutral elemental sulfur. Hydrogen sulfide is a common byproduct in the natural gas production and petroleum refining industry, and sulfur recovery units (SRUs) represent a significant share in the capital expenditure of the entire refinery. Our objective of this study is to evaluate all the possible alternatives that can potentially help the industry in cutting down the cost for SRUs.

Conventional Claus process consists of an initial step where gases containing hydrogen sulfide are burnt with air to produce a mixture of sulfur dioxide and hydrogen sulfide. Then, the reaction mass is cooled and liquid sulfur is removed. This reaction mass is then reheated and passed through a catalyst bed to remove the remaining sulfur. This process is repeated one more time. The remaining sulfur is then removed by SCOT process, which is approximately equal in capital cost to the Claus Process. Hence, to reduce the total capital costs of SRUs, it is imperative to study the alternatives in detail and evaluate the viability of one of these alternatives.

Two of the alternatives for Claus process that we will be studying are as follows:

1. Alternative 1: To feed the Claus Process with an oxygen rich stream which would exclude the diluent, nitrogen, thereby also reducing the volume of the reactor (combustion chamber).
2. Alternative 2: To burn the sulfur recovered in oxygen to produce sulfur dioxide and react it with hydrogen sulfide. This would result in the elimination of the first step in the Claus process where water vapors are produced.

Both these alternatives will be compared based on their cost estimates by First Approximation Costing Technique (FACT), which will be done in the later part of the project.

## Execution Strategy & Milestones

This project will be executed by the team of two people and the workload will be divided evenly between the two. The team will follow the concept of milestones to accomplish the objectives of the project. After each milestone, a review meeting with Prof Center is scheduled to discuss the quality and accuracy of the work.

The schedule for review meetings for each milestone achieved will be as follows:

Milestone 1	Completion of detailed study of the Claus process, the SCOT process and the two alternative processes	Feb 23rd, 2018 (Friday)
Milestone 2	Completion of model for alternative 1 An excel spreadsheet will be presented with complete heat and mass balance	March 9th, 2018 (Friday)
Milestone 3	Completion of model for alternative 2 An excel spreadsheet will be presented with complete heat and mass balance	March 23rd, 2018 (Friday)
Milestone 4	Completion of FACT cost estimates of both the processes and come up with a comparative analysis against the SCOT process	April 6th, 2018 (Friday)
Milestone 5	Completion of comparative studies of both the processes and submission of final report (Design basis memorandum, containing PFD, layout plan for the equipment)	April 15th, 2018

Apart from the milestones, the project team will also be meeting with Prof Center every Wednesday at 1.30 pm so as to ensure that the team is working in the right direction.

The team will maintain a Management of Change journal, that will be populated continuously over the course of the project. This journal will be presented to Prof Center during the weekly meetings.