

Mineral Refining Pilot Plant Wet Oxidation Rig



OBJECTIVES

- To construct a Wet Oxidation Pilot Plant.
- To study the effects of combining oxygen with process liquor.
- To derive optimum operating pressures and temperatures.
- To study the nature of the discharge liquor from the test plant.
- The rig was fully controlled by a high level S.C.A.D.A. system. (Supervisory Control And Data Acquisition System).

INTRODUCTION

Control and Thermal Engineering was asked to construct a Wet Oxidation Pilot Plant for a multinational mining and refining company. The pilot plant was designed to study and prove the methods and the effects on oxidising organic material in their refining process stream.

The system involved delivering fluid under pressure via priming and positive displacement pumps through a steam heated heat exchanger. Full control over the steam and fluid streams was important to control process temperatures.

The fluid then passed through a mixer into which gases could be added. Then onto a pressure vessel. This pressure is regulated by controlling the fluid being flashed off as it exits the vessel via a pressure control valve.

As the fluid flashes, a separation occurs. Liquid is directed out the bottom to another vessel and vapour is directed out the top to a cyclone to further separate any entrained water particles.

The pilot plant was a great success in proving the modification of the refining plant process to ensure a cleaner more refined and value added product leaving their process.

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