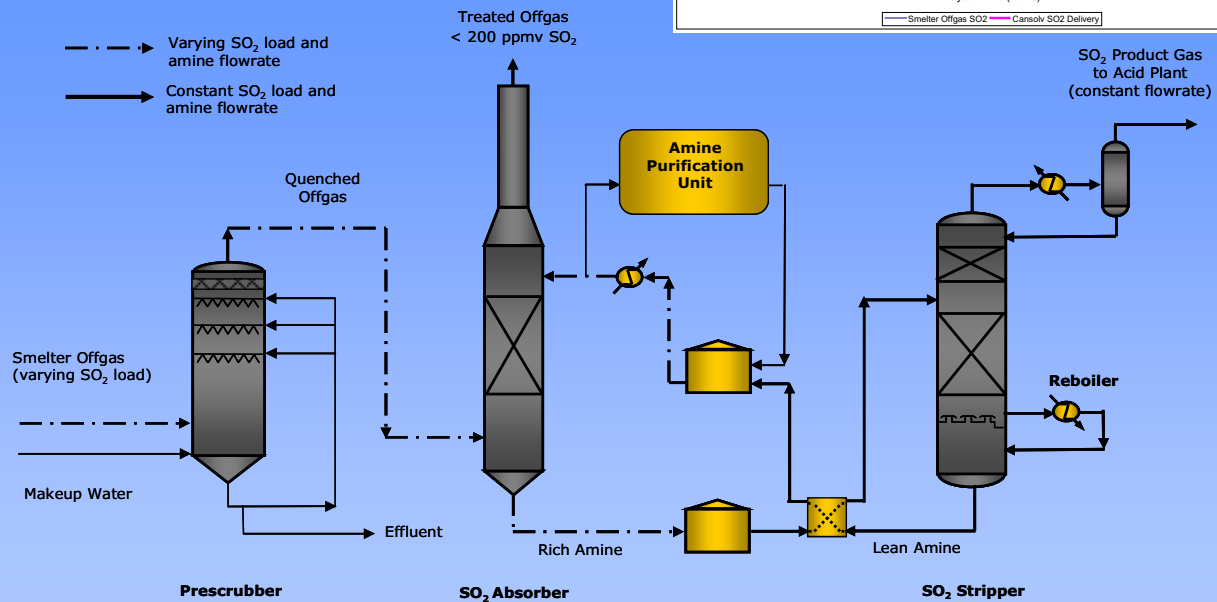
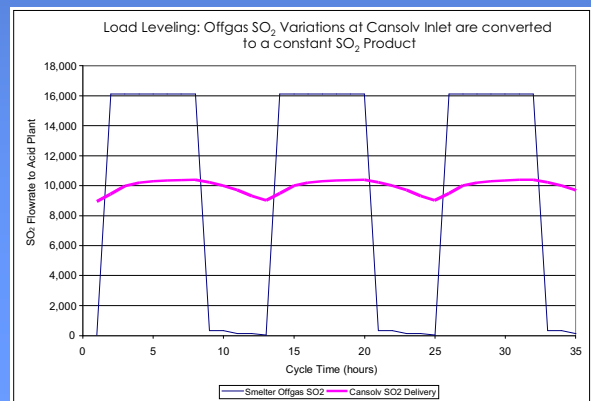


Cansolv SO₂ Scrubbing System For Metallurgical Applications

Case Study: Hindustan Zinc Lead Smelter Off-Gas Plant

Metallurgical emissions are particularly challenging because they are either too dilute or variable in SO₂ concentration for direct feed to an acid plant. The load leveling design of the Cansolv SO₂ Scrubbing System addresses the issue and offers the following benefits:

- ability to treat dilute and variable smelter gases while continuously achieving low SO₂ emissions;
- low gas cleaning requirements;
- easily integrated with existing facilities or simple acid plant design to treat the recovered SO₂;
- constant, steady sulfuric acid production rate.



CANSOLV SO₂ SCRUBBING SYSTEM – Load Leveling Configuration

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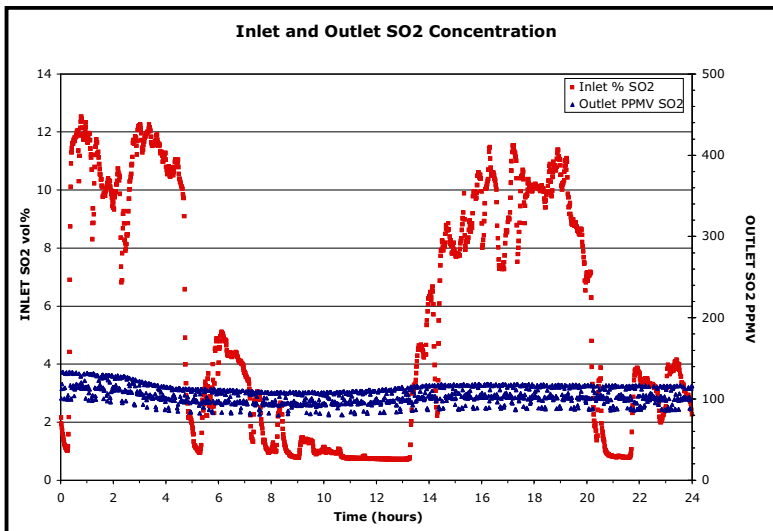
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Background

Hindustan Zinc Limited (HZL), a member company of the Vedanta Resources group, operates a batch lead smelter in India, which uses the CANSOLV SO₂ Scrubbing System to smooth out the cyclic flows of SO₂.

Design Considerations

- SO₂ content varies between 0.1 to 12vol%.
- Gas flowrate varies from 6,000 to 25,000 Nm³/h.
- Continuously meet <100 ppm SO₂ emissions
- Generate a constant flowrate of pure SO₂ gas, suitable for direct feed to the existing acid plant.



Approach

For this application, a Load Leveling design is implemented. The flowrate of lean amine from the Lean Amine Tank to the SO₂ Absorber Tower varies as a function of the SO₂ load in the gas, whereas the flowrate of rich amine to the Rich Amine Tank remains constant. This ensures that the target SO₂ emissions are always met, and that the SO₂ product flowrate is always constant.

Results

Since 2005, the Load Leveling design has allowed HZL to convert a fluctuating SO₂ load in the smelter gas to a constant pure SO₂ product gas, while meeting SO₂ emissions of 100ppmv or less. Load Leveling the SO₂ content of the smelter gas has also enabled HZL to process its entire load of SO₂ in existing sulfuric acid facilities, thereby reducing overall project costs.

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