

ABSORBING TOWER CONCENTRATION CONTROL

Although modern conductivity instruments used to control absorbing tower concentration have proven to be extremely accurate, it is still prudent to verify the acid concentration on a regular basis.

Recommended methods for verifying the acid concentration are lab conductivity and sonic concentration measurement. Lab titration, even with an automatic titration unit, is not recommended.

Following a recent near miss SO₃ release from an operating absorbing tower, it was found that the following errors had been introduced into the tower conductivity meter by titration analysis:

- 1.** The Dosimat titrator was assumed to be in calibration. In fact, it was found to over-deliver titrant by 2.3%. This factor alone would have underestimated the concentration of 98.0% Sulfuric Acid as 95.7%.
- 2.** The purchased 0.5 Normal NaOH titrant, certified to be 0.499N was determined to be 0.494 N. This would have overestimated the concentration of 98.0% Sulfuric Acid as 99%.

Adjusting for these two factors, 98% Sulfuric Acid would have been reported as 96.7%.

Concentration analysis by titration is sensitive to small errors, even when done by automated equipment. Simpler, more robust methods are recommended for industrial control verification.