

# REDUCTION OF SCALING IN SMELT DISSOLVING TANKS

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## BACKGROUND

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Smelt dissolving tanks occasionally suffer from serious scaling, especially on the impellers used for mixing. In some cases, severe scaling has required shutdown and cleaning on a monthly basis.

At a Western Canadian Kraft mill, severe impeller scaling occurred regularly in one smelt dissolving tank, while a very similar dissolving tank with the same feed streams showed minimal scaling. A similar problem was reported at a European Kraft mill.

## STRATEGY

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Several scale samples from the dissolving tank impeller and the tank itself were collected and characterized in detail. Mill operating data was also examined.

## RESULTS

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At the Western Canadian Kraft mill, the major scale component was positively identified as pirssonite,  $\text{Na}_2\text{CO}_3 \cdot \text{CaCO}_3 \cdot 2\text{H}_2\text{O}$ . Using historical mill operating data, a pirssonite solubility curve was constructed. A recommended maximum TTA operating value was established to minimize scaling.

It was found that TTA values varied significantly and were often in excess of the recommended value.

Dissolving tank impeller design was also found to be a factor in the scale formation problem.

A good understanding of the problem led to recommendations to resolve the scaling issue.