Grace’s Super DESOX® product line of SOx reduction additives provides an effective way to reduce wet gas scrubber caustic consumption, and improves the overall economics of SOx removal.

Sodium hydroxide, or caustic soda, is one of the most widely used commodity chemicals. Refiners utilize it in FCCU wet gas scrubbers (WGS) to remove SO₂ from regenerator flue gas stack emissions. Caustic pricing tends to be cyclical, depending not only on the demand for caustic, but also on the demand for the co-produced chlorine. The continued slow down in the housing market has reduced the demand for chlorine derivatives, thus limiting caustic production, and has been a contributing cause in caustic soda price increases. Currently, caustic soda price is forecasted to exceed $600 per dry short ton through the third quarter of 2012 – a price threshold where use of SOx reduction additives can be cost effective. This situation has prompted some refiners to consider use of Super DESOX® additives to reduce the SO₂ loading on their WGS.

The high efficiency of Super DESOX® additives, at modest SOx reduction levels, makes them an economically attractive option to reduce WGS caustic consumption. Using Super DESOX® MCD, Grace’s most cost-effective additive to reduce the amount of SOx going to the WGS, provides refiners an opportunity to lower caustic consumption. To illustrate the potential savings, consider an FCCU with uncontrolled SOx emissions of 700 ppmv upstream of the WGS. A moderate pick-up factor (PUF) of 30 at 40% SOx reduction is assumed for Super DESOX® MCD efficiency. Also assumed is that for every one mole of SOx removed, 2.2 moles of caustic could be eliminated. Optimal savings occur near 40% SOx reduction, potentially exceeding $220,000 annually in caustic consumption alone, while also taking into account the cost of the additive. Additional savings may result from reduced water, utilities, and waste disposal.

For more information on reducing WGS caustic consumption, please contact your Grace technical sales representative.