Industrial experience with VK69
Customer case

REDUCED SO_2 EMISSIONS – LESS THAN 100 PPM SO_2 IN THE STACK

Specifications	Design case November 2005	Reported April 2011	TOPGUN March 2012
SO_2 feed gas, mole %	8.55	7.5-9.0	7.18-7.40
Production, MTPD	620	620-650	645
SO_2 conversion, %	99.75	99.79-99.83	99.92
SO_2 emission, ppm	250	180	60

Yunnan Chihong Zinc & Germanium Co., Ltd's head office is located in Qujing City, Yunnan Province. The company mainly focuses on mining, mineral processing, import and export business and domestic trade of lead, zinc and germanium series productions. The company operates five sulfuric acid plants, all based on off-gasses from zinc/lead smelting. Two of the plants are located in Qujing, two in Huize and one in Hulunbeier. All five plants are operating with Topsoe VK catalysts.

Challenge
The commencement of the new legislation of lower SO_2 emission of less than 100 ppm applicable for Qujing City has forced the company to start an investigation into finding the best technology in order to comply with the new SO_2 emission standard.

Solution
Yunnan Chihong decided on a catalyst solution to decrease the SO_2 emission from their existing 3+1 plant based on off-gasses from zink smelting The decision of selecting a catalyst solution was made based on many years of experience operating their acid plant using VK catalyst and confidence in Topsoe's caesium-promoted VK69 being the most economical solution to achieve the SO_2 emission goal. The final catalyst solution ended up with the use of VK59 in bed 1 as an ignition layer to accommodate the daily fluctuation in the upstream process and the use of the high-active VK69 in the last pass to ensure sufficient activity at low and fluctuating inlet temperatures.

Benefits
- → SO_2 emission significantly lower than 100 ppm was achieved using Topsoe's Cs-promoted catalysts
- → The flexibility of the operation was enhanced due to the superior performance of Topsoe's VK59 and VK69 catalysts.
- → The reduction of the SO_2 emission without increasing the operation cost and reusing the original equipment.

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