

## Performance Profile

# EnviroSOx

New SOx additive consistently delivers less than 25 ppm SOx with less additive.

**EnviroSOx**, BASF's latest Fluid Catalytic Cracking (FCC) additive, shows superior performance by routinely delivering less than 25 ppm SOx even at high feed sulfur levels.

SOx environmental additives are used to reduce flue gas SOx emissions from the Fluid Catalytic Cracking (FCC) units. **EnviroSOx** is BASF's most recent generation of SOx removal additives. With an optimized balance of key components, **EnviroSOx** offers improved performance, enabling low SOx emissions at a lower addition rate.

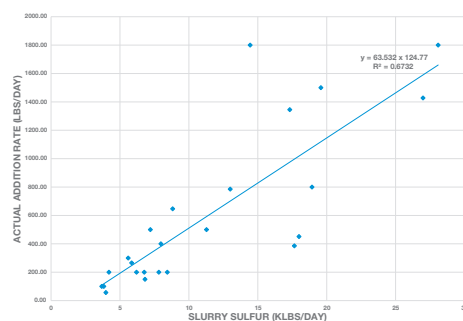
### Goal

The refiner operates an FCC unit in the western region of the United States. To comply with the flue gas emission regulations, the refiner needs to reduce the SOx content in the FCC flue gas to less than 25 ppm. The refiner trialed **EnviroSOx** versus the incumbent additive.

### Plan

BASF proposed **EnviroSOx**, a new SOx additive developed for enhanced performance.

Figure 1. Slurry Sulfur vs Addition Rate



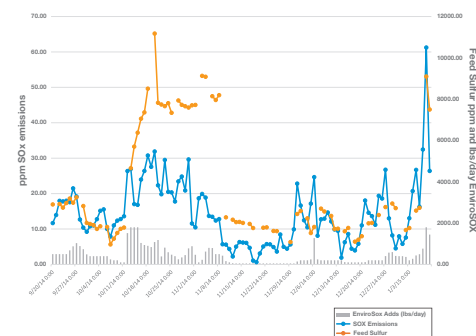
A multivariate statistical model using the operating data was developed to evaluate the performance of **EnviroSOx** vs the incumbent. During the analysis, the modeled and the actual rates were compared.

### Results

**EnviroSOx** showed outstanding performance during the trial. Based on analysis of the statistical model, the refiner was able to use ~ 55 lbs/day less than the incumbent product. This improvement reduced consumption by 14%.

With **EnviroSOx**, the refinery is consistently able to meet the 25 ppm SOx target even when feed sulfur spikes during feed hydrotreater outages. In addition, **EnviroSOx** achieved this target with less additive than the incumbent.

Figure 2. Full Burn SOx Emissions Control



## About Us

BASF's Catalysts division is the world's leading supplier of environmental and process catalysts. The group offers exceptional expertise in the development of technologies that protect the air we breathe, produce the fuels that power our world and ensure efficient production of a wide variety of chemicals, plastics and other products, including advanced battery materials. By leveraging our industry-leading R&D platforms, passion for innovation and deep knowledge of precious and base metals, BASF's Catalysts division develops unique, proprietary solutions that drive customer success.

**BASF - We create chemistry**

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