



The Chemical Company

Product Data Sheet

OxyClean® CO promoter reduces NO_x emissions by 45%

Afterburn control effectively maintained

Proven NO_x expertise — BASF Catalysts has been active in the area of NO_x research for over 30 years. We pioneered the development of oxygen storage compounds widely used to control NO_x emissions from mobile sources. Applying our expertise to the refining market, we commercialized a NO_x reduction additive, CLEANOx®, for use in the Fluid Catalytic Cracking (FCC) process.

Goals

Refiner requested:

- 25% lower NO_x emissions.
- Maintain afterburn control by using less than twice the baseline level of CO combustion promoter; and
- No effects on FCC product selectivity.

Action

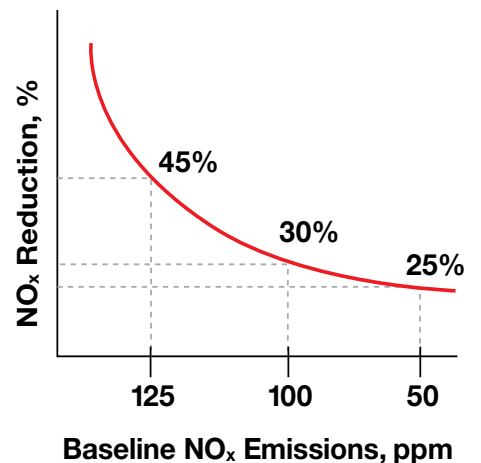
We recommended:

- Use of OxyClean at 1.5 times baseline level of traditional combustion promoter.

Results

The trial of BASF Catalysts OxyClean combustion promoter met all of the refiner's objectives for CO promotion and exceeded expectations for NO_x reduction. The following results were achieved in four weeks.

- Afterburn was maintained with 1.5 times the baseline level of combustion promoter.
- NO_x was reduced by greater than 45% over the duration of the trial.
- FCC product selectivity remained constant, including coke and hydrogen yields.



Reduction of 45% in NO_x emissions have been observed depending on the baseline NO_x emissions.

Commercial trial data of OxyClean

	Traditional	OxyClean
Reduction in NO _x emissions, %	Base	25 - 45
Gasoline yield, vol. % FF	Base	no change
CO promoter addition, lbs	10-15	15-20

About BASF

BASF Catalysts is the Global Leader in Catalysis, and is part of BASF - The Chemical Company. By leveraging our industry-leading R&D platforms, BASF's global research infrastructure and our passionate pursuit of innovation, we develop unique, proprietary technologies that drive customer success. Our catalytic solutions cover a wide range from chemical and refinery processes, to adsorbents and mobile emissions. In addition, we offer broad experience in trading base and precious metals.

BASF - The Chemical Company

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