

# Chemistry Reduces Fouling

## FOULING RATE DECREASED BY MORE THAN 50% IN DELAYED COKER FURNACES

### BACKGROUND AND CHALLENGE

A significant number of refineries experience accelerated fouling in their delayed coker furnaces. High heat flux, feedstock quality, and increased throughput often shorten desired run lengths up to 75%. Furnace tube skin temperature limits force refineries to shut their delayed coker units down for cleaning, significantly decreasing refinery profitability.

### ATHLON'S RECOMMENDATION

Athlon, a Halliburton Service, developed a proprietary chemical treatment program designed to reduce the impact of furnace fouling along with the rate of skin temperature increase, resulting in extended run lengths, reduced fuel consumption, and decreased overall greenhouse gas emissions. This chemistry is simple to use, requires only one chemical injection location, and is economically viable even at reduced coker margins.

### PERFORMANCE RESULTS

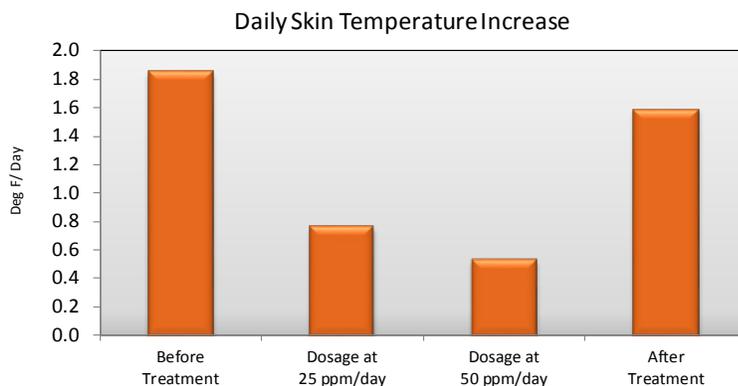
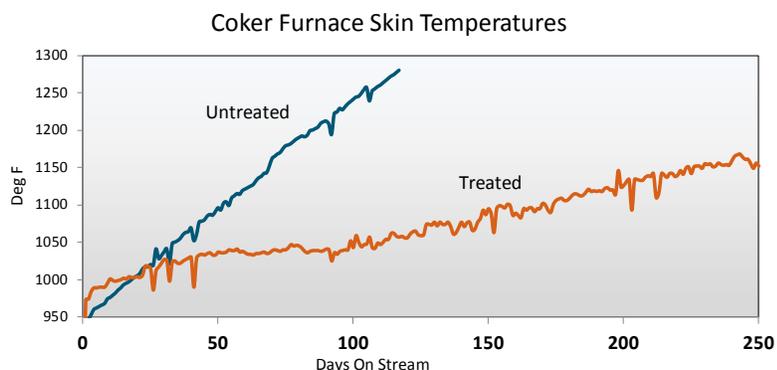
#### Case Study 1

A mid-continental refinery experienced significant fouling in their delayed coker furnace. Run lengths were often shortened to as little as three months. The main reason for the abbreviated runs was a skin temperature limit of 1250°F.

Athlon's RPA-301 was injected into the inlet of the furnace at 50 ppm. Run lengths on this furnace were more than doubled. The adjacent graph shows the impact on average skin temperatures before and after chemical treatment.

#### Case Study 2

A U.S. refiner processing heavy, opportunity crudes reported significant fouling in their delayed coker furnace. Run lengths were limited to an average of six months. A technical and commercial evaluation was conducted to determine the dose response and cost effectiveness of RPA-301. Average daily skin temperature increases consistently ran between 1.5°F and 2.0°F per day on all passes without treatment. A dose response study showed reduced fouling rates with skin temperature increases of only 0.8°F per day at 25 ppm of RPA-301 dosage and 0.5°F per day at a 50 ppm dosage.



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