

## The Value of Gold is Rising

Increasing Fluid Catalytic Cracker Unit (FCCU) conversion can produce significant financial gains. Criterion's new CENTINEL GOLD DN-3310 catalyst is helping refiners raise the bar on FCCU conversion.

### **CENTINEL GOLD DN-3310**

is the latest and most advanced catalyst for FCC Pretreat units. Criterion's latest invention builds upon the best features of the DN-200 technology, the most widely used FCC Pretreat catalyst in the industry's history, and the CENTINEL DN-3110 technology. DN-3310 provides the same exceptional stability as its predecessors, but delivers even more denitrification and aromatic saturation.

Earlier this year, a Gulf Coast USA refiner installed DN-3310 in its FCC Pretreat unit to increase

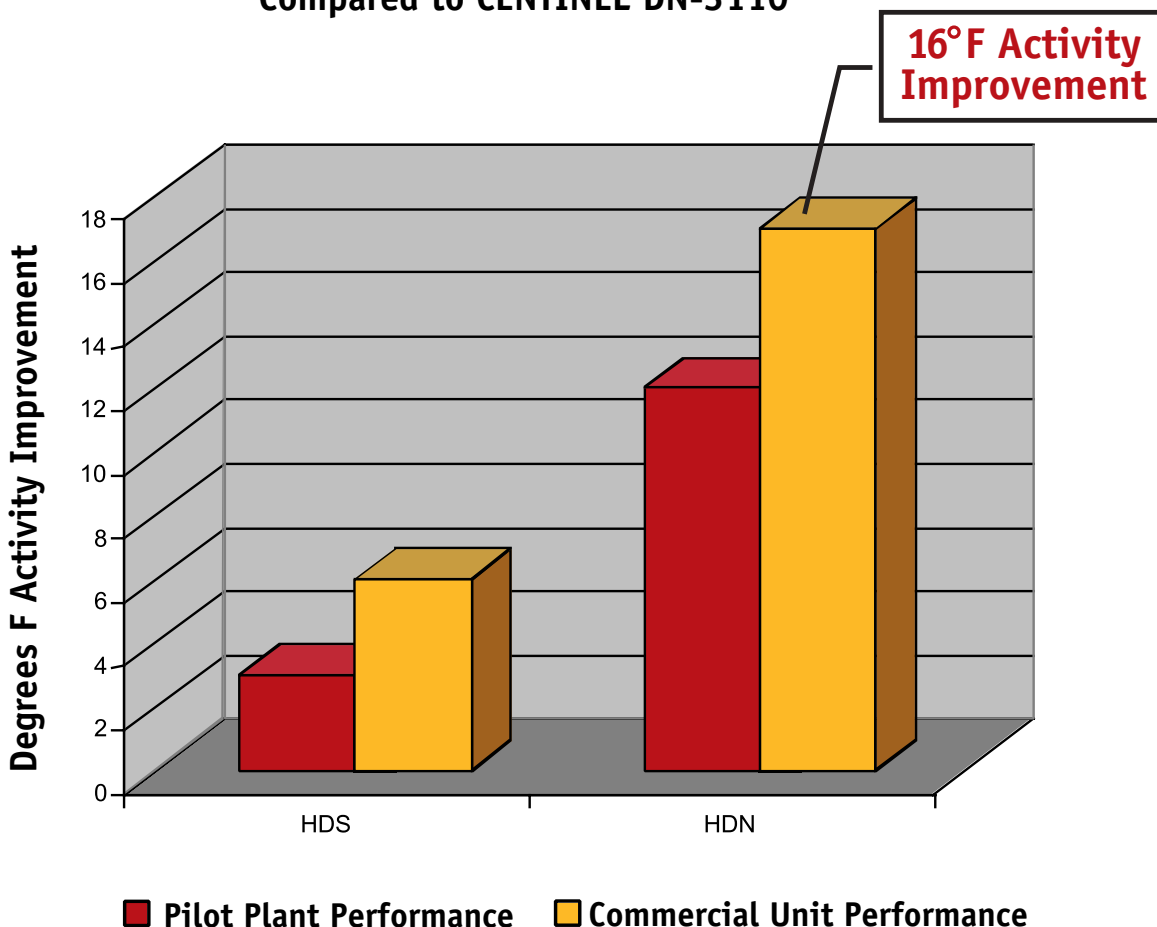
nitrogen removal and polyaromatic saturation. By improving the FCC Pretreat unit's performance, the refiner hoped to get more FCCU conversion. Through the first six months, the catalyst is performing as expected, and the refiner is observing increased FCCU conversion. The DN-3310 is achieving a 16° F denitrification activity advantage compared to the previous catalyst load (See Figure 1 on next page). All other performance parameters for this unit have met the refiner's expectations.



**Figure 1:**

# CENTINEL GOLD DN-3310

Commercial Unit Proven Activity Benefit  
Compared to CENTINEL DN-3110



CENTINEL GOLD DN-3310 can help refiners generate additional margins from the FCCU operation in two ways. First, like the case above, the catalyst can be used to push denitration and aromatic saturation to higher levels to increase FCCU conversion.

Alternatively, DN-3310 can be used to upgrade additional volumes of low-value feeds while maintaining equivalent FCC conversion. Examples are shown in Figure 2 (next page). Either way, this new technology will increase the value of the FCCU.

**Figure 2:**

## Extract Maximum Value from the FCCU with CENTINEL GOLD

	Previous CENTINEL Technology	DN-3310 CENTINEL GOLD	DN-3310 CENTINEL GOLD
<b>FCC Pretreat Feed Properties</b>			
% CGO	30	30	<b>40</b>
Feed S, wt%	2.5	2.5	2.6
Feed N, ppm	2000	2000	2300
Feed Aromatics, UV wt%	16.0	16.0	16.4
Products S, wt%	0.2	0.18	0.2
Product N, ppm	1000	<b>800</b>	1000
Product Aromatics UV, wt	11.0	<b>10.6</b>	11.0
Expected FCC Conversion Improvement	Base	~+1.0	Equal to base

*Assumes equal cycle life*

With the advent of Ultra-Low Sulphur Diesel (ULSD), the FCC Pretreat unit has become an even more critical asset for many refiners. By applying CENTINEL GOLD DN-3310 in the FCC Pretreat unit, refiners can significantly reduce the LCO's nitrogen content, and

address the challenge of desulphurising this very difficult stream to 15ppm sulfur (Figure 3 on next page). This can mean less capital investment to meet ULSD demand, or it can be the difference between producing diesel product and cutter stock.

**Figure 3:**

## Reduced LCO Nitrogen Content with CENTINEL GOLD

	Previous CENTINEL Technology	DN-3310 CENTINEL GOLD
<b>FCC Pretreat Feed Properties</b>		
% CGO	30	30
Feed S, wt%	2.5	2.5
Feed N, ppm	2000	2000
Feed Aromatics, UV wt%	16.0	16.0
<b>Products S, wt%</b>		
Product N, ppm	1000	800
Product Aromatics UV, wt	11.0	10.6
<b>LCO Nitrogen Content, ppm</b>		
	<b>600</b>	<b>500</b>

*Assumes equal cycle life*



*For more information on CENTINEL GOLD DN-3310 or other Criterion products, please contact your Criterion Catalysts and Technology representative.*

**Important:**

All information contained in this document is considered accurate at the time of the testing, based on the equipment, and specific conditions and other limitations during the testing process. It is being furnished upon the express condition that the user will make its own assessment to determine the accuracy and applicability for the user's particular purpose.

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