

Regenerated Hydrotreating Catalysts

REGENERATED CATALYSTS DELIVER COST EFFECTIVE PERFORMANCE

DESCRIPTION

Evonik is an industry leader selling regenerated hydrotreating catalyst to refiners into a wide range of refining applications. At less than half the price, regenerated catalyst offers an economical alternative to fresh catalysts in either full or partial fills, that every refinery should consider for peak cost/benefit ratios.

ADVANTAGES

- **Global Inventory**
Facilities in US, Canada, Europe and Asia to meet worldwide refinery demands
- **Cost Savings**
65-90+% of fresh activity at less than half the cost of fresh
- **High Quality**
Rigorous analysis and superior processing ensures high activity resale catalysts meet quality specifications

Over the past 25 years over 45,000 tons of catalysts have been regenerated by Evonik and successfully applied in more than 150 hydrotreating units worldwide.

CASE 1: GULF COAST REFINERY NHT

Total Savings \$190,000 (€140,000)

Gulf Coast Refinery previously used NiMo catalyst in their NHT to remove sulfur and nitrogen for their reformer. The refinery changes the unit every 30 months to coordinate with turnaround schedules for other units. The refinery was able to save \$190K (€140K) on catalyst costs by loading regenerated CoMo catalyst presulfurized with actiCAT and is on track to meet their 2.5 year cycle length.

CASE 2: NORTHERN US REFINER NHT/KHT

Total Savings \$300,000 (€220,000)

Northern US Refinery has been able to apply regenerated NiMo catalysts to a pressure drop constrained NHT and low severity KHT to meet their processing objectives and save over \$300K (€220K) on catalyst costs.

CASE 3: MAJOR US REFINER – MULTIPLE UNITS

Total Savings \$2,000,000 (€1,500,000)

Major US refiner has reliably applied regenerated catalysts originating from high activity DHT and GOHT units into lower severity units over the past two years. The strategic application of regenerated catalysts to multiple lower severity units decreased disposal and catalyst costs by more than \$2MM (€1.5MM) per year.

CASE 4: SOUTHERN US REFINER – NHT UNITS

Total Savings \$100,000 (€73,000)

Southern US refiner has been able to achieve unit objectives in two NHT units with regenerated NiMo catalysts. The refinery was able to save over \$100K (€73K) in catalyst costs by applying the regenerated catalysts.

CASE 5: EUROPE REFINER DHT

Total Savings \$690,000 (€500,000)

Eastern European Refinery utilized high activity, regenerated NiMo catalyst in their DHT unit to produce ULSD at full, standard rates. Evonik regenerated and coordinated catalyst delivery to meet their turnaround schedule. The refinery saved more than \$690K (€500K) combining regenerated catalyst with actiCAT® presulfurization. Unit on target to achieve required 24-month cycle length.

CASE 6: EUROPE REFINER GOHT

Total Savings \$800,000 (€600,000)

Western European refinery successfully applied regenerated CoMo catalysts in their GOHT to meet their processing objectives. The refinery was able to save over \$800K (€600K) in catalyst costs.

CASE 7: EUROPE REFINER DHT

Total Savings \$800,000 (€430,000)

Eastern European Refinery utilized high activity, regenerated NiMo catalyst in their DHT unit to produce ULSD at full, standard rates. Evonik regenerated and coordinated catalyst delivery to meet their turnaround schedule. The refinery saved more than \$690K (€500K) combining regenerated catalyst with actiCAT® presulfurization. Unit on target to achieve required 24-month cycle length.

CASE 8: EUROPE REFINER NHT

Total Savings \$100,000 (€73,000)

Western European refinery was able to trade their spent catalyst for regenerated catalyst from Evonik. The regenerated NiMo catalysts enabled the refinery to meet processing objectives and save over \$100K (€73K).

CASE 9: ASIA REFINER DHT

Total Savings \$300,000 (€220,000)

Asian refinery was able to achieve unit objectives in their DHT unit with regenerated CoMo catalysts. The refinery decreased their catalyst costs by more than \$300K (€220K).

CASE 10: ASIA REFINERS MULTIPLE NHT UNITS

Total Savings \$200,000 (€140,000)

Asian refiners have been able to achieve unit objectives in several NHT units with regenerated NiMo and CoMo catalysts. The regenerated catalysts results in catalyst savings exceeded \$200K (€140K) by applying the regenerated catalysts.

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