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Long-Term Commercial HCAT® Technology Experience

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http://hcat-hti.com/

Five Years' Experience at Neste Porvoo

The HCAT Technology is being used commercially as a catalyst additive in ebullated bed residual oil hydrocrackers to improve hydrogenation and to reduce sediment.

At the Neste refinery in Porvoo, Finland, the HCAT Catalyst has been added to their ebullated bed hydrocracking unit since January 2011, following an extended commercial trial in 2010 to prove its commercial viability and value. Over that period, Neste has optimized their ebullated bed operation and observed several benefits:

- *Increased resid throughput by +15%.*
- *Increased resid conversion +4 to +8W%.*
- *Greater product yield, approx. +22W%.*
- *Lower sediment, which helped meet Neste's product property specifications.*
- *Longer operating cycles for heat exchangers, vacuum tower, and other downstream equipment.*
- *Elimination of 1 of their previously-required 2 turnarounds per year.*
- *Net upgrading value improvement estimated as USD $2.00-3.00 per feed barrel (based on 2011-13 oil prices).*
- *Additional value improvement of $1-2 per barrel by eliminating 1 turnaround.*
- *Product value increase ~$0.20 per barrel due for requiring less cutter stock for the residual fuel oil blend and enabling greater product flexibility.*

Another European refinery, Slovnaft a.s., located in Bratislava, Slovakia, has also been using HCAT Technology in their heavy oil upgrader for just over a year, and they, too, have observed similar value improvements in terms of higher conversion and throughput than previously possible, along with less fouling and longer cycle lengths for downstream equipment.

Long-term data from Neste and Slovnaft have confirmed that the HCAT Catalyst is recovered in the unconverted resid product, and does not deposit on the ebullated bed's solid catalyst nor on downstream equipment.

HTI provides continuous improvement for its customers through a program of interactive technical support, both via electronic data exchange and on-site meetings.

HTI's Unique Pilot Plant Capabilities

The HTI R&D Center is home to a number of multi-purpose continuous pilot plant units available for contracted, private tests such as catalyst or feedstock screenings with full protection of the client's intellectual property. Our "workhorse" unit is a 3-liter multi-purpose reactor that can be operated in ebullated bed, fixed-bed, or slurry mode, in a single or multi-stage configuration, operating with or without interstage separation. For more information, please write to:

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Photo: Celebration of HCAT Technology at the U.S. Embassy in the Slovak Republic

Celebrating HCAT Technology Success at Slovnaft in Bratislava

A celebration was held at the U.S. Embassy in the Slovak Republic in November to honor the implementation of HTI's HCAT Technology at Slovnaft's Bratislava Refinery. The U.S. Embassy Chargé D'Affaires, Mr. J. Liam Wasley, hosted the well-attended event.

Among the attendees were corporate officials, process engineers, and refinery team members from both the Slovnaft Refinery and its parent company (MOL, Hungary) along with HCAT Technology team members from HTI and from HTI's strategic business partner, Criterion Catalysts & Technologies (U.S.). The event was well-supported by U.S. and Bratislava-based officials of the U.S. Dept. of Commerce (www.trade.gov), assuring the success of this special celebration.

Mr. Wasley's welcoming remarks included the observation that the implementation of HCAT Technology in Bratislava was a result of good teamwork between HTI and Slovnaft. He also noted that HCAT Catalyst, a U.S.-made product, is presently being used at multiple locations in Europe with new applications under development for other refineries around the world.

HTI's president, Stephanie Black, added to Mr. Wasley's statement, saying, "HCAT Technology provides a unique opportunity for refiners to squeeze as much high-value fuel as possible through maximum conversion of lower-value bottom-of-the-barrel residual oil".