

# Start Up Hydrocrackers Without Ammonia Injection



## CATALYST SERVICES

- **TOTSUCAT PREAMTIVATION**

Allows the fastest and safest startup possible.

- **SPECIALTY REGENERATION AND REJUVENATION**

Get >95% activity from Special Regeneration and/or Rejuvenation. Our techniques are much different than a simple carbon burn.

- **SAS SERVICE**

Only get the "good stuff" back with our Sample, Analyze, and Segregate Service.

- **CATALYST RESALE**

Why buy fresh catalysts when regenerated catalysts with "like-fresh" activity are available?

- **ACTIVITY TESTING**

Don't just rely on surface area and poison levels. With two multi-tube test units, Eurecat now runs 82 activity tests per month to measure the true catalyst activity at ULSD conditions.

- **PRESSURE DROP TESTING**

Eurecat offers Pressure Drop Testing at our laboratories in the US and Europe. This provides you with real-world  $\Delta P$  predictions.

## AVOID AMMONIA and SULFUR INJECTION DURING HYDROCRACKER STARTUPS

Temperature excursions are always a risk when starting up a hydrocracking unit loaded with fresh catalyst. To minimize the risk, ammonia is often injected during the sulfiding process. The addition of extra nitrogen from the ammonia passivates the hydrocracking catalyst, reducing the risk of exotherms as the cracking catalyst reaches operating temperature levels. However, ammonia addition exposes operations personnel to a potentially hazardous material and slows the startup process.

Eurecat has developed a method to eliminate the need for ammonia injection.

Our newest offering, Totsucat<sup>®</sup> HC-AP, combines the patented Totsucat Activation and Sulfiding process with a special "acid protection" step, to passivate the acidic sites. With Totsucat HC-AP, the catalyst will be totally sulfided *and* the acidic cracking sites will be protected from hyperactivity that can lead to exotherms.

By treating your catalysts with Totsucat HC-AP prior to loading, complicated and time consuming sulfiding steps are no longer required, and the dangers of ammonia injection can be totally avoided.

Eurecat Sulfiding Technologies

# NO AMMONIA

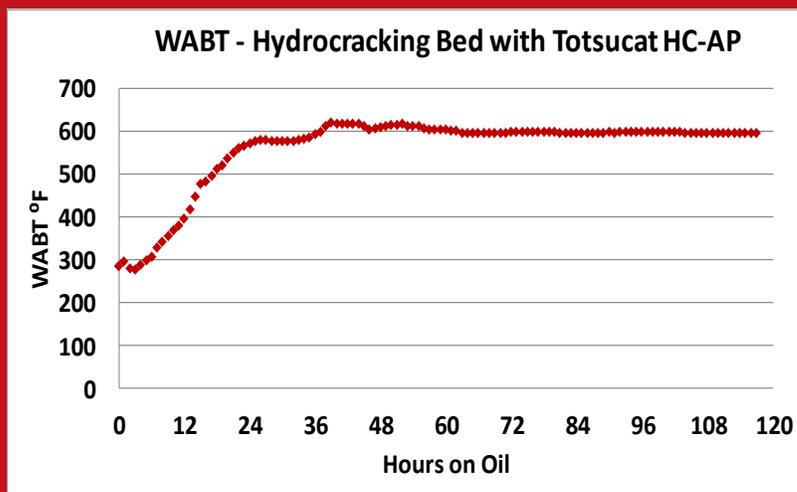
TOTSUCAT HC-AP

Pre-Activating hydrotreating catalysts with Totsucat offers **many benefits** to the refiner including:

- **Load-and-Go reactor startups.** The active metal sulfides are totally formed during the Totsucat treatment. No additional sulfiding agents or complex activation procedures are required after loading.
- **No temperature excursions.**
- **No need for additional hydrogen** at startup.
- **Minimal sour water formation** during startup.
- **No odors or HSE issues** related to the handling of sulfiding chemicals and H<sub>2</sub>S.
- **Negligible amounts of H<sub>2</sub>S** are released during reactor heat up, protecting sulfur sensitive units downstream and preventing a sulfur overload of your SRU.

Starting up with Totsucat-treated catalysts is similar to a restart after an emergency shut down. **Startup time is reduced to a few hours** while the risk of damaging the catalyst prior to activation is eliminated. The catalyst load will achieve peak performance since sulfiding and activation is controlled at very precise conditions by the patented Totsucat process.

In a previous startup of their hydrocracker, a **Midwest refiner experienced difficulties injecting the proper amount of ammonia** into the unit that was needed to passivate the cracking bed. **For their 2012 startup, this refiner selected TOTSUCAT HC-AP treatment for their hydrocracking catalyst** and combined that with **TOTSUCAT N** to sulfide and activate their hydrocracking pretreat catalyst. The Totsucat treatment enabled the unit to reach normal SOR temperatures within 36 hours of oil in **without any exotherms.**



**Ammonia injection was not required**, allowing the refiner to start up their hydrocracker without handling any potentially hazardous chemicals.

**HYDROCRACKERS** - In these days of high cracking margins, the performance of hydrocracking catalysts is critical to the profitability of the entire refinery, making it crucial that these specialized catalysts are treated with the greatest of care. Processing with Totsucat HC ensures that hydrocracking catalysts function as designed without the need to spend valuable production time on in-situ sulfiding. And Totsucat N is designed to maximize the hydrodenitration (HDN) activity of the newest NiMo catalysts typically used in the pretreat section of the hydrocracker.

**START UP WITH CRACKED FEEDS** - Eurecat has also developed an exclusive procedure to gently moderate the initial catalyst hyper-activity of freshly sulfided catalyst. This unique process, called Totsucat CFP, allows the direct introduction of cracked or heavy feeds without the 3-4 day delay typically recommended by catalyst manufacturers. Many CFP users have also experienced lower deactivation rates by treating their catalyst with Cracked Feed Protection.

 **EURECAT**  
Sulfiding Technologies