Catalyst & Technology News

June/July 2005

New Transitional Catalysts for Reformers

Criterion has commercialized new catalysts applying unique technology that allows Refiners the opportunity to further increase performance of the Naphtha Reformer unit

PS-48
Modernized PS-40 series for CCRs

PR-30
Low Pt, Highest Performance Catalyst for Semi-Regen units

A new catalyst technology has been developed to drive Criterion's reforming catalysts to deliver greater performance. This technology has successfully been applied to develop new catalysts that are more stable, particularly, in the second half of the catalyst cycle life. This results in greater overall yield and performance over the catalyst cycle life. An economic evaluation of several industry reformer units revealed a catalyst performance opportunity for Criterion to focus on and further improve. Our study concluded that many Reformer operations could benefit from new catalysts that are designed by modulating the bi-functional components of a catalyst to lessen the activity and yield loss due to catalyst coking.

While many industry catalysts are advertised to be robust, they are manufactured in conventional ways that stamp the support with active metals. Improved metals dispersion generally shows initial catalyst improvement, but this initial advantage is seldom retained as the catalyst ages. Many of the industry's catalyst suppliers claim improvements through change of a catalyst's **physical** properties: surface area, active metal content, chloride, density etc.

At Criterion, we target the key Catalyst properties giving better performance through **chemical** change to ensure that it is a permanent characteristic of the catalyst. Catalyst durability is never sacrificed and our catalysts, when properly operated, can be used to establish new benchmarks for performance by the refinery.

Often, refiners are faced with a dilemma of how best to evaluate reforming catalyst longevity. When evaluating catalyst stability performance, many simply do not invest in long duration pilot plant tests to study differences in catalyst coke content, product yields and activity decline rates for various catalyst formulations. In some cases, this leads to extrapolation of projected catalyst performance from an initial activity and selectivity basis. This can result in unmet expectations when the catalyst change is implemented in the commercial unit. Criterion encourages customers to consider and understand these differences. We share with them sufficient information to make them comfortable to make informed decisions regarding catalyst performance. This approach has led to many satisfied customers and loyal long-term relationships. Criterion supports the use of certified independent laboratories to test our catalysts and is willing to participate in fair and experienced evaluation programs.

Proven Model for Successfully Delivering New Products

A few years ago, using this philosophy, Criterion introduced PS-40 for CCR units. Sales accelerated as refiners confirmed the advertised low coke-making characteristics of the catalyst through testing. PS-40 allowed refiners to shift the CCR unit operation constraints and optimize their operation by increasing the unit throughput early in the restart and sustaining the advantage over the cycle. Due to the exceptional strength of the catalyst, customers witnessed the lower operating cost and reliability of PS-40.

For fixed bed units, Criterion introduced a new platform of high performance catalysts, P-15 and PR-15. These catalysts are more active and have greater stability than the older generation 9 series catalysts. **P-15** catalyst improved performance while reducing the platinum by 17% vs P-93. Several refiners achieved rapid payout with better unit performance. Many were also fortunate to schedule the catalyst change during the recent period of record market platinum prices for further credits to their investment. The recovered platinum credits assisted in defraying the cost of the unit turnaround to replace the catalyst.

New Catalyst Performance Advantages

- Lower Coke on Catalyst
- Higher Activity
- Greater total yield over the cycle
- Longer Cycle Life
- Greater Retention of Chloride on Catalyst

For further information on these new catalysts
please contact your sales or technical service representative.

Figure 1

Shows the Greater Activity and Stability of New PS-48

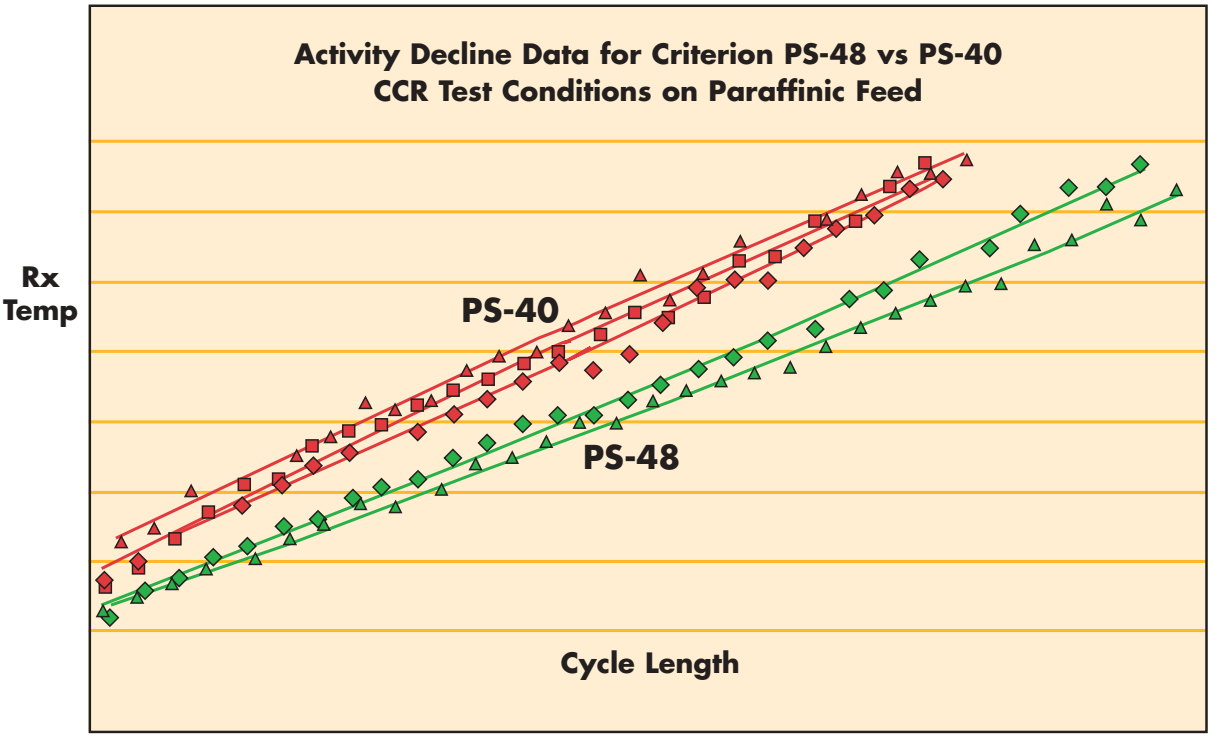
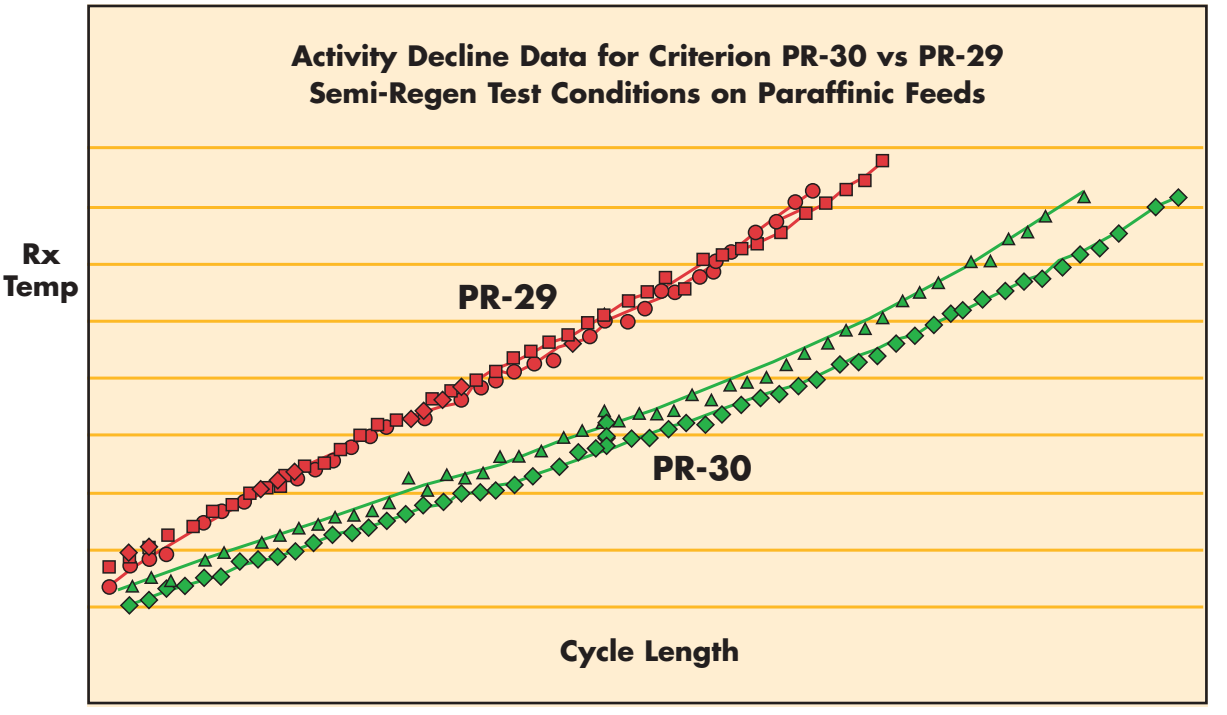


Figure 2

Shows Greater Performance of New PR-30



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