

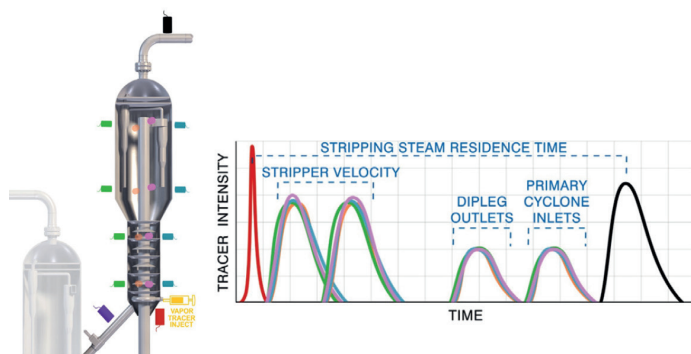
How a Tracerco Diagnostics™ Distribution study helped to increase FCC stripper efficiency

A Tracerco Diagnostics™ Distribution study can be performed to identify catalyst and vapour distribution in an FCC stripper.

Uniform distribution of catalyst and steam in a stripper is critical to achieve high stripping efficiency (less carry-down of hydrocarbon products from reactor to regenerator). A failure to effectively remove hydrocarbon from the catalyst will result in a loss of product, lower throughput, and lower catalyst activity due to increased regenerator bed temperature.

The Field Test

Tracerco was contacted to conduct distribution studies for a leading refiner that was experiencing issues on their FCC stripper. Identifying maldistribution can be accurately characterised using tracer injections with detectors positioned in the pattern, as shown in Figure 1. Separate injections are made of a gas tracer into the stripping steam, and a catalyst tracer into the riser.



A Tracerco Diagnostics™ Distribution Study allows Tracerco customers to identify problematic operations, and make modifications to increase efficiency.

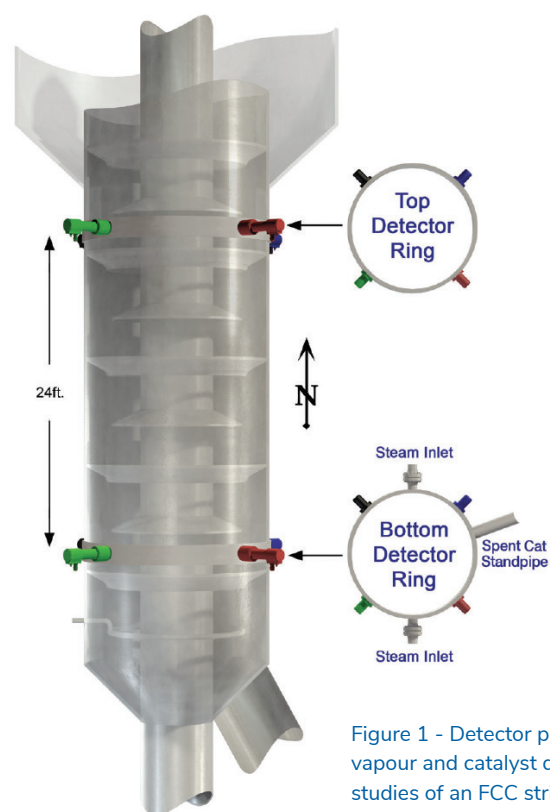


Figure 1 - Detector placement for vapour and catalyst distribution studies of an FCC stripper.

The Analysis

Figures 2 and 3 show vapour and catalyst distribution in the stripper of one FCC. Results from the stripper distribution study showed 62% of the catalyst was passing through the north quadrant at the bottom of the stripper, and only 19% of the steam passing through the same area. This imbalance of steam-to-catalyst ratio in the north quadrant resulted in inadequate stripping of the hydrocarbons from the catalyst. This is a good explanation of why the regen temperatures were too high.

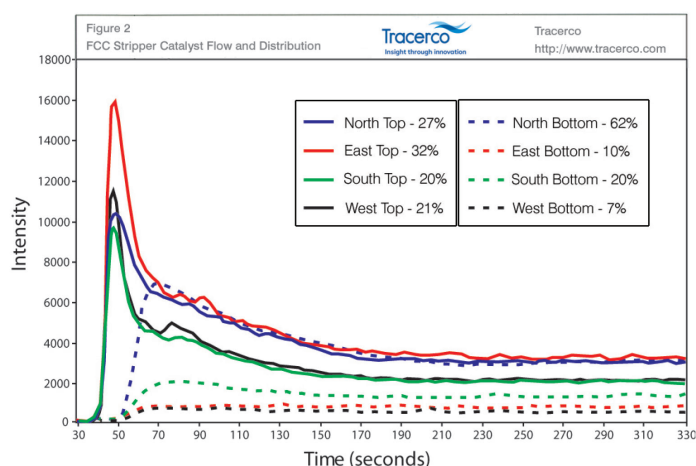


Figure 2 Catalyst flow and distribution from the first tracer injection.

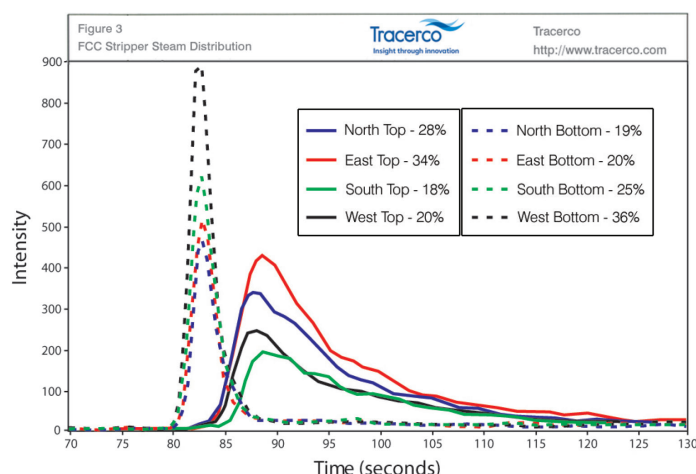


Figure 3 - Steam distribution results from second tracer injection.

The Conclusion

Proper FCC stripper operation is important for the recovery of as much hydrocarbon as possible. The Tracerco Diagnostics™ Distribution results can help Tracerco customers identify problematic operations, and make modifications to increase efficiency. The study can also identify problem areas for upcoming turnarounds to assist in scheduling maintenance, resulting in on-time turnaround performance.

Our innovative work gives customers the insights they need to help solve their problems. Read more of our case studies at tracerco.com/downloads/case-studies