



CASE STUDY

Minimizing Turnaround Time and Production Loss with Gamma Scanning

THE CHALLENGE

Scheduled shutdowns are required at any operating plant. Pinpointing problem locations prior to a shutdown can reduce production loss by focusing on areas of concern.

In this Case Study, our customer expected to open 6 of 10 towers for visual inspection, cleaning and repair in their scheduled shutdown. ScanTech was asked to perform Gamma Scanning to verify our customer's existing shutdown plan and strategy, order necessary equipment and minimize lost production from a lengthy, extended turnaround.

OUR RESPONSE

Gamma Scanning was performed on all trayed and packed towers 2 months before the shutdown. Our process required no alterations to plant operations, no preparation to the towers and was completely non-invasive. Our Gamma Scans provided the status of internal components including demisters, distributors, trays and packing. Additionally, the operating characteristics of the tower including tray loading, vapour densities and liquid distribution were also obtained.

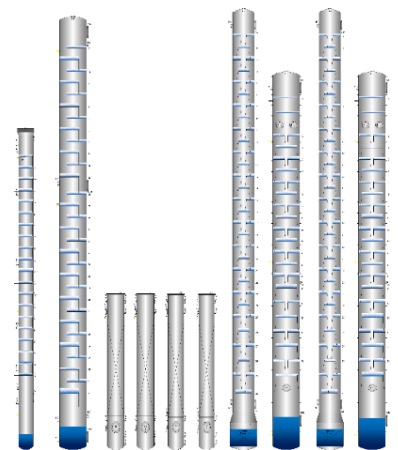
THE SPECIFICS

The plant had 10 towers ranging from 7 to 23 meters in height (figure to the right). 10 were scanned including condensate stabilizers, contactors, deethanizers, strippers and wash towers. The plant had 2 process trains which allowed for operational comparisons between most of the towers.

GAMMA SCANNING RESULTS

Gamma Scanning showed the following anomalies (see next page):

- 1 damaged bottom tray in the Train 1 contactor
- 2 contactors showing entrainment profiles
- 2 towers showing foaming characteristics on the trays
- 1 tower showing liquid maldistribution through the packing
- 1 tower displaying fouling characteristics in the packed bed



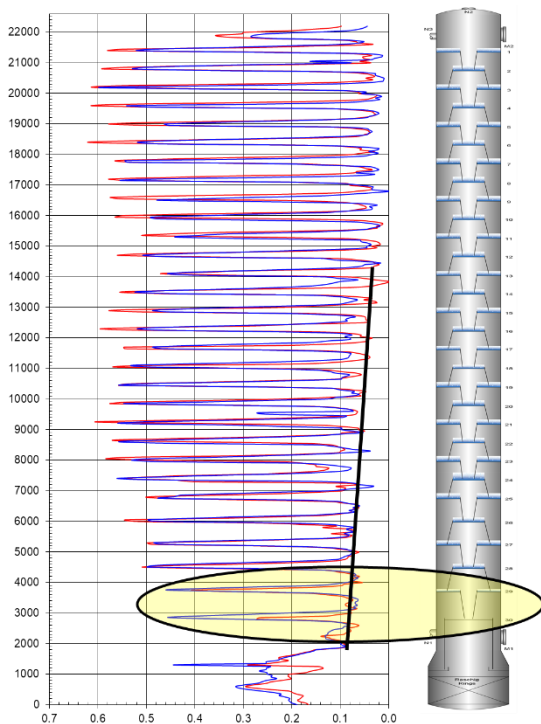
The customer called ScanTech's office 2 days after the scanning to reconcile the results against the turnaround plan. Based on the results of the Gamma Scanning, the following changes were made to the turnaround plan.



When Performance Matters

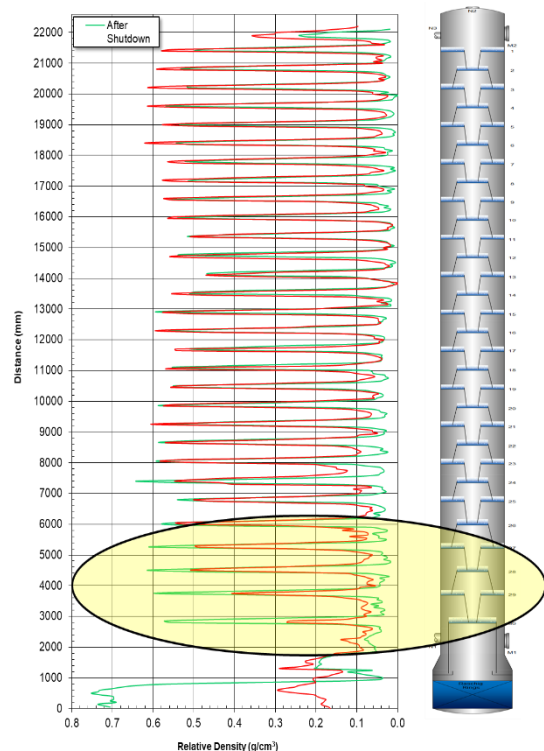
CASE STUDY

- Train 1 contactor would be opened to replace the bottom tray instead of train 2 contactor
- Train 1 and 2 contactors would undergo a chemical wash to remove fouling on the trays
- Train 1 contactor displaying maldistribution would be opened to check distributor and packing
- Train 2 wash tower would be chemical washed and then opened to inspect packing for fouling



Process Comparison – Train 1 & Train 2

The Gamma Scan in red indicated damage to the bottom tray in Train 1. The blue scan is an overlay from Train 2. The trend line shows entrainment in both towers.



Before and After the Turnaround

The replaced tray is displaying a uniform liquid level. Entrainment in the vapour space due to fouling has been minimized.

CASE STUDY CONCLUSION

- Gamma Scanning allowed our client to understand what work needed to be done before the scheduled shutdown to minimize time and production loss.
- Gamma Scanning confirmed that 2 towers showed no major issues and only received a wash.
- One of the towers was removed from the inspection plan while a different tower was added.

For more information on how Gamma Scanning can assist your operation, contact us at don@scanningtech.com or call us at 780-410-0563.

