

FROM BOTTLENECK TO BREAKTHROUGH

UPGRADING AMINE ABSORBER PERFORMANCE UNDER TURNAROUND PRESSURE

Industry: Industrial Processing

Scope: Amine Absorber System Upgrade

Timeline: Fall Turnaround in less than 6 months

The Challenge

A large industrial processing facility faced a critical production bottleneck: planned throughput increases required a 15% additional capacity for their existing CO₂ removal unit. The existing random packing in a 19'-0" (5.79m) diameter absorber did not have sufficient capacity to handle this planned increase, while the existing feed pipe and liquid distributor were not adequately designed to provide quality liquid distribution to the packed beds at the liquid rate required for an absorber of this diameter.

With a short outage window approaching, the plant needed more than just an equipment vendor. They needed a partner who would work collaboratively to engineer, design, and deliver a reliable, on-schedule solution.

Compounding challenges included:

- ▼ Existing liquid distribution system has an insufficient design
- ▼ Existing equipment unable to meet increased throughput requirements
- ▼ Tight turnaround with limited outage availability

The Koch-Glitsch Solution

Koch-Glitsch responded with a complete, engineered solution, not just a direct equipment replacement. The team redesigned the amine absorber's piping and liquid distributors using INTALOX® Packed Tower Systems technology to improve liquid handling, liquid distribution, and overall system capacity and performance. INTALOX® ULTRA random packing was installed to achieve the required increase in throughput.



Key upgraded equipment included:

- ▼ **INTALOX® ULTRA L Random Packing**, delivering greater capacity and lower pressure drop with comparable efficiency to the existing packing, enabling higher throughput without compromising performance.
- ▼ **INTALOX® High-Performance Model 117 Orifice Deck Distributors**, custom engineered to ensure uniform liquid distribution to the packed beds.
- ▼ **Model 119 Feed Pipe Distributor**, replacing the simple feed pipe to a multi-lateral design which was required to handle the liquid feed and work in unison with the Model 117 Orifice Deck Distributor in this large diameter absorber.

With the INTALOX® Packed Tower Systems approach Koch-Glitsch was able to maximize performance by ensuring both existing and upgraded equipment worked as an integrated system. By pairing advanced random packing with high-performance liquid distributors and feed design, the absorber achieved the desired capacity without compromising CO₂ removal.

End-to-end support included:

- ▼ Engineering collaboration from concept through installation
- ▼ On-site support with KSPS Certified Tower Specialists (CTS) to ensure efficient and accurate installation in this short turnaround window
- ▼ Supply chain expertise to provide on-time delivery of internals and large volumes of random packing

This full-spectrum approach exemplified Koch-Glitsch's ability to combine application knowledge, design expertise, and supply chain agility, delivering complete confidence from start to finish.

Partnership That Drove Results

The success of this project was built on open communication and strong collaboration. From the first inquiry to on-site support, Koch-Glitsch worked closely with the customer's engineering and operations teams to ensure the final solution met performance expectations and schedule commitments.

The outcome:

- ▼ **Increased unit throughput**, preventing an amine absorber bottleneck with an 18% production capacity gain, exceeding the original expansion target.
- ▼ **Enhanced absorber performance**, with upgraded internals eliminating foaming issues and improving vapor and liquid distribution, supporting more consistent CO₂ removal and reliable system operation.
- ▼ **Reduced solvent consumption**, as an improvement in removal efficiency due to improved vapor and liquid distribution allowed the plant to operate at a lower amine concentration, resulting in lower MEA make-up and operating cost savings.

This project demonstrated how close collaboration and commitment to full-solution support can not only achieve throughput increases but also lasting operational improvement.

Why It Matters

This project showcases Koch-Glitsch's ability to deliver engineered solutions that overcome legacy system limitations and enable long-term production growth.

Through collaboration, technical expertise, and execution, Koch-Glitsch delivered more than an upgrade. They delivered a complete engineered solution.