



MATERIAL
CONTROL
SOLUTIONS

Reducing Railcar Unloading Time by 80% with a Heavy-Duty Railcar Shaker

NAVCO[®]
NATIONAL AIR  VIBRATOR CO.

Client

client is a large chemical processing facility responsible for unloading railcars of Adipic Acid, a challenging bulk material used in multiple downstream manufacturing processes. Adipic Acid is a highly hygroscopic powder with a steep angle of repose, which causes it to adhere to hopper walls, railcar interiors, and discharge transitions. These material characteristics routinely disrupt flow during unloading operations and create significant labor, safety, and efficiency challenges.



Objective

The customer was experiencing severe unloading inefficiencies that affected productivity, workforce safety, and asset longevity. At the time of engagement:

- It required two operators working 2–3 full days to completely empty a single railcar
- Multiple external vibrators were hung on railcar cleats, often inconsistently positioned
- Operators relied on dead blow hammers, manually striking the railcar to dislodge material
- Material flow was unpredictable, leading to extended downtime and operator fatigue
- Repeated hammering caused structural damage to railcars and transitions
- Employee injury risk increased due to repetitive, high-force manual labor

The objective was to dramatically reduce unloading time, remove reliance on brute-force methods, and implement a safer, more efficient flow-assist solution that could handle real-world material conditions consistently.



Solution

Rather than proposing an immediate equipment sale, a Navco Railcar Shaker demonstration was recommended at the customer's facility. This approach allowed performance validation under true operating conditions, using the exact Adipic Acid received from the customer's vendor and deployed directly on their existing unloading system.

Results

The on-site demonstration revealed immediate and measurable improvements:

- Railcar emptying time was reduced by approximately 80%
- Unloading was accomplished with significantly fewer operator interventions
- Material flow became consistent and predictable, even with adhesive product behavior
- Reliance on hand-held vibrators and dead blow hammers was eliminated
- Railcars discharged more completely, reducing residual build-up and cleanup time



Summary

Work smarter, not harder” may not be a new philosophy, but in bulk material handling, it can be difficult to recognize when legacy practices are silently undermining safety and efficiency. As we like to say: put the hammer down and step away from the victim.

Dead blow hammers belong on construction sites—not on railcars and silos. Repeated impact damage leads to costly repairs, shortened equipment life, and long-term injuries to employees’ shoulders, elbows, rotator cuffs, and backs. These hidden costs often far exceed the price of a purpose-built solution.

By implementing a dedicated railcar shaker system, the customer transformed a labor-intensive, multi-day unloading process into a faster, safer, and more reliable operation. The result was reduced unloading time, improved employee well-being, and protection of critical material handling assets.

Using the right tool for the job doesn’t just improve efficiency—it protects people, equipment, and profitability over the long term.

Wash-Off Prevention & High Retention

- Tall, angled magnetic poles improve retention and reduce the risk of metal wash-off
- Captured metal is held outside the product stream until cleaning
- Continuous operation is maintained without interrupting material flow

Superior Sealing & Sanitary Design

Unlike competing systems, this solution incorporates:

- DE-STACO quick-clean clamps to eliminate over-compression
- A Sani-Tight™ gasket that ensures a leak-proof, repeatable seal
- A “bullet-proof” sealing interface that prevents both product loss and external contamination



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