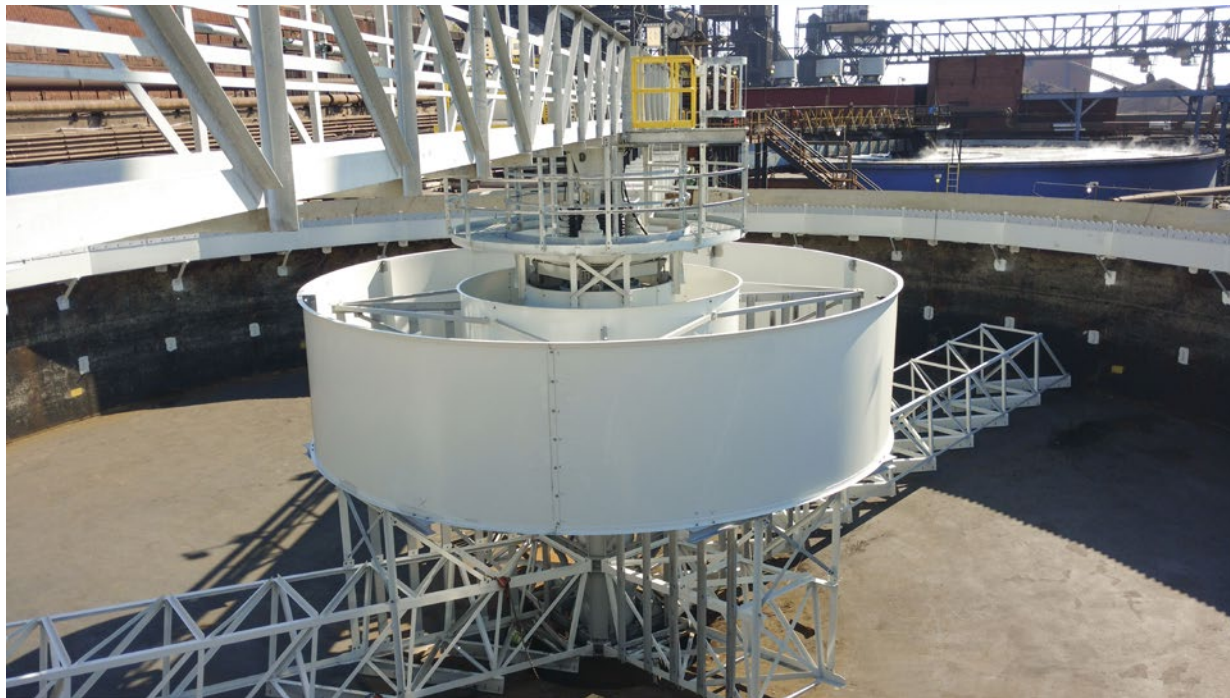




MONROE
ENVIRONMENTAL

Water & Wastewater Treatment | Air Pollution Control

CLARIFIER REBUILDS & RETROFITS



Why Rebuild or Retrofit Existing Clarifiers?

Rebuilding and replacing the internals of a concrete or steel tank clarifier is a quick, cost-effective solution versus constructing an entirely new system. The clarifier tanks often maintain a suitable operating condition while the skimmer arm, center well, drive assembly, and sludge rakes corrode and wear beyond an acceptable level.

The Benefits of a Monroe Environmental® Clarifier Rebuild are Straightforward and Simple:

- Faster installations with minimal clarifier downtime
- Reduces total cost
- Improves performance
- Reduces future maintenance costs

These benefits are realized because we are often able to fully assemble clarifier equipment before it ships to the job site. In such a case, we inspect and test every bolt, weld, and panel to make sure that each component fits together perfectly before it is shipped to site and installed. This key step can be the difference between a few days of simple installation or weeks of fitting, engineering, and re-working equipment in the field. By reducing installation time, projects can often be completed ahead of schedule with minimal labor cost.

Clarifier Rebuild Services

- Site visit and clarifier evaluation
- Exact replacement or modified designs to improve performance
- Variety of construction materials and coatings available
- Demolition and installation
- Bypass services to keep plant online during replacement

Photo above: Clarifier upgrade for steel mill meets stringent performance requirements. Monroe's value engineering of the effluent weir and launder design for the rebuild of the 100 ft. Thickener Clarifier saved the plant approximately \$145,000 in capital costs, lowered installation costs, and improved the overall schedule. Monroe's clarifier met the process guarantee requirements of 15mg/L TSS and 5% solids sludge underflow, allowing the plant to effectively recycle the water with minimized sludge dewatering costs.

Clarifier Rebuilds: Recent Projects

Primary Clarifier: Municipal Wastewater Treatment

Conversion to Spiral Scrapers

The City of Detroit WWTP needed to upgrade (4) of its 250 ft. primary clarifiers. The plant decided to replace the internal components with a combination of mild, coated steel and non-corrosive stainless steel members. The project included converting the sludge rakes to higher efficiency spiral scrapers and rehabilitating existing drive units, as well as replacing influent wells, column supports, weirs, baffles, and launders.

Before (Photo 1): One of the Clarifiers before rehabilitation

After (Photo 2): One of the Primary Clarifiers ready to return to operation.



Circular Clarifier: Chemical Manufacturing Plant

Exact Replacement of Clarifier Internals



Before (Photo 1): Existing 55 ft. diameter Scraper Clarifier at chemical manufacturing plant. **Fabrication (Photo 2):** New Clarifier internals completely assembled in Monroe shop. **After (Photo 3):** Installation of new internals as well as drive, bridge, and walkway.





Circular Clarifier: X-Flo™ Bypass for Truck Assembly Plant: 100% Uptime!

X-Flo Mobile Clarifier Provides No Downtime Solution

A truck assembly plant needed a rebuild for their 40 ft. clarifier, and downtime was not an option. Monroe executed a complete, turn-key solution that included a new circular clarifier internal mechanism, demo/install of the circular clarifier, and rental of an X-Flo Mobile Clarifier to bypass the existing clarifier while it was being rebuilt.

The Monroe X-Flo Mobile Clarifier was installed prior to taking the clarifier offline while the new internal mechanism was being fabricated. When it came time for the rebuild, the plant easily diverted flow to the X-Flo Mobile Clarifier and continued operations as usual. The old clarifier was drained, internals removed, and the new clarifier mechanism was installed. The complete project took just a few weeks with no downtime!

Vertical Plate Clarifiers: Retrofit at a Catalyst Plant

Rebuild for Under-Performing Clarifiers

A chemical plant had two under-performing lamella plate clarifiers with internal components that were warped, buckling, and in danger of collapsing. The plate supports, separation walls, and structural members were inadequate for supporting the internals given the stresses from elevated liquid temperatures and process loading requirements.

Monroe designed and fabricated customized rehabilitation kits for two underperforming lamella plate clarifiers that would solve structural and process deficiencies, and be able to be installed without deconstructing the separators. This lowered the total project cost and allowed the plant to execute the retrofit during a scheduled shutdown.

After (Photo 1): Installation of retrofit components

Before (Photo 2): Lamella plates in danger of collapsing due to elevated liquid temperatures.



Rebuild and Replace for Long Term Performance

If you plan to rebuild or retrofit a water or wastewater treatment clarifier, call Monroe Environmental. We specialize in the repair, retrofit, replacement and general upgrading of clarifiers. We recognize that up-time is critical; we've replaced whole systems in as little as 3 days — from empty tank to new internals installed and operating.

Secondary Clarifier: Municipal Wastewater Treatment

Replacement of Two 130' Secondary Clarifiers at a 25 MGD Wastewater Treatment Facility

Monroe oversaw the removal of the clarifier internals and designed a new system to perfectly fit the existing concrete tank.

Each 130 ft. clarifier rake arm was fully assembled and pre-fit to simulate the angle of the existing clarifier tank floor. This ensured that on-site installation would be as fast as possible, with no field engineering or fabrication required.



Before (Photo 1): Assembly of 130 ft. clarifier rakes

After (Photo 2): Secondary Clarifier ready to return to operation after just a three day installation.



Vertical Plate Clarifiers: Rebuild of a Competitor's Inclined Plate Clarifier

Clarifier for Heavy Metals Discharge

Clarifier rebuild of a competitor's inclined plate type clarifier to improve performance, eliminate bypass, and achieve compliance for heavy metals (zinc) discharge. Scope included new internal baffles, separator plates, gaskets, and launders. Monroe provided equipment, demo, and installation turnkey.



Vertical Clarifier: Plating Company

Refurbished Plate Clarifier Tank and Internals

Before (Photo 1): Existing Vertical Clarifier at a plating company. **After (Photo 2):** Refurbished Vertical Clarifier in Monroe shop.