

Drive Units

for Clarifiers and Thickeners



WESTECH®



Drive Units



Municipal and industrial customers have been coming to WesTech since the 1970s for precision bearing drives, as part of the company's high-quality process equipment offerings for liquid-solids separation. Our drive gives you a flexible design, precision components, and strict quality control. WesTech guarantees a long drive life and the best fit for your process equipment needs. We stand behind our equipment, which has proven to meet the toughest requirements.

Applications

Clarifier and thickener drive units provide the rotational force necessary to turn the rake arms in a circular basin. The rotating rake arms transport settled solids to the center of the tank for removal. Because drive units are applied in water and wastewater treatment plants, as well as industrial facilities, WesTech has developed a premium drive unit for each application. WesTech drive units can be designed for torque requirements from 1,000 ft-lbs to 6,000,000 ft-lbs.

Industrial & Minerals

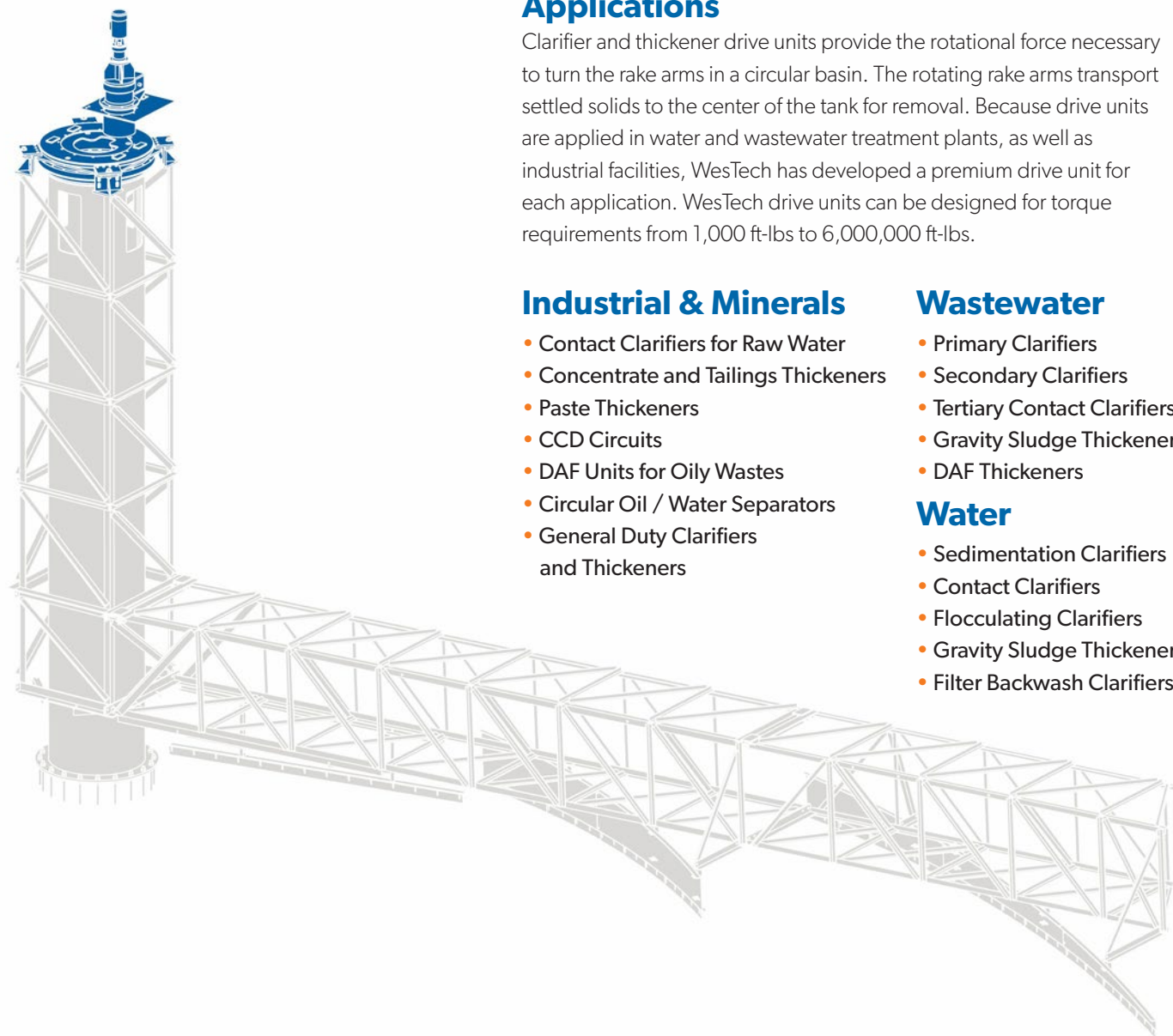
- Contact Clarifiers for Raw Water
- Concentrate and Tailings Thickeners
- Paste Thickeners
- CCD Circuits
- DAF Units for Oily Wastes
- Circular Oil / Water Separators
- General Duty Clarifiers and Thickeners

Wastewater

- Primary Clarifiers
- Secondary Clarifiers
- Tertiary Contact Clarifiers
- Gravity Sludge Thickeners
- DAF Thickeners

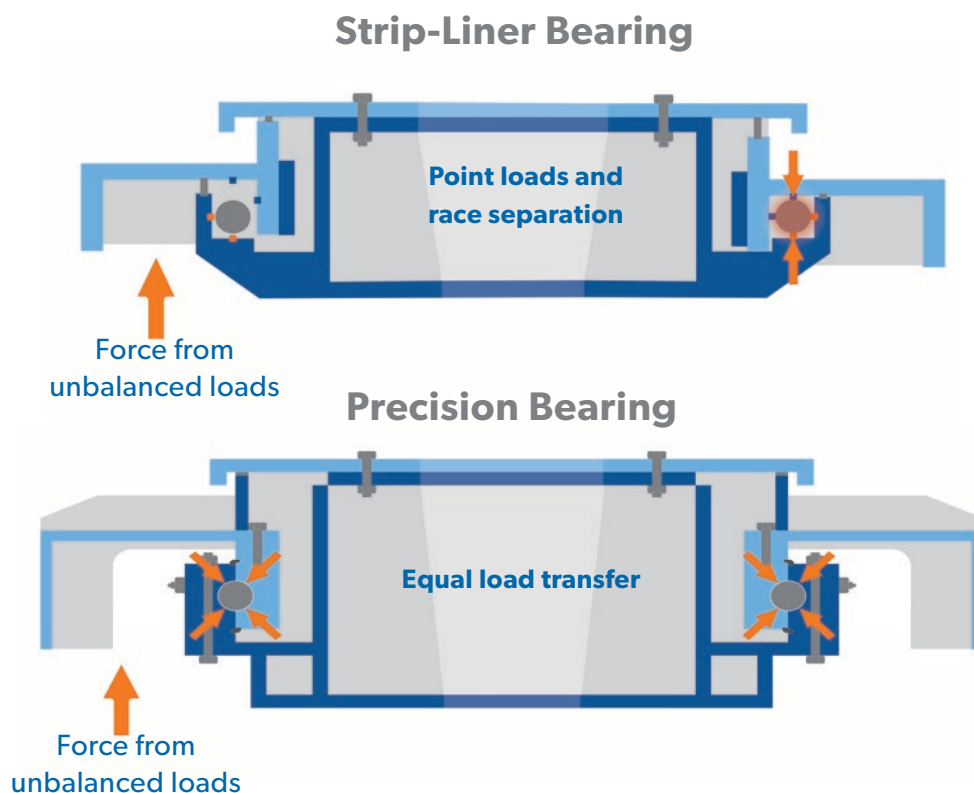
Water

- Sedimentation Clarifiers
- Contact Clarifiers
- Flocculating Clarifiers
- Gravity Sludge Thickeners
- Filter Backwash Clarifiers



Precision Bearing Drive

WesTech offers precision bearings in its drive units, a better choice when compared to the primitive strip-liner bearings of other units.



Precision Manufacturing Tolerances

The precision bearings WesTech uses in its drive units are ideal for high load, high speed applications and are manufactured by recognized bearing companies. The use of these precision bearings is widespread among larger and more heavily-loaded clarifier and thickener mechanisms common to the metallurgical industries, in addition to overhead cranes, gun turrets, and track hoes.

Exceptional Long Life and Load Capacities

Instead of applying the bearing load in four points on the bearing balls as with the old-style strip-lined bearings, the precision bearing utilizes a full band contact race with hardness equal to that of the strip liners. Calculated bearing life is at least five times that for strip liners of the same ball size and diameter. The need for splitting gears and housings is eliminated because of the superior service life.

Overturning Load Capacity

Strip-lined bearings have no inherent overturning load capacity and must rely on the mechanism weight alone to hold the bearing race together. This capacity of the precision bearing makes possible tank settling, misalignment, and lack of precision leveling of the drive during installation and operation a far less determining factor in premature bearing failure.

Even Load Distribution

As the figure shows, the rotating turntable of the strip-liner can easily separate from its stationary base and cause a point load on one or two bearing balls. This separation can occur with the simple action of a skimmer riding over a scum box. The locked ring design of the precision bearing eliminates damaging point loads by equally transferring any unbalanced load to the entire group of bearing balls.

Main Bearing Protection

WesTech gear housings protect the bearings from dirt and contamination using designed neoprene seals and gaskets, whereas strip-lined bearings typically only use a loose felt seal. WesTech precision gears also allow the bearing to run in a separate, sealed grease cavity, which achieves additional protection from contamination.

Advantages of the WesTech Drive



Cycloidal Speed Reducer

can withstand momentary shock loads exceeding 500% of its rated continuous torque. At least two-thirds of the speed reducer teeth are engaged at any one time. The rolling action of the main lobes and pins reduces heat buildup and wear, while increasing efficiency to 95% per stage.

Heavy-duty Gear and Bearing Housings

are available in mild steel, stainless steel, or cast iron. The steel and stainless steel designs use box construction to provide the strongest drive base on the market. Now you can select your preferred material of construction and combine it with the best drive mechanism design available.

Precision Main Gear and Bearing

in a WesTech drive has a calculated L-10 service life exceeding 100 years. The alloy steel gear teeth are hardened to 285-321 BHN for exceptional gear life. A modified-addendum main gear tooth geometry increases load distribution among gear teeth, reduces gear wear, and prevents tooth breakage. The tight bearing tolerances maintain a proper gear-to-pinion alignment.

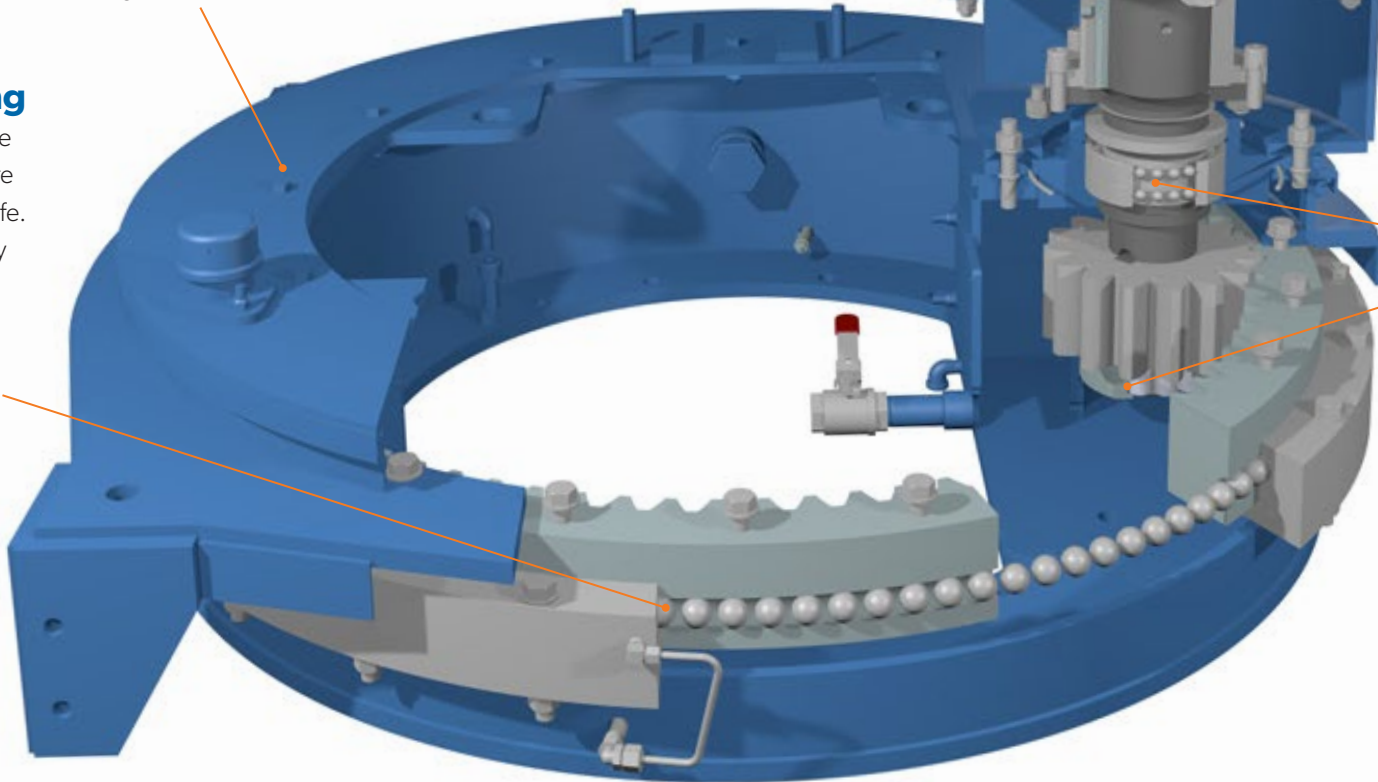


Direct Coupling

of motors, speed reducers, and shafts eliminates drive chains, belts, and an oily mess around the drive. This design improves safety, reduces maintenance requirements, and provides a neat and clean space-saving design.

Torkmatic™ Overload Protection

accurately senses the torque from the pinion shaft and displays it on the torque indicator. On every new drive, the electromechanical switches are factory set for high-torque alarm and high-torque motor cutout to protect the mechanism from damage. These settings can also be confirmed by field tests during start-up. Other options include rake arm lift, remote monitoring, redundant motor cutout, and explosion-proof torque boxes. An electronic load cell type torque protection is also available for use on new and existing drives.



Pinion Bearings

eliminate overhung loads on the output bearing of the speed reducer. The upper and lower pinion bearings keep the pinion shaft in precise alignment with the main gear.

Lubrication Options

While oil lubrication has been the standard for many years, WesTech also supplies an all-grease lubricated drive. Grease lubrication eliminates the need for periodic condensate draining and messy oil changes, as well as the threat of potential oil spills. Both systems of lubrication have been successfully used for years and help ensure a long bearing life.

Design Flexibility

One of the unique advantages of premium WesTech drives is their great flexibility in design. This flexibility allows the engineer to select a drive that best matches the environmental and mechanical requirements. WesTech's thorough design and meticulous component selection yields a strong, reliable, premium-quality drive that will provide a long service life with minimum maintenance. Your drive unit will be delivered to the job site completely assembled, shop tested, and ready to be installed.

Drive Unit Types

WesTech offers two main drive types: the Shaft Drive and the Cage Drive. The selection of the drive type depends on how the rotating mechanism will be supported in a given application.

Cage Drive

A cage drive unit rests on a stationary column mounted in the center of the tank. A half or full-span bridge then attaches to the robust housing of the drive unit. This column-mounted drive transmits power to the sludge collection system through a center cage mechanism.

Shaft Drive

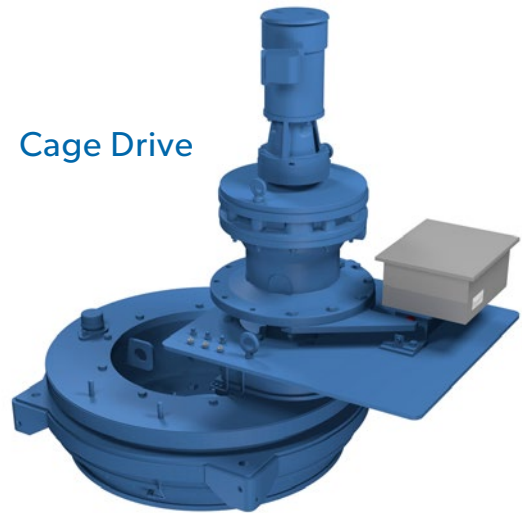
A shaft drive works well in smaller-diameter tanks where the entire mechanism is supported by a full-span bridge. This bridge-mounted drive transmits power to the sludge collection system through a center drive shaft.

Drive Unit Options

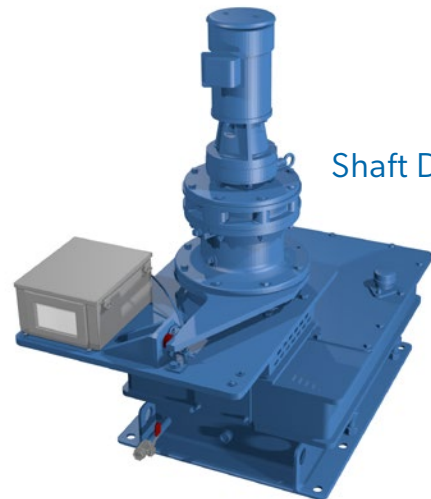
Concentric Dual Drive

Dual drives are multi-tasking units that provide independent mixing in the feedwell, while the rakes transport settled solids along the floor. Supplied in both shaft and cage designs, dual drives are commonly used in WesTech's Solids CONTACT CLARIFIERS™ and Flocculating Clarifiers. Two distinct motor/reducer assemblies are combined into one unit, which allows for independent speed control of the mixer/flocculator and the rake arms.

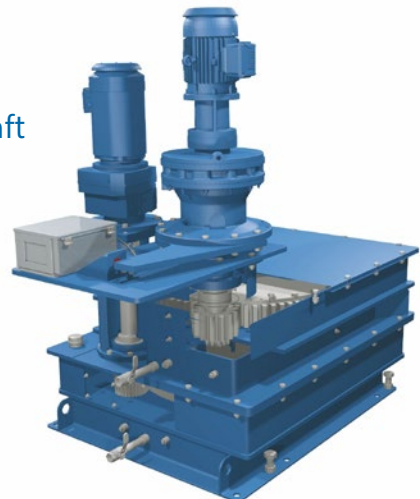
Cage Drive



Shaft Drive



Dual Shaft Drive



Lift Drive

In heavy-duty industrial applications where torque can peak unexpectedly, both shaft and cage drive units can be provided with a lifting device to raise the rake mechanism out of the dense, settled slurry. As the rakes are raised from the slurry, the torque load decreases and operation continues, which gives the operator time to make necessary system adjustments. The operator can then slowly lower the rakes back to their original position and avoid any shutdown time during the process.

D25 Gearless Shaft Drive

The D25 drive has the motor and speed reducer assembly directly mounted on the precision bearing for low-torque applications. The precision bearing eliminates the need for a submerged bearing that is common with other gearless drives and some strip-liner drives. In these low-torque applications, the main gear-to-pinion reduction is not needed.

Direct Shaft Drive

For light-duty applications, WesTech provides a drive unit that connects the center drive shaft directly to the output of the cycloidal speed reducer.

Multiple Pinion Drive

Heavy-duty industrial applications often require more torque than a single pinion can provide. In such cases, multiple pinions are used to drive a single precision bearing, which allows the torque design to double, triple, or quadruple in value.

Peripheral Drive

Rim drives travel along the periphery of a concrete tank and pivot the sludge collection system around the center support column. For large-diameter tanks, rim drives can provide both mechanical and cost advantages. In minerals applications, heavy-duty traction drives are used for large-diameter units with very high solids throughput requirements. Traction drives are designed to travel along either a smooth or geared rail, depending on site-specific torque requirements.

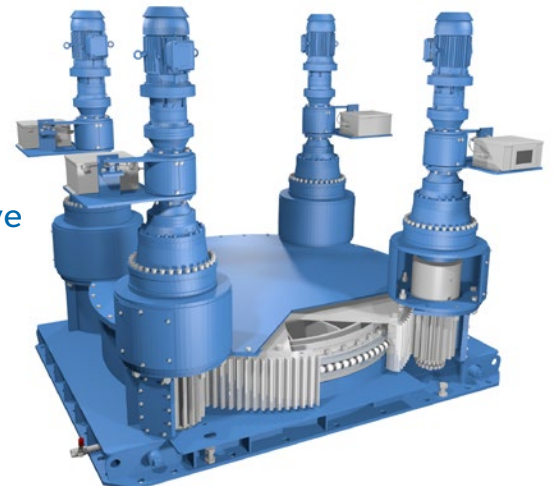
Shaft Drive
with Lift



D25 Drive



Multiple
Pinion Drive





WESTECH[®]



Tel: 801.265.1000
westech-inc.com
info@westech-inc.com
Salt Lake City, Utah, USA

© WesTech Engineering, LLC 2023