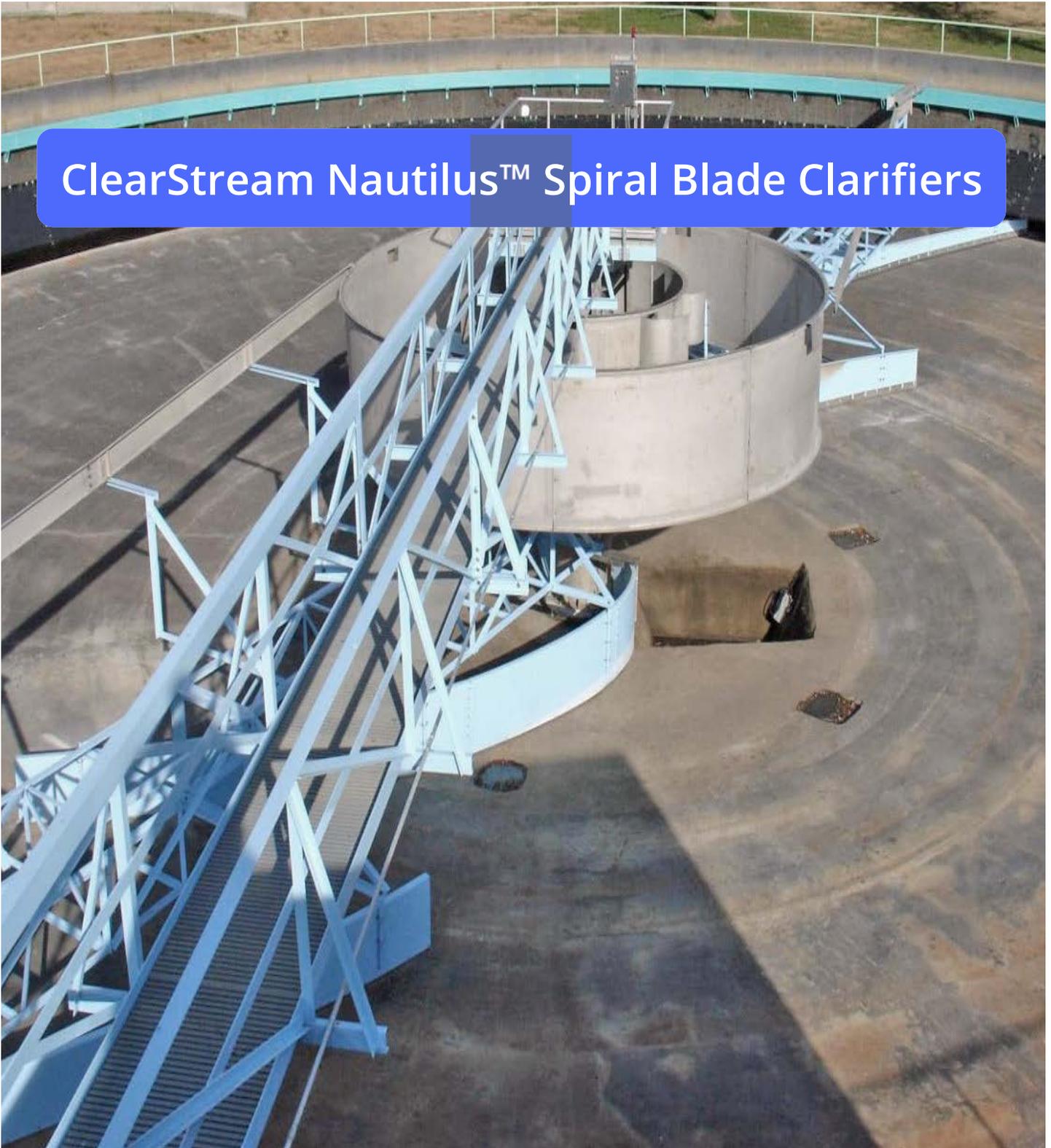




Quality Equipment: Competitive Price

ClearStream Nautilus™ Spiral Blade Clarifiers





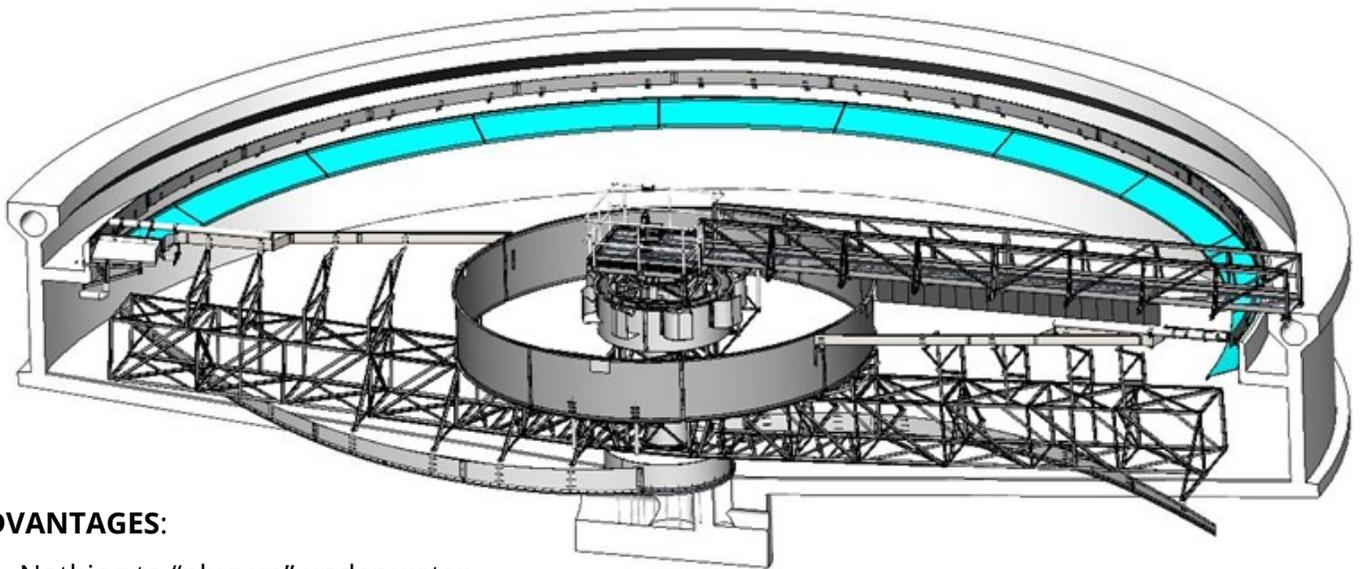
Spiral Blade Design

Because of the high rate of sludge removal with spiral blades, there is minimal risk of denitrification or secondary phosphorus release due to sludge age. In addition, if the rakes are run at the proper speed, there is little or no plume formation which could impact the effluent solids level.

Spiral blades have the added advantage of not requiring seals or having the risk of plugged suction orifices / pipes. Suction sludge removal techniques demand more maintenance than spiral rake blades. Debris or particles accumulating in the horizontal runs of suction pipes can readily clog them.

The spiral scraper blade has a logarithmic attack angle of 30 to 35 degrees and generally increases in depth towards the center of the clarifier.

Settled sludge is rapidly collected continuously along the spiral rake blade pushing it towards the center with one or two passes of the rake arm.



ADVANTAGES:

1. Nothing to "plug up" under water.
2. Regardless of solids loading, settled sludge will be transported to the sludge pit, and / or rotating sludge manifold.
3. The settled sludge transport time is significantly decreased over the segmented blade design. Many consider the spiral blade clarifier to be a "rapid solids removal clarifier".

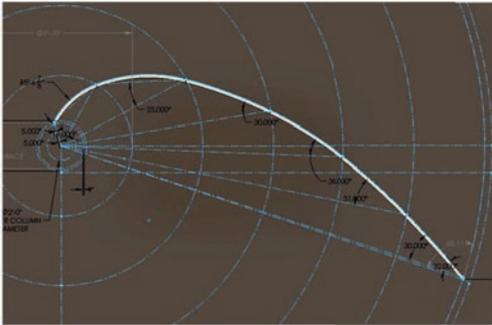
VARIATIONS:

1. Change the attack angle of the blade to the radius.
2. Add two approximately 1/3 radius arms to aid in solids transport near the clarifier center (typically larger units).
3. Dual-slope bottom (steeper near the center) to increase the solids inventory in the bottom of the clarifier and aid in thickening the sludge.



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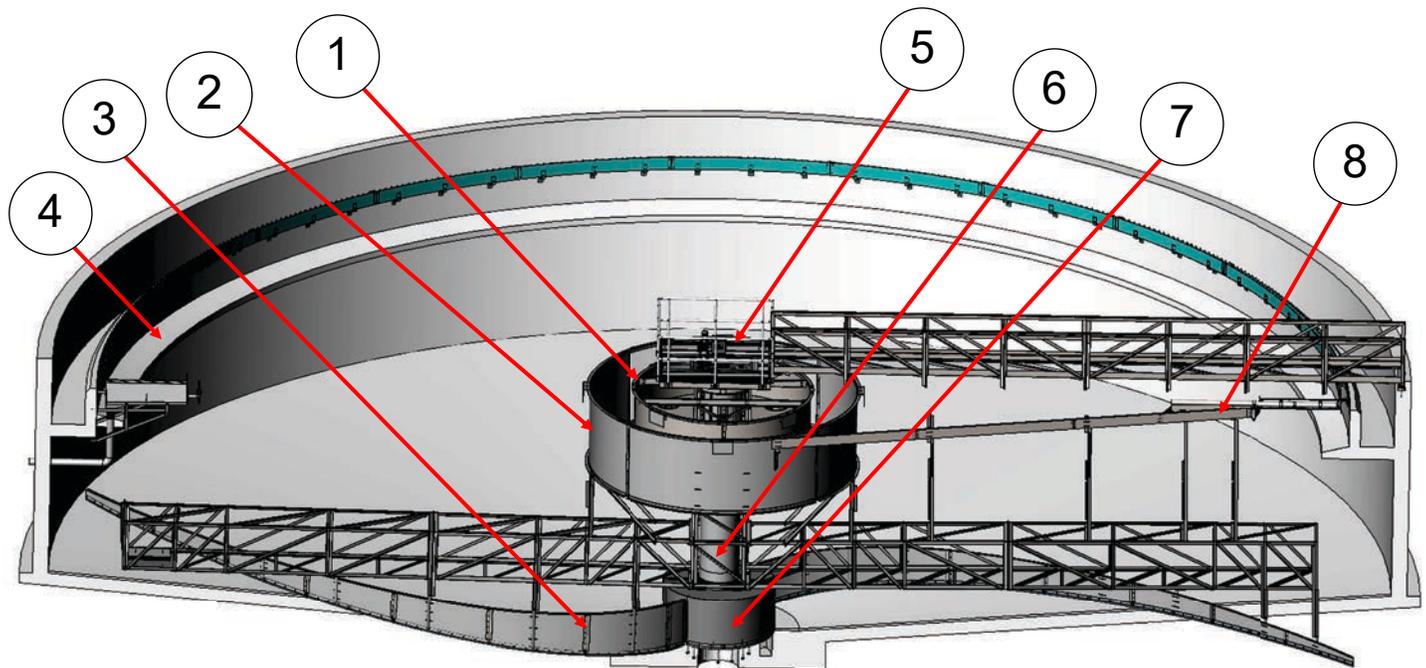
Spiral Blade Design



Just like its namesake, the spiral blades of the ClearStream Nautilus™ Spiral Blade Clarifiers are designed for function, strength, and for the rapid sludge transportation rate required by the application and the clarifier sizing.



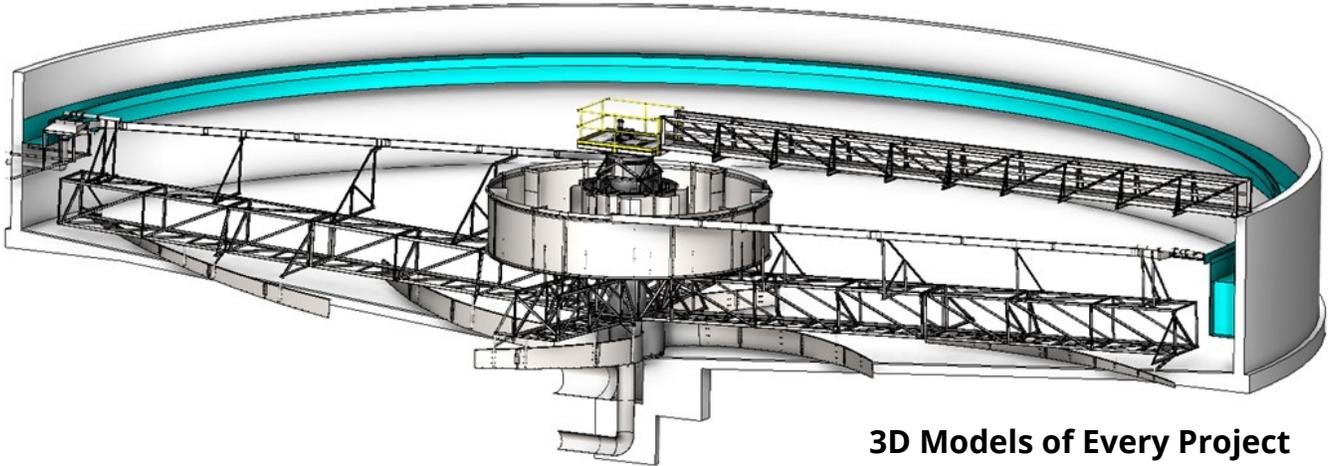
STANDARD OPTIONS:



- 1. Influent Dispersion Well™ (IDW)** The unique IDW design has demonstrated, in side-by-side testing, substantial improvements in lowered TSS over other EDI designs.
- 2. Flocculating Feedwell:** Allows the solids a low energy area in which they may form larger flocs.
- 3. Spiral Blades:** Segmented Blades, Stub Radius Additional Blades are other options.
- 4. Density Current Baffle:** The primary function is to eliminate wall currents and prevent clarifier short circuiting.
- 5. Precision Bearing Drives:** A proven design which does not require a lower bearing; maximizes drive life and minimizes drive maintenance.
- 6. Center Column Inlet:** This feed configuration maximizes the effectiveness of the IDW feedwell.
- 7. Optional Sludge Drum™** The Sludge Drum rotates with the blades and therefore always receives the highest concentration of sludge.
- 8. Skimmers:** Standard Skimmers, Full Radius Skimmers, and Ducking Skimmers are all available.



ClearStream Nautilus™ Spiral Blade Clarifiers



3D Models of Every Project



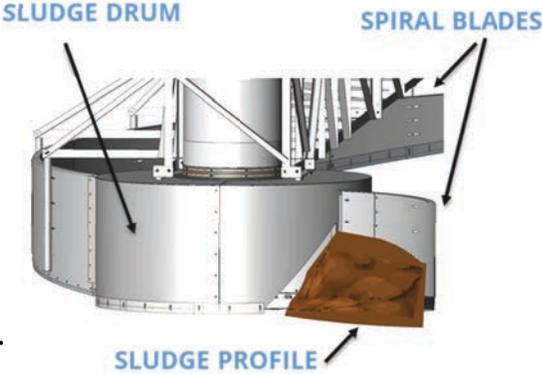
ClearStream produces a 3D model of every unit which we manufacture. These models are extremely valuable to ensure proper fit up. In addition, these models can be a useful tool for operators training and understanding of the unit design and operation. ClearStream provides these 3D models as well as the means for clients to view and manipulate these models at their own site or offices. This affords operations and maintenance personnel with a unique opportunity to “preview” the unit prior to any planned maintenance without having to drain the tank.

Sludge Drum™ Option



The Sludge Drum™ rotates with the blades and therefore it always receives the highest concentration of sludge.

In addition, the opening matches the sludge profile, further reducing the amount of short circuiting.



Using this design, ClearStream can convert a Suction Pipe or a Suction Header to a Spiral Blade Rake without compromising the concrete floor of the unit.



Water & Wastewater Treatment Solutions
Municipal, Industrial, Power & Mining

9090 South 300 West
Sandy, UT 84070
Phone (801) 676-1890
Fax (801) 676-1893
www.clearstreameng.com