

ATTRITION SCRUBBERS

Eagle Iron Works Attrition Scrubbers are designed for high-intensity grain-on-grain scrubbing of minus 4 mesh (5 mm) sand feeds. They are used when rinsing alone cannot remove stains, surface coatings, adhering fines, lignite, or weak and weathered grains. Liberating coatings and fines can improve sand equivalent values, while breaking down weaker material allows particles that can reduce durability ratings to be removed downstream.

As slurry enters the first cell, each shaft uses two five-bladed turbine propellers set at opposite pitches. The upper propeller directs material downward, while the lower propeller moves it upward. These opposing flows keep the dense slurry circulating and force the grains to continuously abrade against one another. Continuous feeding moves the scrubbed slurry through successive cells toward the discharge.

The feed rate directly controls the discharge rate and residence time. For maximum particle contact, the slurry should contain 65% to 85% solids by weight. This concentration keeps the grains close enough to provide the required abrading action. Excess dilution separates the particles and reduces scrubbing intensity, while feed surges change the time material remains in the cells.

An Attrition Scrubber liberates and breaks down deleterious material but does not remove it from the process. A Fine Material Washer is typically installed downstream to de-slime the discharge, retaining the scrubbed sand while released fines and contaminants leave with the overflow.

EIW can test representative samples to confirm whether attrition scrubbing can improve the required product properties.



Design Features

Heavy-gauge fabricated steel tank	Abrasion-resistant steel feed chute liner
Rubber-lined cells and baffle plates	Rubber-lined shaft assemblies
Direct-drive speed reducer	Oil-bath gear lubrication
Anti-friction roller bearings	Two top-plate inspection openings
Bottom clean-out pipes for draining cells	Removable drive, cover, shaft and propeller assembly

EAGLE IRON WORKS

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Attrition Scrubber Models

Model	Capacity	Feed Material	Propeller Diameter	Propeller Speed	Motor Configuration	Empty Weight	Loaded Weight
Standard (2-Cell)	50 to 75 STPH (45.4 to 68 MTPH)	Minus 4 mesh sand (5 mm)	36" (914 mm)	105 RPM	2 x 40 HP (2 x 30 kW)	9,800 lb (4,445.2 kg)	36,500 lb (16,556 kg)
High-Capacity (4-Cell)	100 to 150 STPH (90.7 to 136.1 MTPH)	Minus 4 mesh sand (5 mm)	36" (914 mm)	105 RPM	4 x 40 HP (4 x 30 kW)	17,300 lb (7,847.1 kg)	66,900 lb (30,345 kg)



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