

Fines Recovery System

Enhancing Dry Stacking of Tailings

21 November 2024



Industry Problem

It has been suggested that the single largest problem facing the mining and aggregate industry today is the use of high-cost settling ponds to house the by-product waste generated during production

Require huge area



The Old Way, Build and Maintain Pond Very Costly



Risk, Dam Failure Affect the Ecosystems



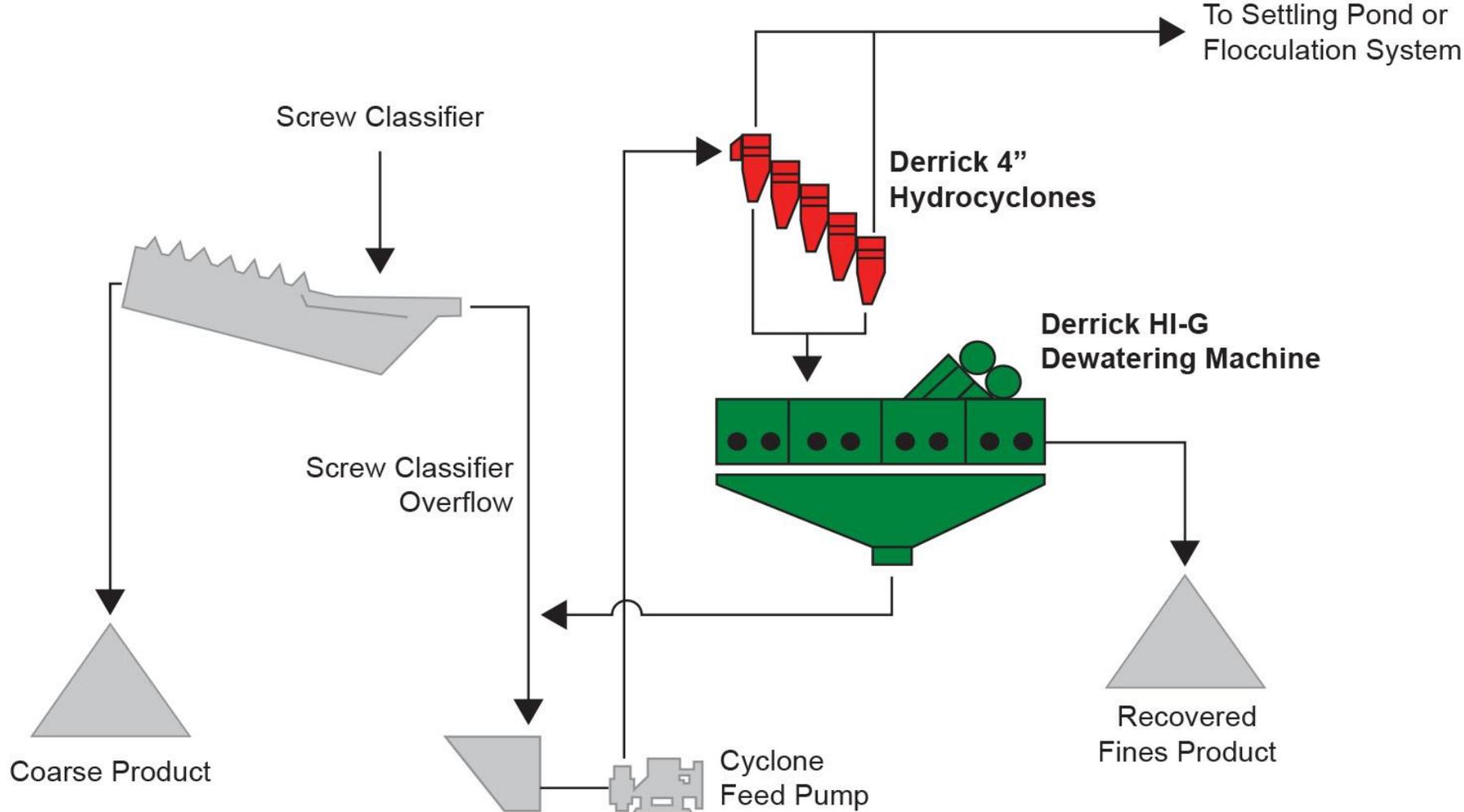
Derrick HI-G[®] Dewatering Machine

Incorporates our 4" hydrocyclones with our "G" force, linear motion screen frame

The Derrick HI-G Fines Recovery System provides the Mining & Industrial markets with unparalleled performance and unmatched cost-effectiveness in handling fines



Typical Installation Flow Sheet

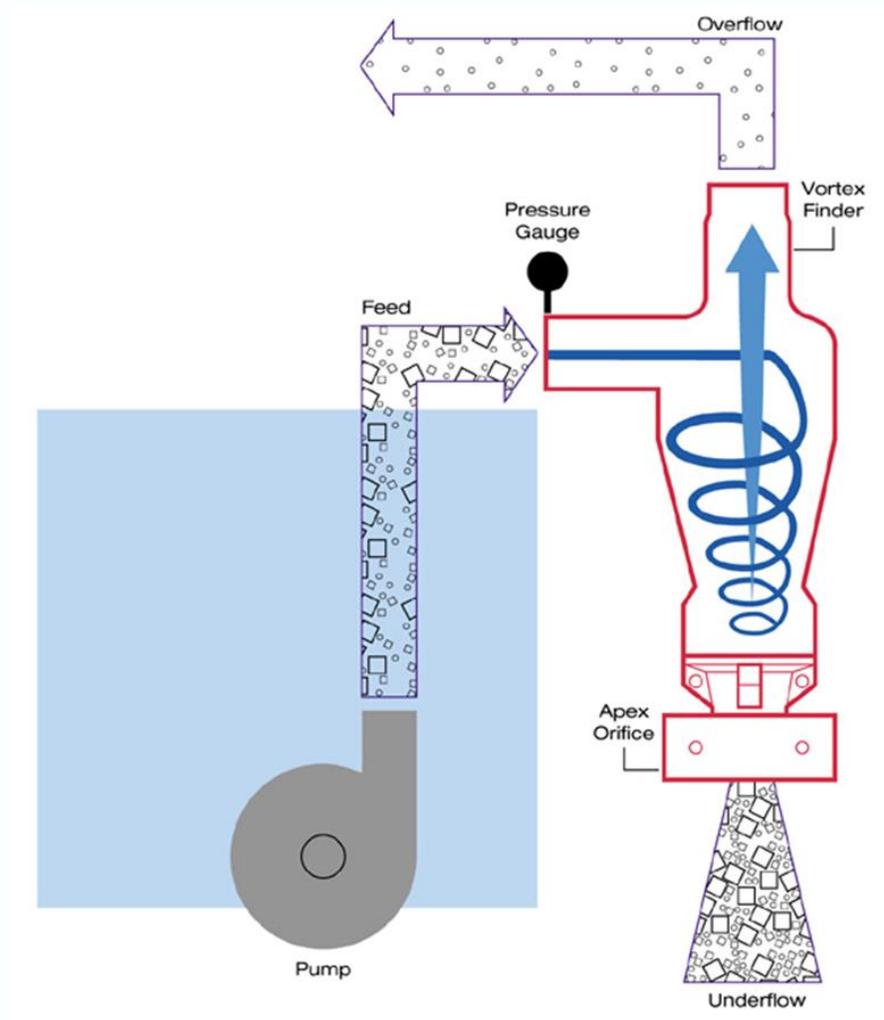


1st Stage Fines Extraction

4" Hydrocyclone Desilter

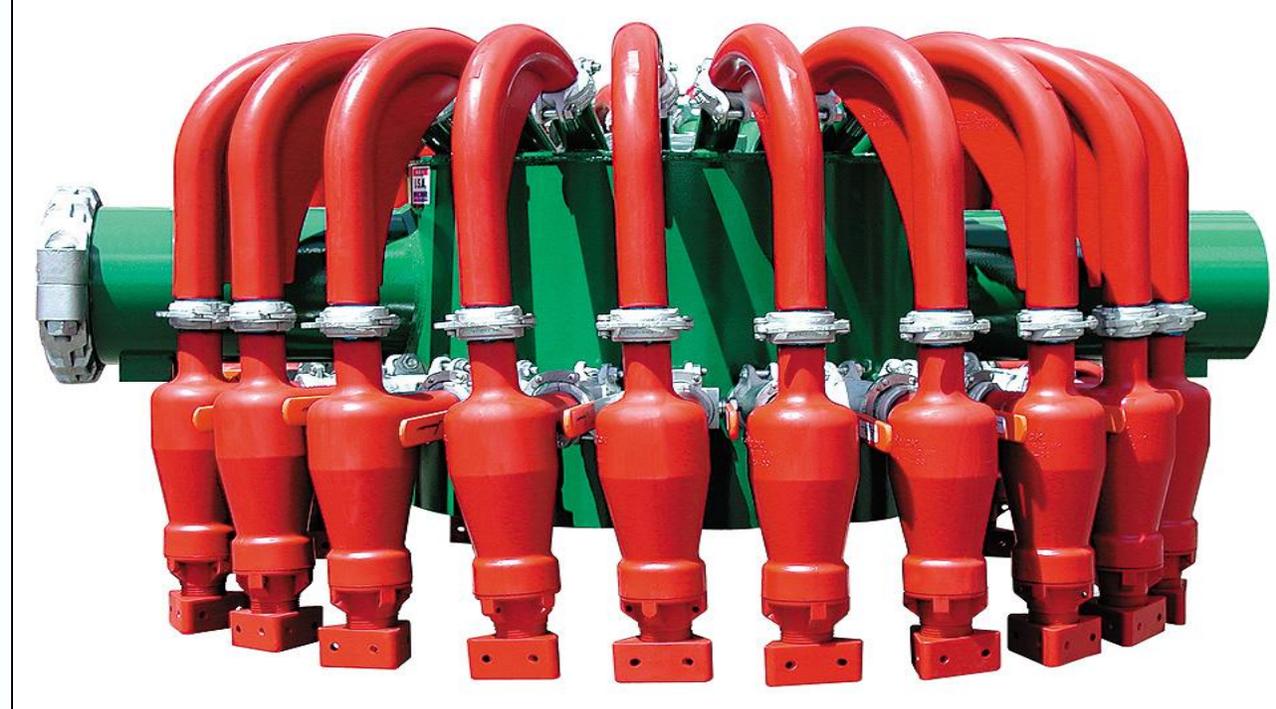


Principle of Operation



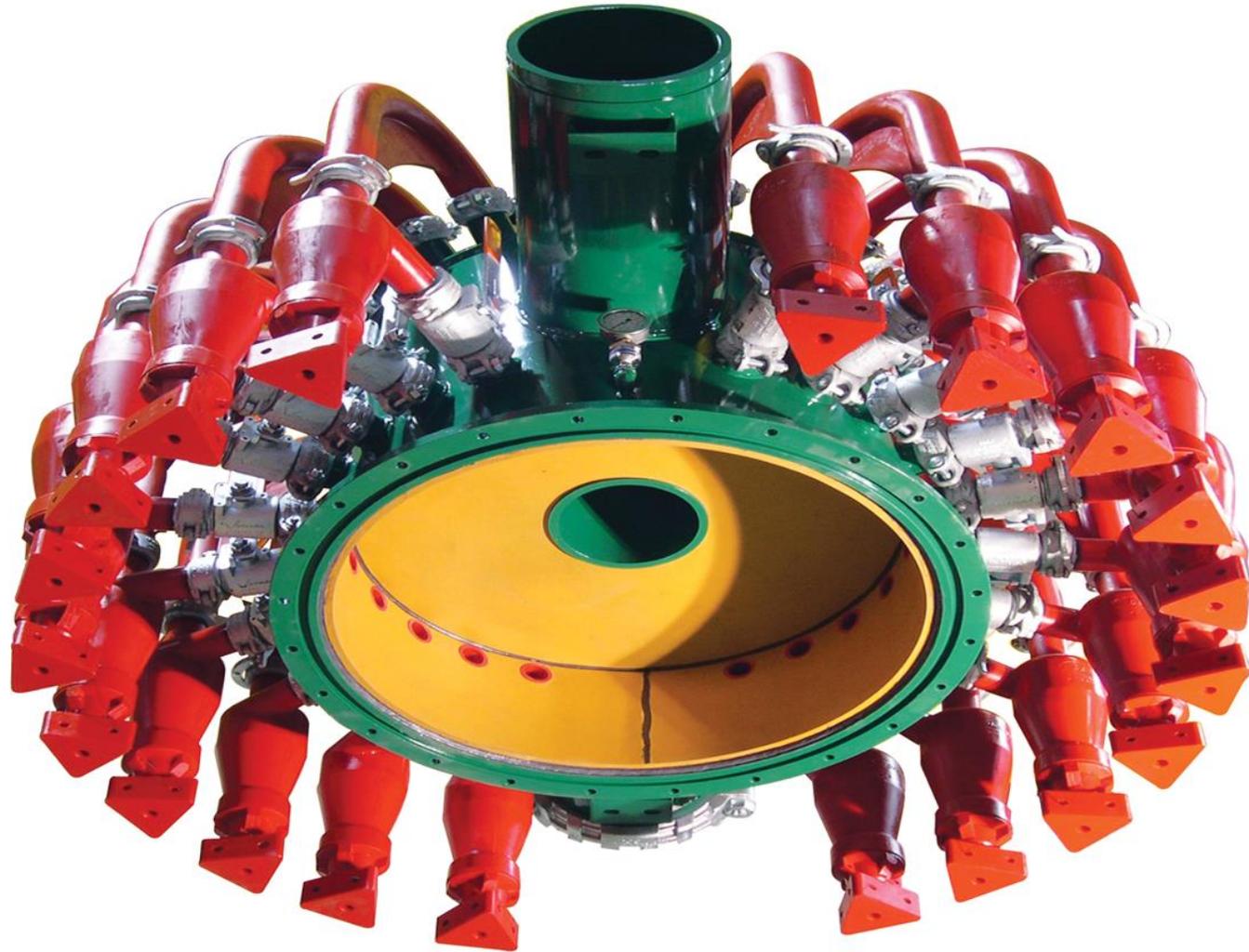
Hydrocyclones

- Capacity: 60 to 85 GPM/cyclone
(13.6 to 19.3 m³/h)
 - ✓ 40 cone cluster 3400 GPM (772 m³/h)
 - ✓ 20 cone cluster 1700 GPM (386 m³/h)
 - ✓ 12 cone cluster 1020 GPM (232 m³/h)
- Ideal pressure drop = 35 to 40 psi
- Cyclone feed: ~10% solid by weight
- Cyclone Cut point: D50: 25 to 38µm
- Cyclone overflow will contain 85 to 95% passing the 25µm (500 mesh)
- Cyclone underflow percent solids: ~50% to 65%



Manifold Protective Linings

- Equal split of solids
- Equal split of water
- Equal split of pressure
- Overflow = Atmospheric venting



2nd Stage Fines Dewatering

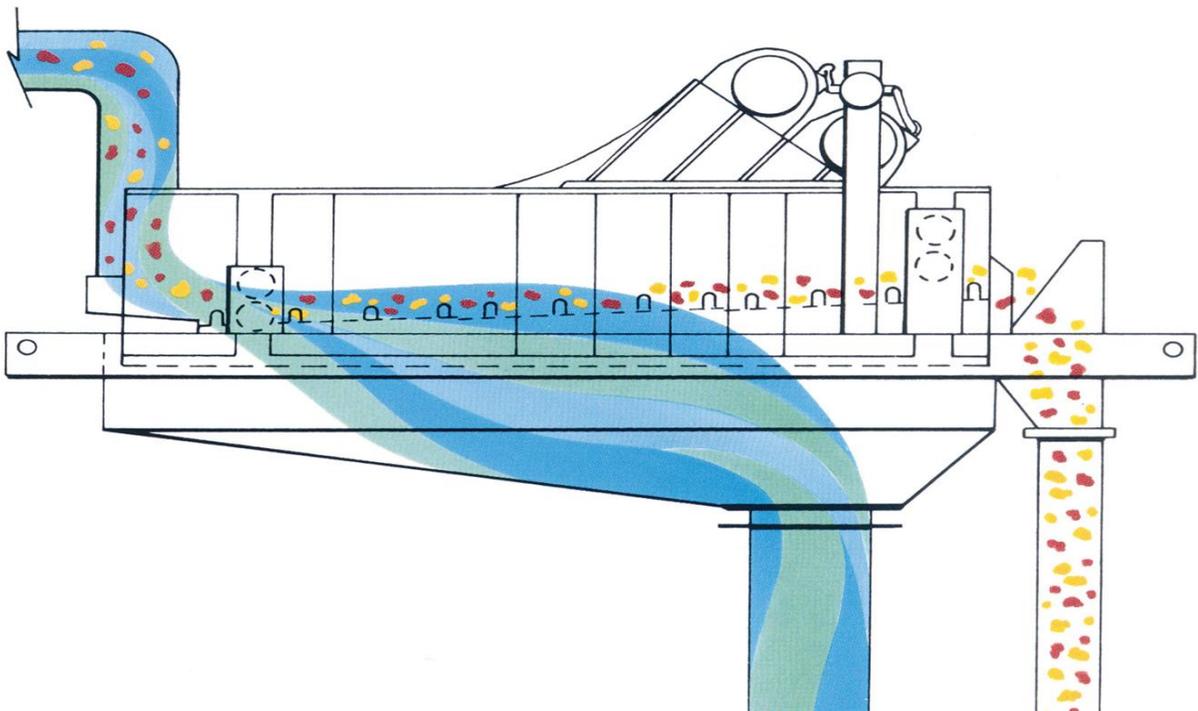
Recovered Solids – Screen Feed

- Solids collected in common collection pan are gravity fed into our box feeder
- The box feeder equally disperses the solids onto the HI-G force screen from where they begin the de-watering process



High-G Force

- Dewatering process

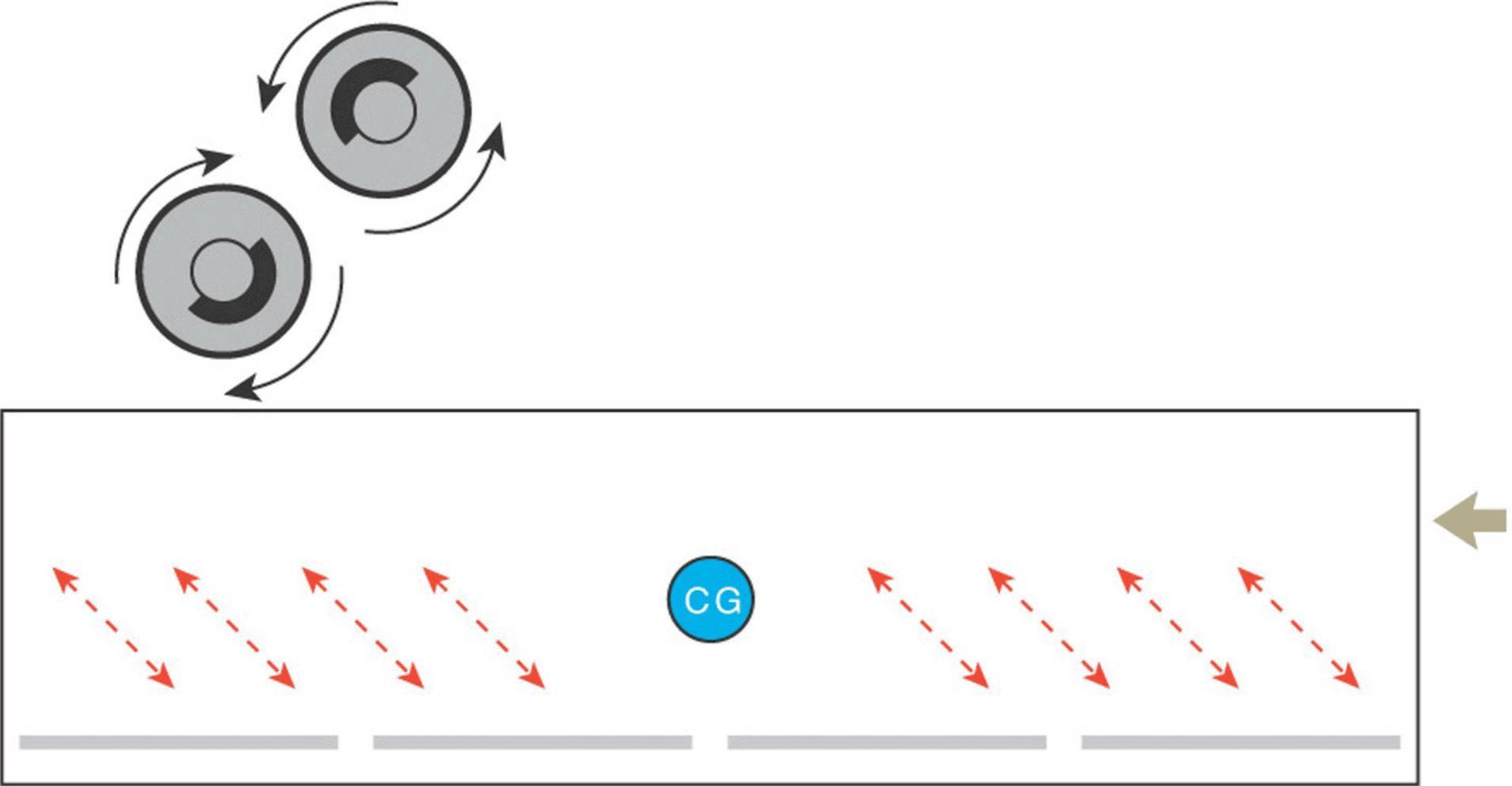


Derrick High-G Force Vibratory Motors

- Powerful, quiet, dual vibratory motors apply high G performance
- Standard Super G has greased-for-life bearings
- Zero Maintenance
- Low sound level



Linear Motion

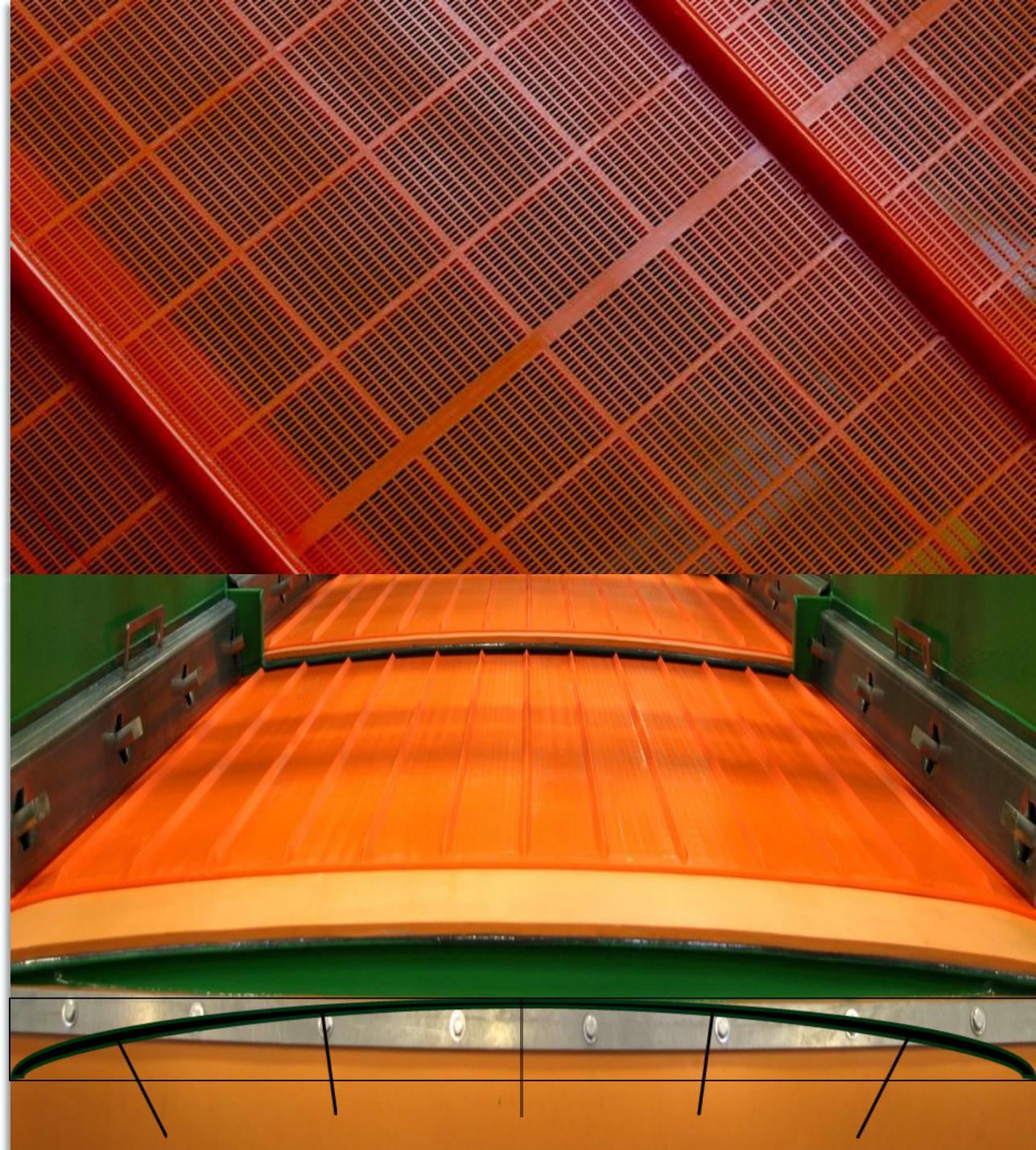


Derrick Patented Urethane Screen Panels

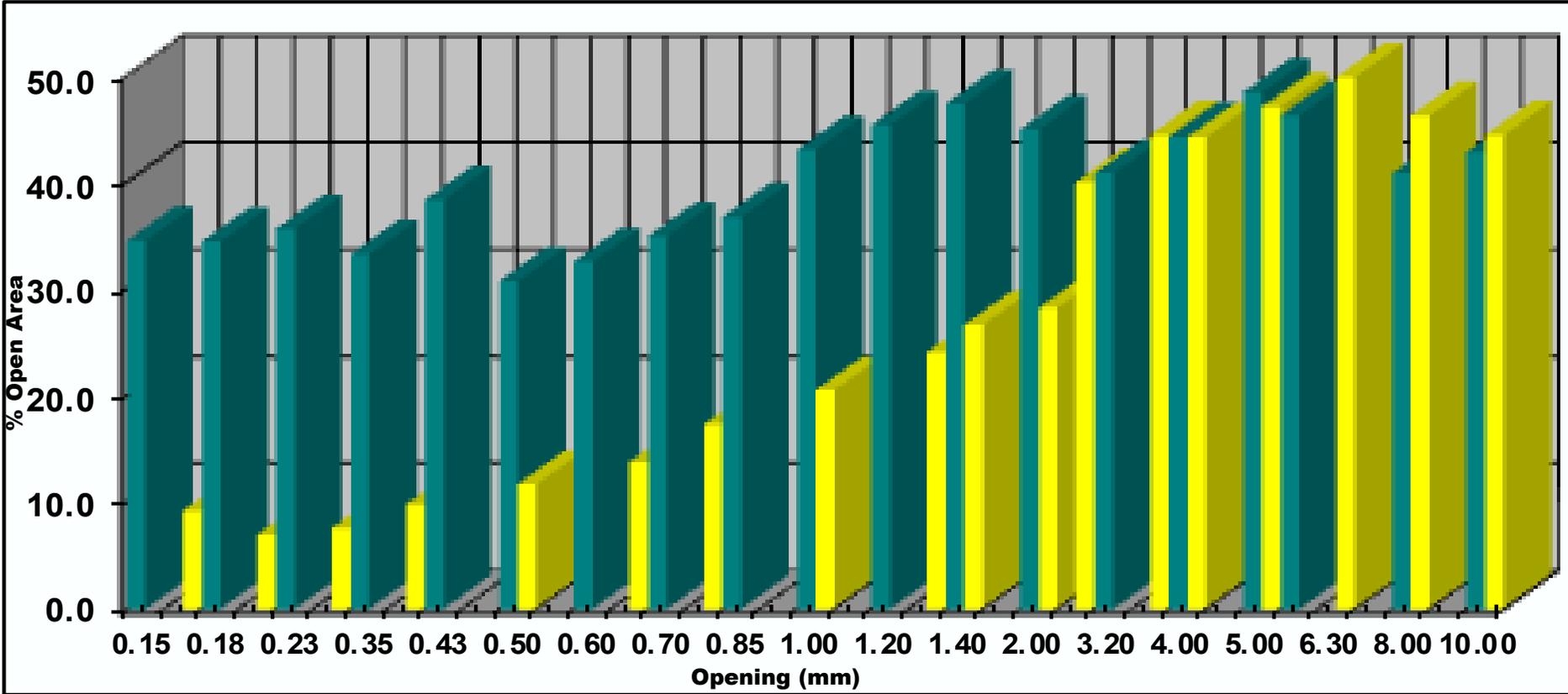
- High open area for maximum flow capacity
- Unique non-blinding design for optimum efficiency and performance
- Reduce operating and maintenance cost
- Light weight and ease to install
- Long lasting

Installed with Crown Deck Design

- Equally disperse material on the screen panel
- Ease to install



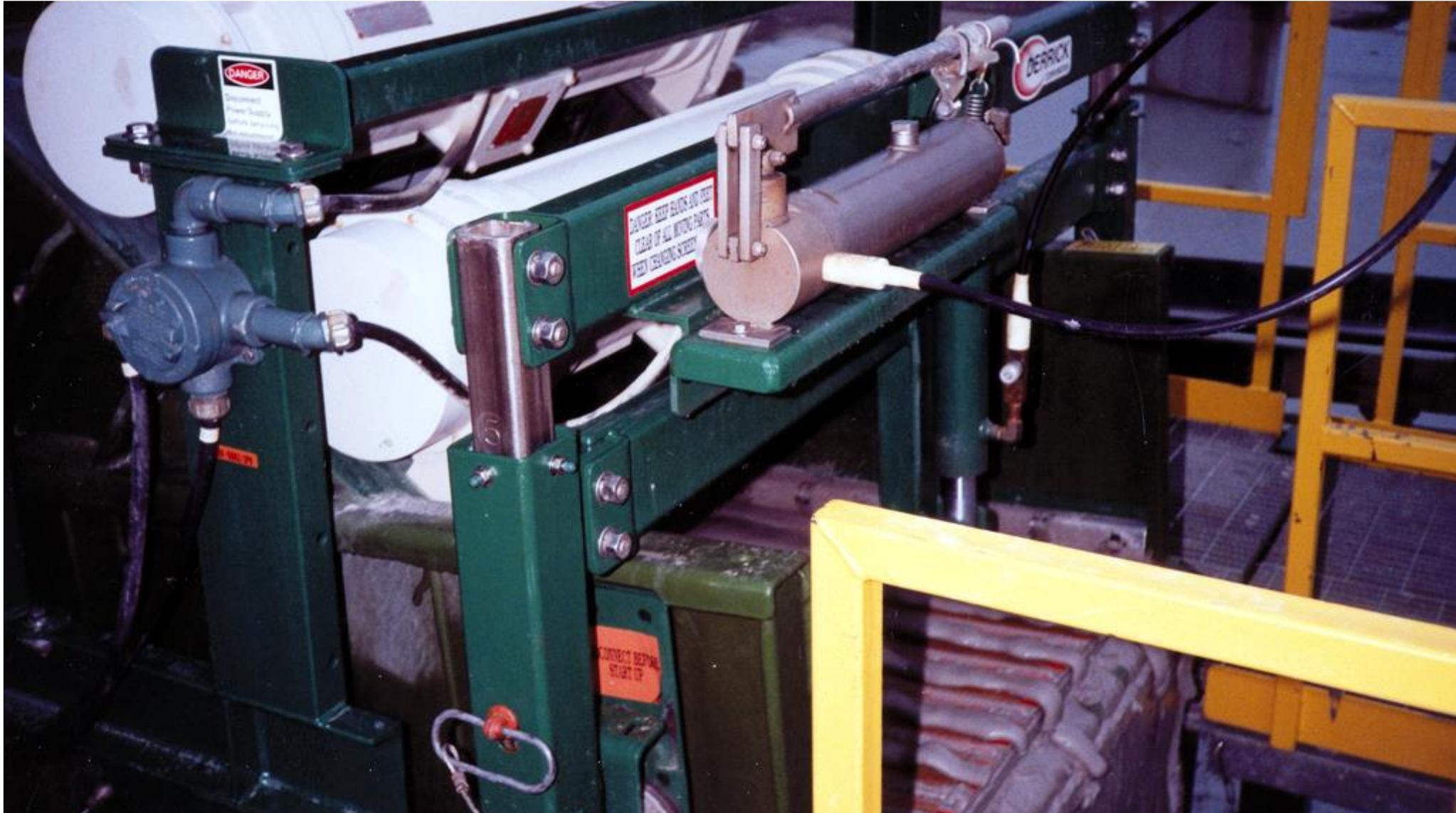
Open Area of Derrick's Patented Urethane Screen vs. Conventional Manufacturer's Urethane Panel



DERRICK- ACTUAL PERCENT OPEN AREA

CONVENTIONAL MANUFACTURER'S - RELATIVE PERCENT OPEN AREA

Adjustable Screen Angle



Cost Saving Provided

- Drastically reduce pond cleaning frequencies and greatly extend life of settling pond
- Reduce wear & maintenance on pond cleaning equipment
- Enhance water quality back to the plant or public discharge and reduce make-up water costs
- Minimize labor & time involved with pond cleaning
- Utilize real estate with ponds size reduction
- Reduction in liabilities
- **Turn a once wasted material into a now marketable, profitable product**



Equipment Configuration



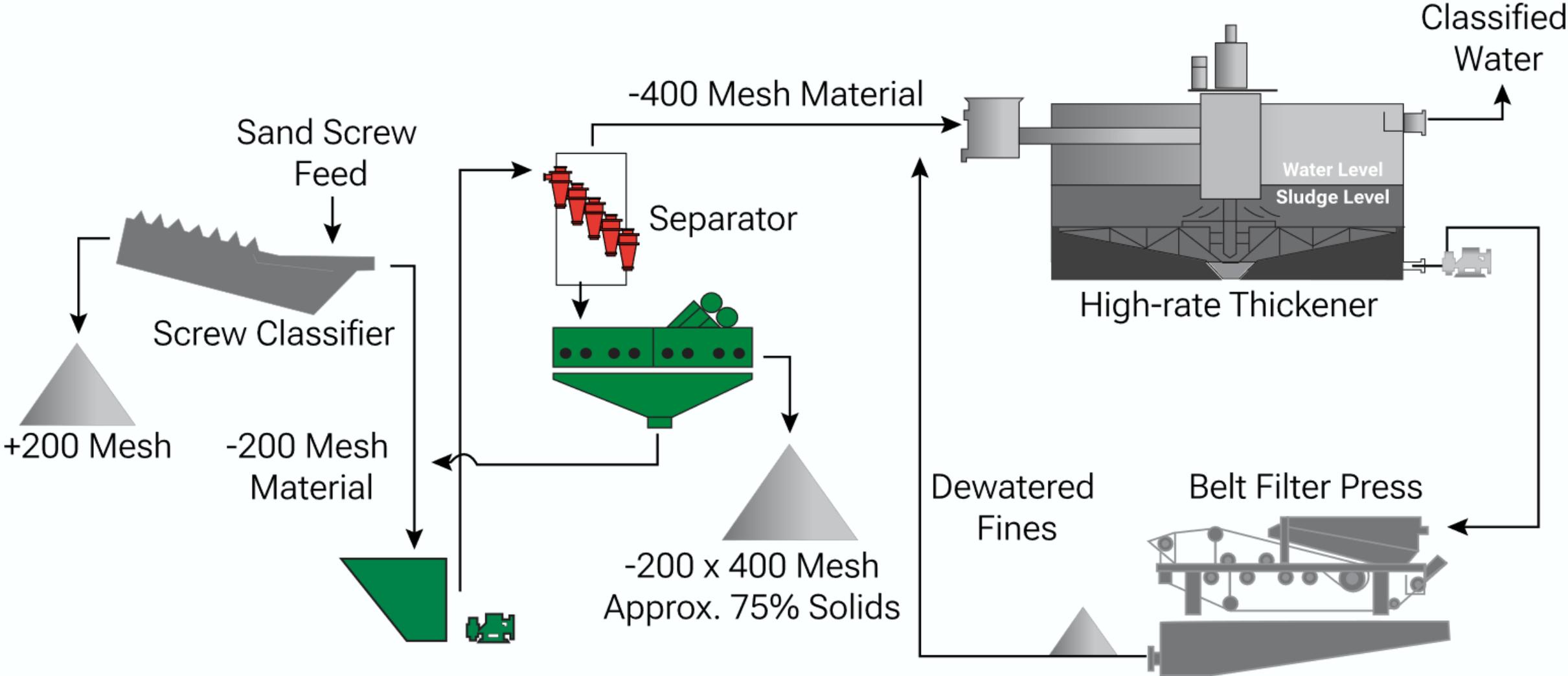
93% Solids @200 Tph



90% Solids @280 Tph



Complete Pond Elimination



Conclusion

This high-efficiency system delivers a cost-effective and environmentally friendly solution, enabling mining operations to reduce tailings volume, reclaim lost materials, and turn them into saleable products



Thank You

