

McNally Sayaji Engineering Limited

ARENATEC SAND WASHING SYSTEMS

Composite Solution for Wet Sand Washing and water recovery plant for concrete, Plaster and glass sand



McNally Sayaji Engg Ltd (MSEL) is one of India's leading manufacturers of crushing, screening, grinding, material handling and mineral processing equipment. We have been serving the core sectors of industry mainly Mining, Power, Steel, Cement etc for the last 60 years where we have been working with a range of minerals like iron ore, coal, steel, zinc, copper, limestone, silica, feldspar, Beach sands etc.

The company is headquartered in Kolkata and has 4 manufacturing facilities located at Kumardhubi, Asansol, Baroda and Bangalore. The Bangalore Unit manufactures all process related equipment and ARENATEC Sand washing plant is a product designed and manufactured at the Bangalore Works.

There has been increasing awareness about the harmful effects of exploiting river beds to excavate River sand. Consequently, Governments across the country are insisting on the use of Manufactured sand. There is an urgent need for reliable and robust equipment that can produce high quality sand from different types of rocks.

When rocks are crushed, considerable amount of ultra fine dust is generated which has to be removed. The removal of this dust is best done by a wet washing plant.

Our ARENATEC™ washing plants are technologically superior and are designed to offer a complete washing solution.

Arenatec™ Washing Plants

SINGLE PRODUCT

Construction Sand

DUAL PRODUCT

Construction Sand and Plaster Sand

PLANT CAPACITIES

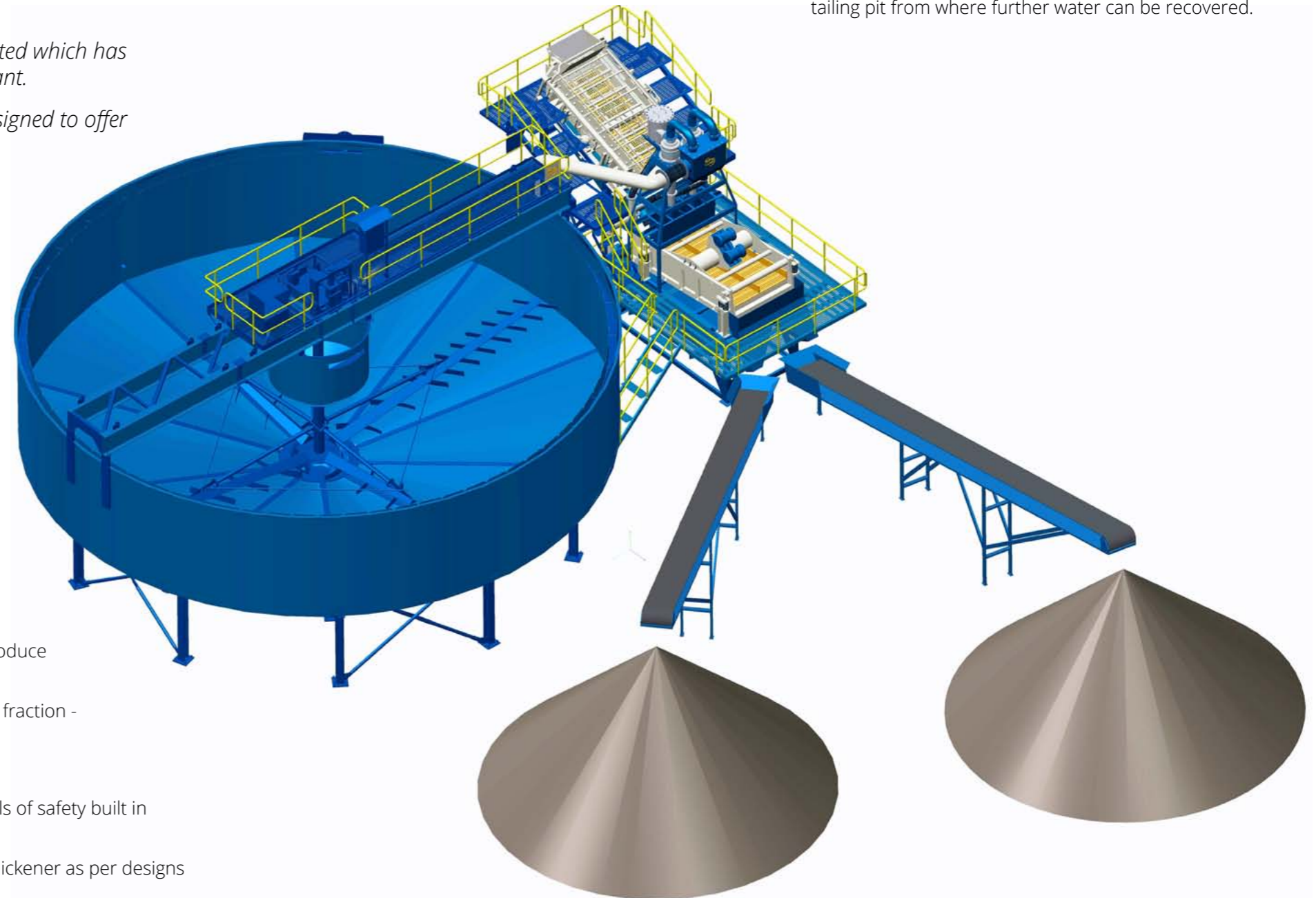
80 tph, 120 tph, 160 tph and 200 tph

Key Features of Arenatec™ Sand Washing Plant

- Two separate screens to effectively perform two separate functions critical to produce quality washed sand – Rinsing and Dewatering Screens.
- High efficiency cyclones to effectively remove dust and slimes at the desired size fraction - to prevent loss of product into rejects.
- Two product system that produces truly blended homogenous products.
- Maximum water recovery through high efficiency High Rate thickener with 3 levels of safety built in for trouble free operation.
- Top of the line equipment from best in the world – Screens from Sizetec-USA, Thickener as per designs of Outotec, Finland and Slurry Pumps as per designs of Sala, Sweden.
- Fully Automatic operation controlled from an air conditioned cabin integrated with the washing plant.

Principle of Operation

- Fresh feed is delivered to separate Rinsing screen fitted with screen panels having 2.5mm openings. This enables classification of the incoming sand at 2.36 mm and washes out dust & slimes.
- The clean washed oversize travels down to the dewatering screen.
- Undersize of rinsing screen flows into sump from where it is pumped to the cyclones.
- Cyclone overflow containing the slimes flows to the thickener for recovery of almost 90% of the wash water. Recovered water will be returned to the washing plant.
- Clean fines devoid of slimes from the Hydrocyclone underflow falls into onto the dewatering screen and mixes with the rinsing screen oversize to provide a clean washed homogenous product.
- Underflow of thickener will be discharged as a thick sludge to a tailing pit from where further water can be recovered.





SINGLE SAND PRODUCT

In the single product machine, the "coarse" oversize from the Rinsing screen falls across the entire width of the Dewatering screen.

The 'fines' from the cyclone underflow too falls across the screen width to mingle with the coarse to produce a single homogenous product.



DUAL SAND PRODUCT

In the dual product machine, the Dewatering screen has a partition plate installed along the length of the screen panel dividing it into two.

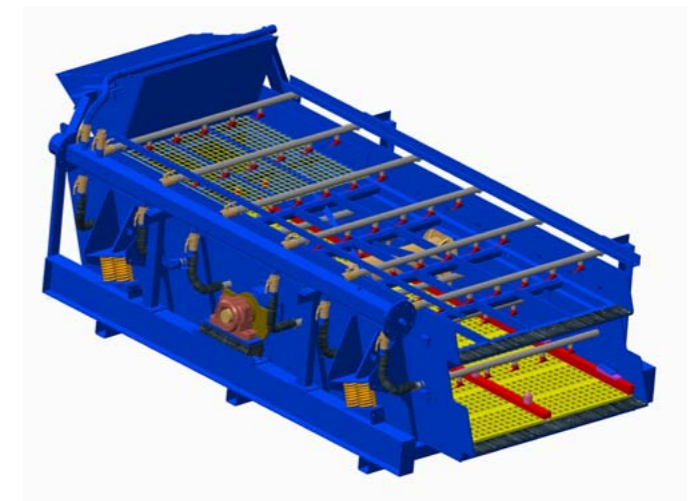
The Rinsing screen oversize is guided onto one side of the partition. The cyclone underflow is allowed to fall in a controlled proportion on either side of the partition. The fines falling into the coarse side blends well into the coarse material generating homogenous construction sand. The fines falling on the other side of the partition shall be plaster sand.

Both construction sand and plaster sand will fall into a dual discharge chute to be transported and stockpiled.

Overview of Equipment

RINSER SCREEN

Dedicated Rinsing Screen fitted with high pressure water spray arrangement to wash out the dust and clay adhering to the sand grains. The Rinsing Screen also effects a size separation at 2.36 mm – the cut size for plaster sand if required separately. Complete screen area with pressurised water is available for proper rinsing unlike other machines where a quarter of a screen is used for rinsing.



HYDROCYCLONE

High Efficiency Hydrocyclones to effect precise separation at required particle size to get required grade of product and limit losses.



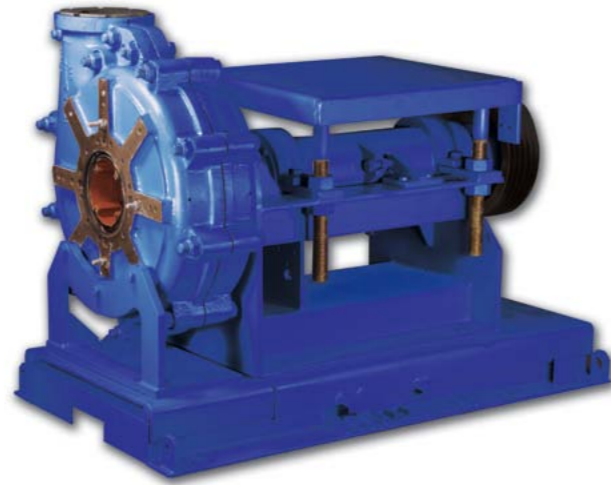
DEWATERING SCREEN

High Frequency dewatering screen with an upward slope of 5° delivers a thick bed of dry sand as final product which can be stockpiled or despatched immediately.



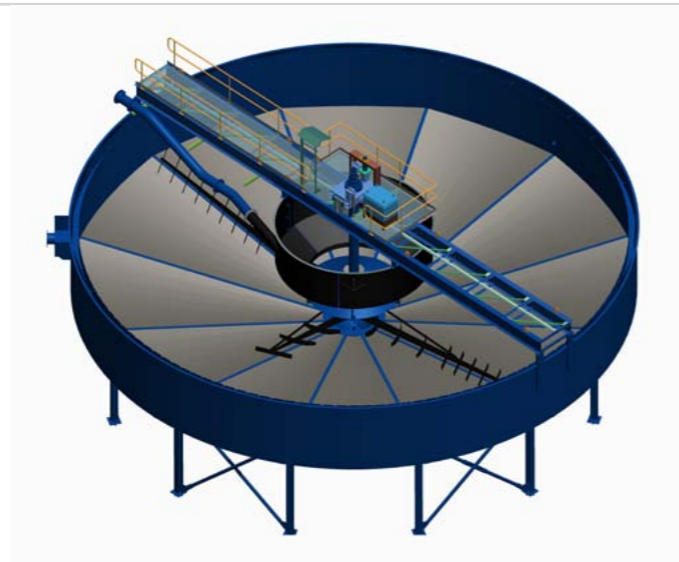
SLURRY PUMPS

MSEL Slurry pumps are specially designed to handle slurries with high solids concentration (up to 65 %). These pumps operate at low impeller speeds, high operating efficiencies, higher wear life, low power consumption & less downtime. They are mechanically rigid to give longer life of wear parts and bearings.



HIGH RATE THICKENER

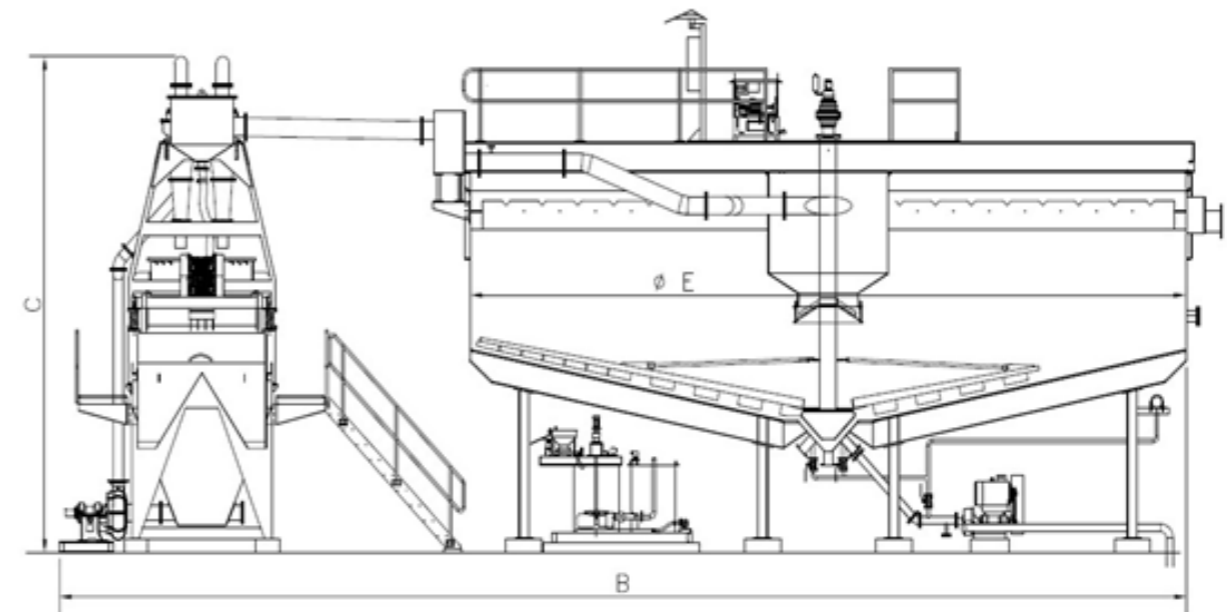
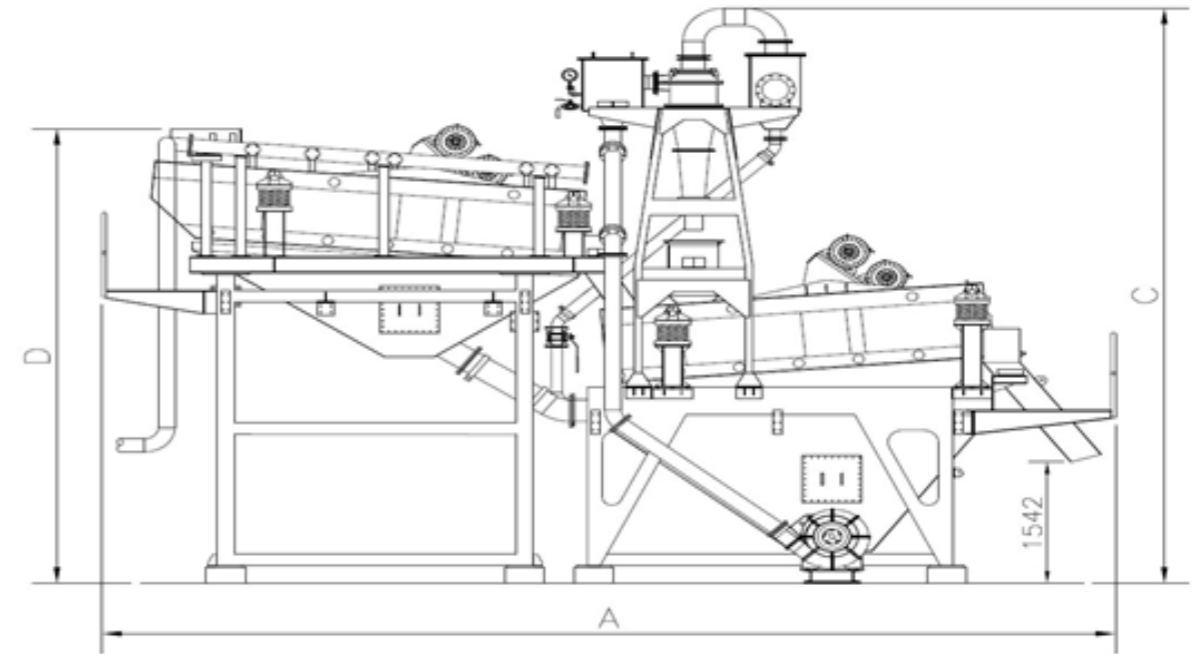
High Rate Thickener (HRT) with special" McTurbo" feed well is used to recover 90% of water used for washing and provide clear water back to the plant. Getting clear water back to rinse the incoming sand results in clean final product. In a conventional settling tank, the water returning to the plant is still loaded with slimes



Technical Specifications

Capacity (Max.)	Model			
	80 TPH	120 TPH	160 TPH	200TPH
Rinsing Screen	1.5m (w) x 3.6m (L)	1.5m (w) x 3.6m (L)	1.5m (w) x 3.6m (L)	1.5m (w) x 3.6m (L)
De-Watering Screen (MM)	1.5m (w) x 3.6m (L)	1.5m (w) x 3.6m (L)	1.8m (w) x 3.6m (L)	2.1m (w) x 4.2m (L)
Hydro-Cyclone	420 x 1	350 x 2	420 x 2	500 x 2
Thickener (dia in Mtr)	8	10	12	14
Fresh Water required	~112 (m ³ /hr)	~170 (m ³ /hr)	~225 (m ³ /hr)	~280 (m ³ /hr)
Fresh Water with thickener in circuit	~12 (m ³ /hr)	~18 (m ³ /hr)	~24(m ³ /hr)	~30(m ³ /hr)
Power requirement	~73 KW	~96 KW	~125 KW	~165 KW

Dimensions



Capacity	A	B	C	D	E
200 TPH	11,500 mm	21,500 mm	7,500 mm	5,800 mm	14,000 mm
160 TPH	10,300 mm	18,900 mm	7,340 mm	5,600 mm	12,000 mm
120 TPH	10,300 mm	17,600 mm	7,030 mm	5,600 mm	10,000 mm
80 TPH	10,300 mm	16,300 mm	7,140 mm	5,600 mm	8,000 mm

Indian Standards 383:2016_Fine Aggregates (Clause 6.3)

IS SIEVE DESIGNATION	PERCENTAGE PASSING			
	Zone I	Zone II	Zone III	Zone IV
10 mm	100	100	100	100
4.75 mm	90 – 100	90 – 100	90 – 100	95 – 100
2.36 mm	60 – 95	75 – 100	85 – 100	95 – 100
1.18 mm	30 – 70	55 – 90	75 – 100	90 – 100
600 Micron	15 – 34	35 – 59	60 – 79	80 – 100
300 Micron	5 – 20	8 – 30	12 – 40	15 – 50
150 Micron	0 – 10	0 – 10	0 – 10	0 – 15

Notes:

1. For Crushed stone sands, the permissible limit on 150 micron IS Sieve is increased to 20 percent. This does not affect the 5 percent allowance permitted in 6.3 applying to other sieve sizes.
2. Fine aggregate complying with the requirements of any grading zone in this table is suitable for concrete but the quality of concrete produced will depend upon number of factors including proportions.

FOCUSING ON WHAT BEST WE CAN DO FOR YOU.

Optimum solution to produce best quality construction & plaster sand with minimum operational cost.

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