

compact hydrocyclone plants



Ultra-fine sand production (20 tph)

Sand washing and classification



GENERAL DESCRIPTION

ERAL's wide experience in the design and development of efficient solutions for sands wet-treatment enables it to offer a variety of hydrocyclone plant configurations suitable for the needs of every intended use and for meeting the material quality requirements established by European standards for aggregates.

ERAL determines the most appropriate type of compact plant on a case-by-case basis after analysing the process variables and the particular features of the material to be processed. The resulting specifications give rise to a diversity of plant configurations, such as: a) compact, two-stage washing plants; b) plants that simultaneously produce sand for mortar and concrete; and c) plants equipped with small-diameter hydrocyclones with high classification efficiency for the production of sands applied to laying conduits, improving agricultural soil, preparing sports grounds and manufacturing high-strength precast products.

OPERATION

The slurry feeding, which is usually discharged by a vibrating screen in the case of a sand washing process or as an overflow effluent when is delivered by a screw classifier or bucket-wheel, in the fine sands recovery cases, is conveyed to the **Pumping Group** from which it is pumped out to the **Hydrocyclone**, which eliminates undesirable particles (clay, silt, etc.). The washed product discharged from the hydrocyclone is conducted to the **Dewatering Screen** to reduce the moisture content of the final product and thus obtain an easy-to-handle, top-quality material. The hydrocyclone overflow containing rejected particles is evacuated to settling ponds or re-processed in the subsequent clarification and filtering stages, thus minimizing environmental impact and reusing the water employed in the process.

Compact Hydrocyclone Plants are designed for washing and classifying sand. Each plant consists of a single, compact module comprising a pumping unit, a hydrocyclone and a dewatering screen, which are sized to suit the conditions required for each application, mainly in sand washing and recovery of fine sands, production of special sands, bentonite regeneration, thickening of feed slurries with solids in suspension or partial clarification of effluents.

Their compact, demonstrably effective design is commonly used among plant operators and affords significant user benefits, such as speedy assembly, ease of operation, low maintenance and a reduced footprint.

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Certified under ISO 9001 - ISO 14001

compact hydrocyclone plants



Sand washing (350 tph)



Recovery of fine sands



Double washing of sand (150 tph)



Sand washing (200 tph)

CONSTRUCTION

Compact Plants integrate a **Pumping Group, Hydrocyclone and Dewatering Screen** with a variety of adjustable settings.

The **Pumping Group** consists of a Pump Sump fabricated in mild painted steel, with rubber lined wear parts, and automatic level-control device to ensure a regular pump feeding. The sump is mounted on a skid chassis, comprising a compact unit with the plant's other components. The replaceable hydraulic parts (impeller and liners) of the split-system centrifugal pump are made of rubber, chrome alloy steel or other abrasion- and corrosion-resistant materials, with a centrifugal or pressurised-water shaft seal. The electric motor rests over the pump base. Other type of standard drive arrangements are available upon request.

The **Hydrocyclone** is made in mild painted steel with exchangeable elastomer liners or built entirely of polyurethane, while the parts subject to heavy wear can be supplied in ceramic. A broad programme of models, initially developed for mineral processing and ranging in size from 10 to 1250 mm, affords a variety of configurations and adjustments.

The **Dewatering Screen** of modular design is equipped with polyurethane filter panels screwlessly mounted to the trough, resulting in a larger effective filtering area. Thanks to the wide range of mesh openings available and the modular design the filter surface can be tailored to the needs of each particular process. The heavy-duty vibrators with high-capacity roller bearings provide a high-frequency and low-amplitude vibration, ideal for the dewatering duty.

APPLICATIONS

Sand Washing for concrete production, in substitution of settling bucket-wheels or screw classifiers.

Recovery of Fine Sands lost in water effluents from bucket-wheels or screw classifiers. The fine sand recovered in the hydrocyclone may be added to the washed sand generated by the bucket-wheel or screw, or it is stocked separately.

Production of Ultra-fine Sand for fibre-optic laying and telephone cable, as well as for agricultural crops, horse racecourses, golf courses and special mortars. The sand contained in the effluents from sand-washing equipment with a particle size distribution over 30 µm is processed in special hydrocyclone plants that include small-diameter, high precision cut-off hydrocyclones combined with dewatering screens specifically designed for the dehydration of ultra-fine particles. The special sands thus obtained are in great demand in the above mentioned markets, which at the same time affords to minimize environmental impact by reducing the solids content of the effluents.

Sand Classification, by combining hydrocyclones with high-frequency vibrating screens or hydroclassifiers, one or two types of sands can be obtained with a particle size distribution adjusted to a specific spindle, according to the new E.C. standards.



Ultra-fine sand dewatering

Preparation of Mortar Sand, with the simultaneous production of sand for concrete, by combining hydrocyclones, sieve bend screens and built-in dewatering screens integrated in high-capacity compact plants with low operating costs and great ease of operation.

Double Washing of Sands, by means of a compact plant equipped with two washing stages in a single unit, when the sand to be washed contains over 15 % harmful particles to be eliminated. Sand containing up to 40 % clay can be treated.

Bentonite Regeneration, for use in slurries for foundation piles, concrete diaphragm walls and tunnel construction. Fully automated, high-capacity plants with up to three stages can be designed for the recovery of high-quality bentonite, necessary for today's large-diameter tunnel-boring machines.



Mortar sand dewatering

MANUFACTURING PROGRAMME

The manufacture of these compact plants is based on the appropriate combination of their main components, as determined by the operating conditions of the plant to be installed.

Type	Hydrocyclone Ø mm	Pump Ø mm	Dewatering Screen Type	Total Power kW	Capacity tph
MLE15	150	40	EV 12	5.1	8
MLE25	250	50	EV 22	9.3	15
MLE32	325	75	EV 23	14.2	30
MLE40	400	100	EV 33	22.9	50
MLE50	500	150	EV 43	37.2	70
MLE62	625	150	EV 53	49	95
MLE75	750	200	EV 54	55	130
MLE100	1000	200	EV 64	89	200
MLE 2/62	2x625	250	EV 75	111.2	250
MLE 2/75	2x750	300	EV 76	136	300