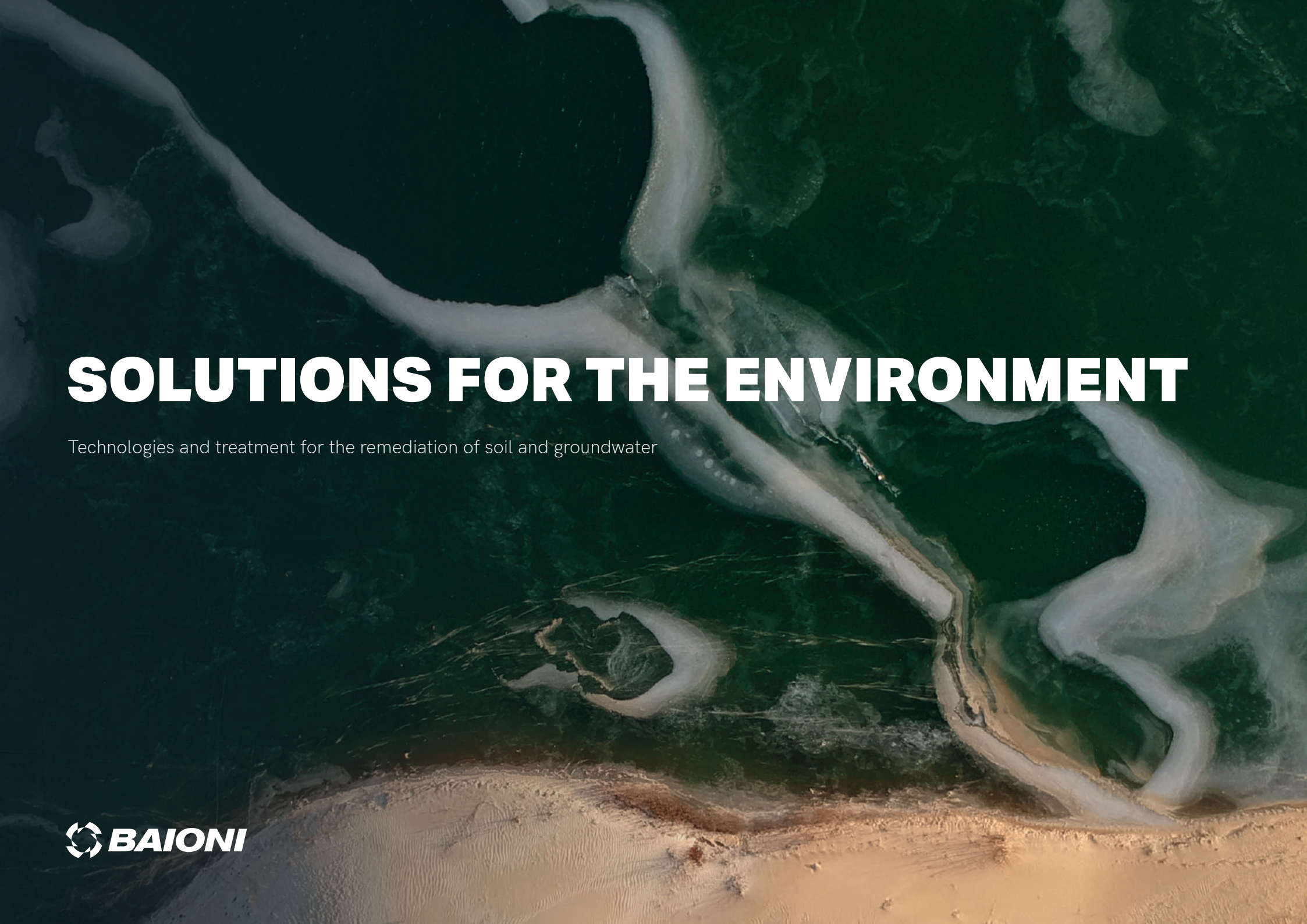


SOLUTIONS FOR THE ENVIRONMENT

Technologies and treatment for the remediation of soil and groundwater

BAIONI

ENVIRONMENT DIVISION

The Environment Division is dedicated to the design and production of machines and plants for the treatment of process water, water coming from aggregates washing plants and for the dewatering of quarry and industrial sludge, where the market today requires high performance and technologies.

Particular attention is paid to the design and production of complex installations for the treatment of solid, liquid, muddy, civil and industrial, hazardous and non-hazardous waste, steel mill slag, industrial waste, waste from incinerators, waste from street sweeping.
The technologies offered are 'soil washing', 'sediment washing', and inertization through stabilization / solidification processes.

APPLICATION AND SOLUTIONS

> decanter centrifuges
> washing plants and equipment
> fines and ultra fines recovery plants
> static and dynamic clarifiers / thickeners
> soil washing / sediment washing plants

Through our technologies and processes we give oxygen back to the Earth and the Sea

STATIONARY AND MOBILE APPLICATIONS

With a wide choice of products and services designed for environmental sustainability, the Baioni company is able to meet any market demands, offering advice that, starting from the design and manufacturing of the plant, and to advice the customer taking into account the economic and safety needs and supports them in a timely manner with on-site interventions and after-sales assistance.

> MINING
> AGGREGATES SAND & GRAVEL
> C&D RECYCLING
> TUNNELING AND INFRASTRUCTURE
> WASTEWATER AND SLUDGE MANAGEMENT
> REMEDIATION AND WASTE MANAGEMENT

SOIL WASHING

The term "soil washing" indicates all the treatment processes undertaken to reclaim land and contaminated areas, usually brownfield sites, refineries, etc ... that is all those areas where parts of the soil are not compatible with life due to the presence of chemicals and pollutants. This pollution can also pass to groundwater and waterways and cause environmental disasters.

The choice of the type of intervention is made both on the basis of contamination and on the use of the area after the remediation work. A "soil washing" installation can take place on site (in-situ) without the necessary transfer of the soil and aims to reduce the costs of disposal of contaminated earthy material, reducing the need for new quarries and landfills and to recover the valuable fractions (pebbles, gravel, sand, compost, metals, etc ...) so as to reintroduce them on the market with an on the benefits of circular economy (recycled aggregates).

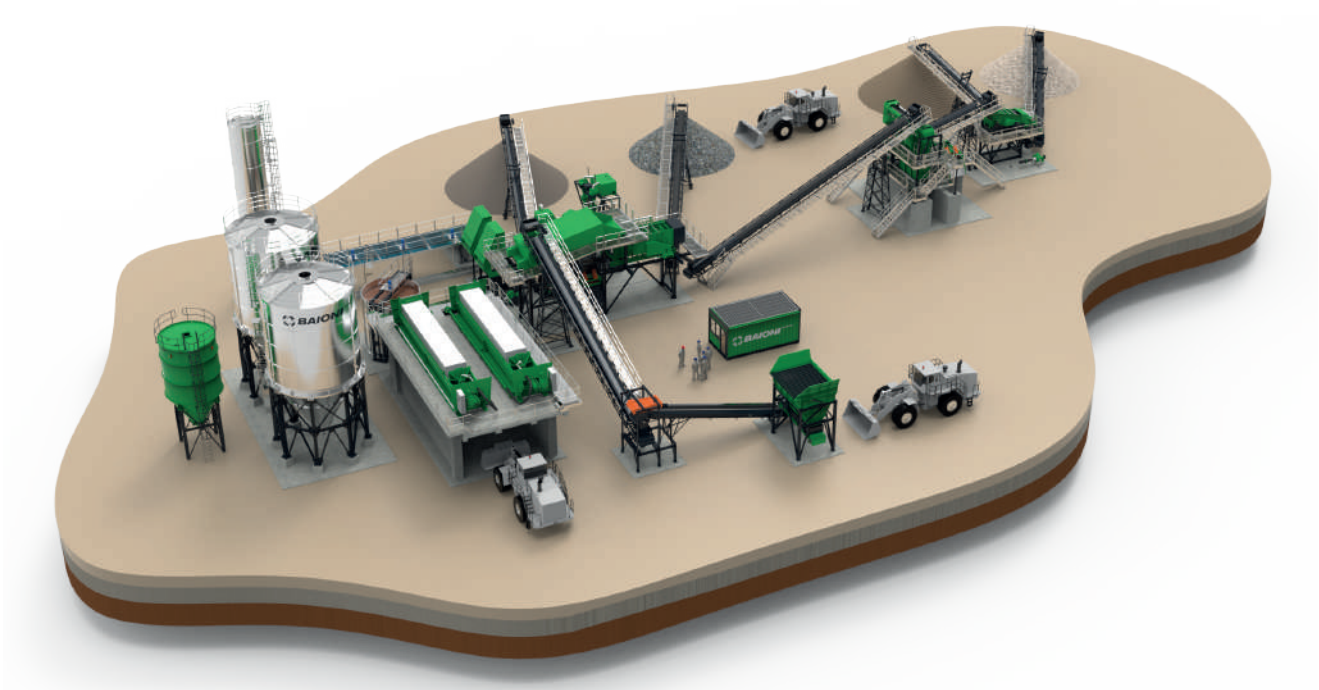
TREATMENT PROCESS

The "soil washing" technique can be applied to soil contaminated by the following pollutants:

- volatile and semi-volatile organic compounds
- fuels
- heavy metals
- chlorinated and polycyclic aromatic hydrocarbons
- dioxins and cyanides

TREATMENT STAGES

- escavation of contaminated soil
- separation of large sized rubble
- possible crushing operation
- remediation treatment by mechanical attrition and washing with the addition of extracting agent
- final classification
- sludge dehydration



SEDIMENT WASHING

With the Environment Division, Baioni specializes in the design and construction of plants for the treatment, transformation and therefore the reclamation of the sediments of marine-coastal areas and marine-river areas affected by contamination. After the dredging operations, sediments are subjected to washing treatment to recover the sandy and gravelly fraction useful for resell and reuse.

Baioni actively works for the sustainable development of ports, tourist marinas and waterways. Whether it is dredging work, or sediment treatment, the company stands out for its project-oriented and results-oriented approach, to the attention of its staff and professional collaborations created over the years.
Removing pollutants and contaminants in the sediments is vital to ensure safety for humans and aquatic wildlife.

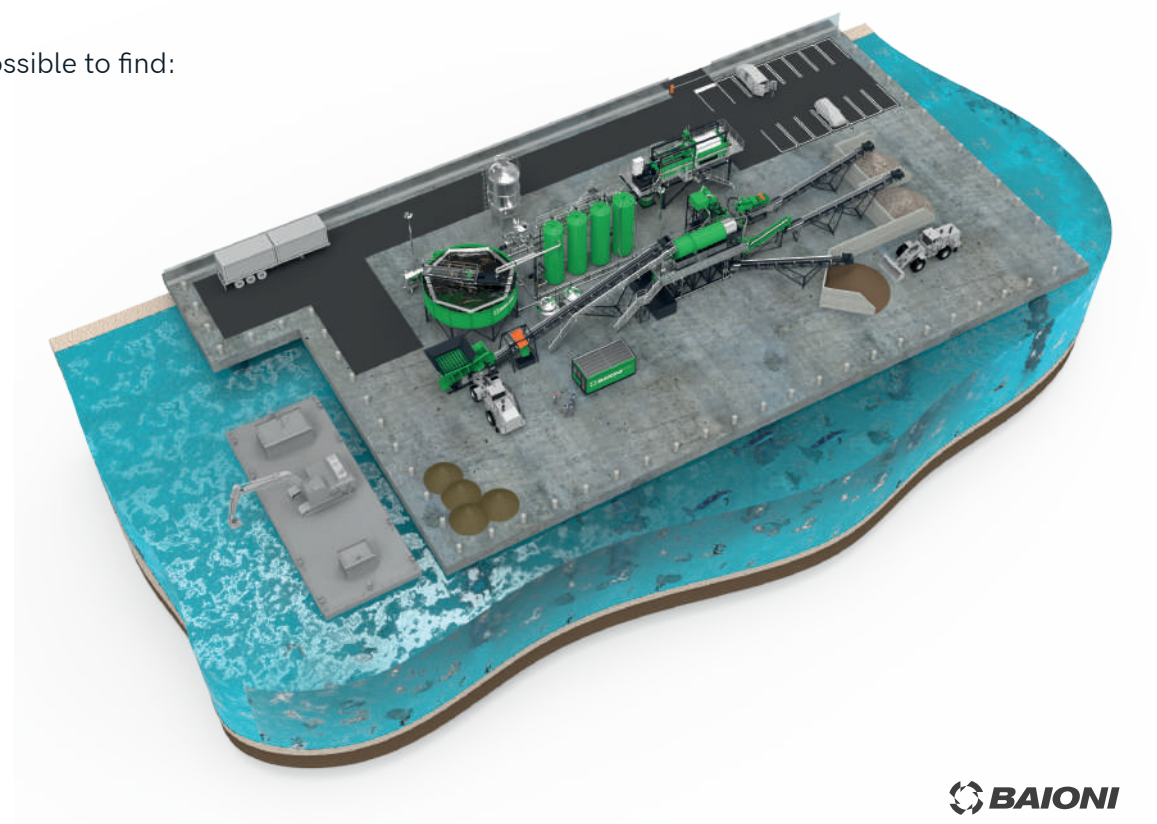
TREATMENT PROCESS

In marine sediments, compared to generic contaminated soils, it is possible to find:

- higher humidity values.
- a clear prevalence of the finer particle size fractions.
- high saline content.
- wider heterogeneity of contaminants.
- presence of both organic and inorganic contaminants.

TREATMENT STAGES

- sediment dredging
- separation of large sized rubble
- remediation treatment by mechanical attrition and washing with the addition of extracting agent
- final classification
- sludge dehydration



STABILIZATION/ SOLIDIFICATION

A Baioni inertization plant is a solid waste treatment plant, which, if solid waste is coming from other upstream processes such as purification, are loaded with pollutants, therefore the goal is to reduce the possibility of dispersion and the danger.

Stabilization and Solidification treatment is used to treat dangerous and non-dangerous waste of any kind (liquids, sludge, mud, slime, solids, etc.), separately or mixed. The aim of the treatment is to modify (both "physically" and "chemically") the substances included in the waste; in particular, the processes that are implemented in this kind of treatment reduce both the pollutants mobility and the contact between the waste and the percolation water. Stabilization and solidification (S/S) is a soil remediation process by which contaminants are rendered immobile through reactions with additives or processes. During this process, also called immobilization, fixation, or encapsulation, contaminants may be chemically bound or encapsulated into a matrix.

TREATMENT PROCESS

TREATMENT STAGES

- stockpiling section for the materials to be treated
- any necessary material refinement stage
- weighing and collection systems
- transport system of waste to reactor-mixer
- teactor for stabilization/solidification, usually a single-shaft mixer with mixing blades, inside which the material to be treated is mixed with the reagents (dusts or liquids) as to achieve a stabilized and solidified product
- extraction and dosage of reagents
- transport system to discharge the treated material
- storage section of treated material (tanks and silos)

TREATMENT OF ROAD SWEEPINGS

Modular Baioni plants for the treatment and recycling of road sweepers for contaminated soils, canals and gully waste can reduce costly disposal costs to provide waste products compliant with the inert protocol for reuse.

A range of modular solutions for the treatment of street waste, from mobile plants with reduced dimensions to complete turnkey structures. Baioni street sweeper waste recycling plants are perfectly designed to increase recycling rates and ensure 100% recovery of all street sweeper waste. Proven equipment that uses separation, washing and scrubbing techniques to treat street sweeping and remove contamination.

POSSIBLE USERS

> Local authorities (municipalities)
> Regional authorities
> Transport companies
> Public utility companies
> Companies in the environment industry

TREATMENT PROCESS mobile version

Baioni wet processing equipment can recycle road sweepings and gully waste to divert it from landfill and produce new recycled aggregates that can produce new income.

TREATMENT STAGES

Road sweepings treatment and recycling plants are based on a washing process that allows the inert fraction to be separated and destined for construction uses. The process is a "soil washing" characterized by the following process steps:

- transfer of pollutants present in dissolved, emulsified or suspended form, from particles materials to water
- separation of solid fractions by selection processes
- removal of contaminants transferred from the particles to the water by means of chemical-physical processes of precipitation, flocculation and sedimentation
- concentration of contaminated organic in a shoveling sludge

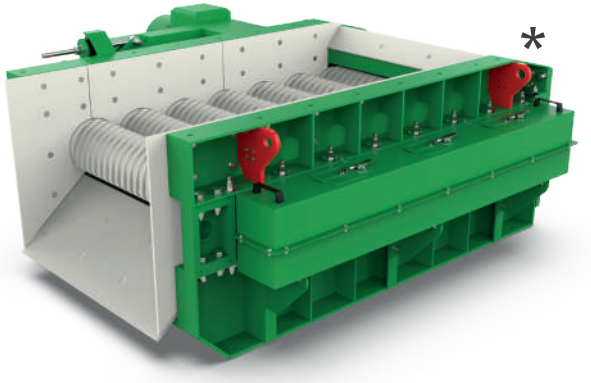
TREATMENT PROCESS fixed version

Baioni wet processing equipment can recycle road sweepings and gully waste to divert it from landfill and produce new recycled aggregates that can produce new income.

OUR EQUIPMENT

DOSING HOPPER AND FEEDER

>> Primary selection using a hopper with grid bars suitable for the removal of blocks of soil not suitable for treatment. Feeder under the feed hopper.



COARSE SCREENING

>> Coarse screening using a grizzly screen* or a live-roll wobbler feeder. Further process of iron removal with an overbelt magnetic separator.

CRUSHER/SHREDDER

>> Crusher* or twin-shaft shredder ideal for crushing rocks and/or large stones, (process not always required), necessary to prepare the soil for the next step.

OUR EQUIPMENT

WASHING DRUM/LOG WASHER

>> First washing with trommel* or log washer in counter-current to the washing water flow, containing the finest material (sand, silt and clay).

VIBRATING SCREEN

>> Vibrating screen with 3 or 4 screens depending on the customer's needs, ideal for the particle size separation.

SAND RECOVERY PLANT

>> Cycloning - Separation and concentration of sand particles by centrifugation (0.063 - 2 mm). Washing action consists of high-speed collision of sand particles.

OUR EQUIPMENT

ATTRITION SCRUBBERS

>> Scrubbing process and contaminants removal. Attrition cells – the pollutant present on the surface of sand is released by friction.

SCREW WASHER

>> The heavier fraction coming out of the drum washer is conveyed to a screw recovery machine for further washing and then to stockpile (gravel).

CONVEYING SYSTEM

>> The whole transport system is made up of entirely hot-dip galvanized conveyor belts, a vital surface treatment that protects against corrosion and guarantees long life.

OUR EQUIPMENT

WASTEWATER TREATMENT

>> Wastewaters used in the whole washing process must be clarified to remove and reduce suspended materials. The coarse heaviest part (sludge) is send to thickening.

CHEMICAL-PHYSICAL PLANT

>> Wastewater with fines, coming from cycloning, are fed to a dedicated chemical-physical plant, to achieve clarified water suitable for reuse (closed water circuit).

SLUDGE DEHYDRATION SYSTEM

>> Sludge coming from the chemical-physical plant is pressed in a dewatering plant with a filter press; the separated water is reused in a closed circuit in the same plant.

OUR EQUIPMENT

SLUDGE DEHYDRATION SYSTEM

>> Sludge coming from the chemical-physical plant is treated in a dewatering plant with a decanter centrifuge; the separated water is reused in a closed circuit in the same plant.

MIXER

>> Reactor for stabilization/solidification, usually a single-shaft mixer with mixing blades, inside which the material is mixed with the reagents (dusts or liquids) as to achieve a stabilized and solidified product.

STORAGE SILOS AND AUGER

>> Powder reagents storage section for lime milk preparation and dosing plants.

OUR INSTALLATIONS

>> Soil washing plant

>> Soil washing plant

>> Stabilization/solidification plant

>> Sediment washing plant

>>Road sweepings recycling plant

>> Stabilization/solidification plant

"BECAUSE WE KNOW OUR JOB AND EXPERIENCE COUNTS"

ULDERICO BAIONI, PRESIDENT

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