

DIEMME

Soil Washing



Soil Washing Plants



Contaminated soils and sediments

The Soil Washing technique

Soil Washing is a process of washing contaminated sediments and soils, generally coming from sites no longer used or on the way to be no longer used, based on physical and/or chemical mechanisms allowing to separate the matrices which compose the soil, concentrating the contaminants in the finest part (silts and clays). This technique, already used for many years in Northern Europe, is the only one allowing to solve all the problems related to sediment and soil remediation with an industrial approach, thus achieving desired results within a scheduled period.

DIEMME Soil Washing Technology and Plants

Diemme Soil Washing designs, develops, builds and installs Soil Washing plants for remediation of contaminated soils and marine-fluvial sediments, contaminated by several polluting typologies: heavy metals, hydrocarbons, pesticides, etc. Diemme Soil Washing is able to supply the best technical-economical solution to the problem by designing Soil Washing Plants based on data got by specific tests. A pilot laboratory unit allows to carry out a versatile and complete experimentation on very small quantities of contaminated matrix in order to get project parameters and results on decontamination. An industrial pilot plant allows a versatile and complete experimentation also with large quantity of material. Thanks to modern developed technologies and to high yields guaranteed by equipment composing the Diemme Soil Washing process, we get a very high recovery.

How the Soil Washing works

The Soil Washing makes use of the principle according to which, contaminants tend to mostly adhere to fine particles. In fact, fine particles have a large specific surface area and consequently tend to absorb a quantity of contaminants larger than coarse particles. The Soil Washing technique reaches the aim to separate the fine fraction impregnated with contaminants from the coarse fraction by means of the washing process with several extracting fluids, the granulometric selection of washed materials and the final filtration of the fine fraction from the washing liquid.



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1 Belt conveyor

It feeds the plant, it is equipped with a magnetic separator which removes the ferrous metals contained in the soil, in this way avoiding damages to the machines of the following processing phases. It receives the product through a loading hopper with extractor where a first coarse sieving takes place, in order to remove large objects like rocks and scraps (boulders).

2 Washing screen

The contaminated soil undergoes a strong washing. Contaminants begin to separate from coarse fraction of the matrix.

3 Blade log washer

The blade log washer consists of an inclined tank with cross-blade agitators lined with wear-resistant material. The particular angle and rotation speed of the blades allows the complete separation of soil clods and consequently their dispersion in water.

Moreover, the tank inclination allows the removal of the floating organic fraction which is recovered by means of a dryer-screen.

4 Screening

The log washer pours the matrix into the screen where it is further washed and classified according to reuse needs.

5 Hydrocyclones

Hydrocyclones are used to recover sands from silts and clays.

6 Attrition cells

The sands recovered by the hydrocyclones are transferred to attrition cells. These are tanks lined with wear-resistant material equipped with rotating blades. These blades are lined with wear-resistant material as well and remove pollutants from sands by friction.

7 Waste water treatment plant

The Soil Washing process is a closed circuit, in order to minimise water consumptions.

Upstream the plant the treatments with chemicals necessary for purification of water are carried out, then the waste water goes to the clarifier where the separation between sludge laying on the bottom and clear supernatant water takes place. Sludge is sent to the homogenization tank and afterwards to the filter press. The supernatant is sent to the storage tank to be reused in closed circuit.



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8 Plate filter press

The sludge from the clarifier is dewatered using a filter press which carries out a further solid-liquid separation concentrating the polluting substances in the cake. The filter press, thanks to its high performances and full automation, allows to reach the lowest possible residual humidity value, thus allowing to reduce disposal or post-treatment costs.

9 Electric panel

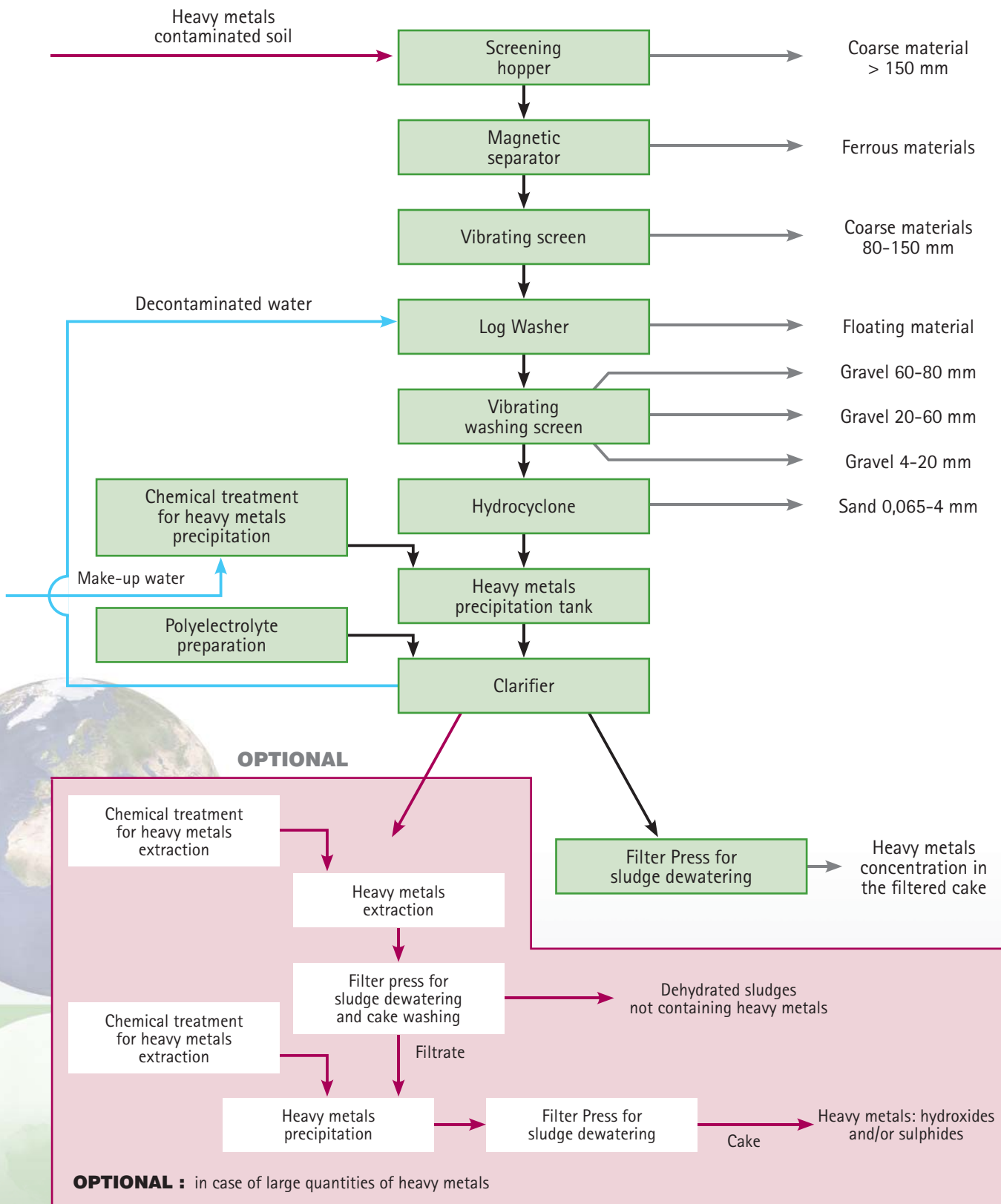
The electrical control system for the plant is housed in a cabinet designed and built expressly for this particular application. The control panel houses the electrical switchgear for all the plant equipments and includes the PLC (Programmable Logic Controller) and the graphic supervisor for the remote control of the whole plant.



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Diemme Soil Washing : Plant Knowledge Development, Production, Installation

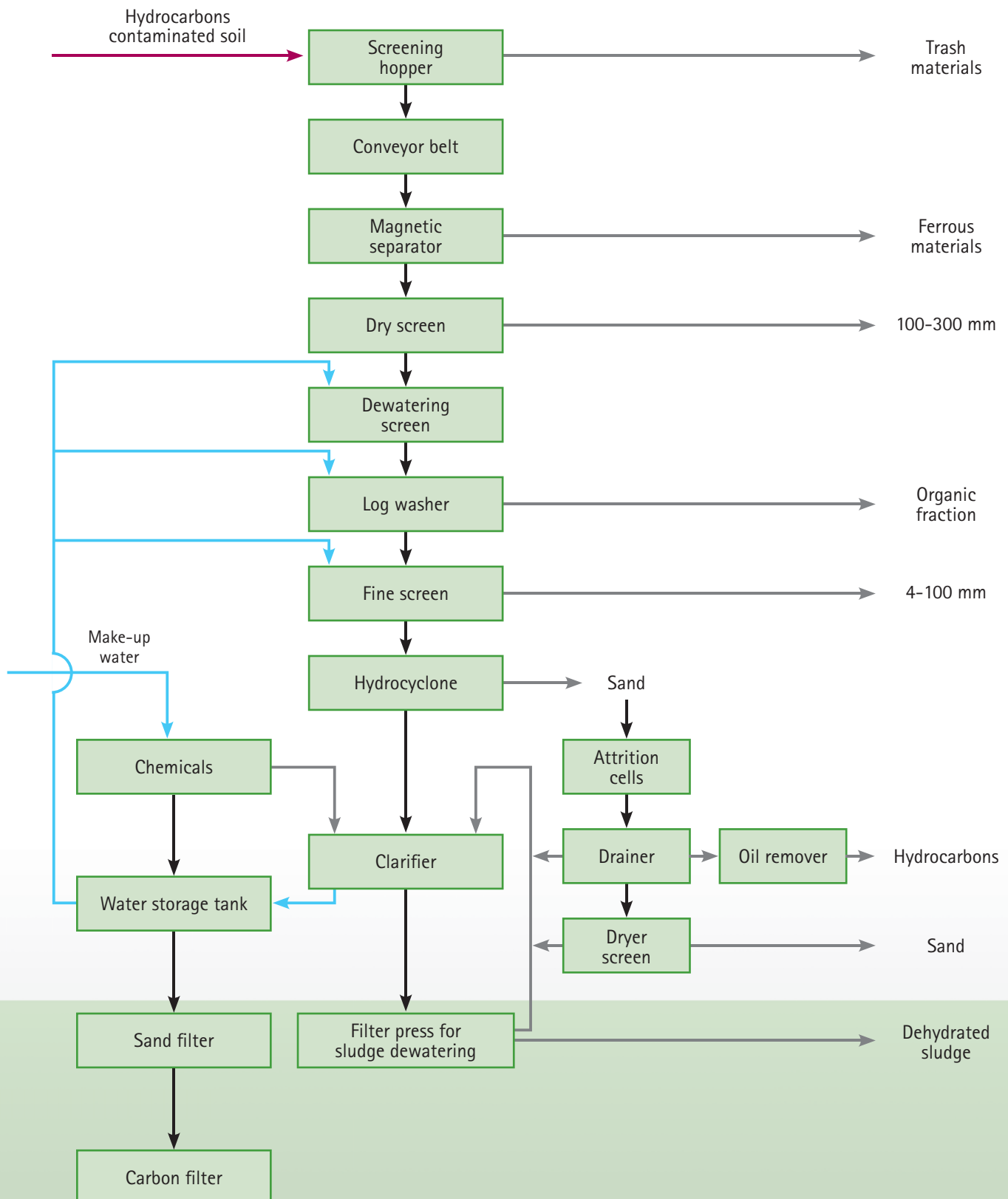
Flowchart : Heavy Metals decontamination



How-how, Design, ation

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Flowchart : Hydrocarbons decontamination



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Diemme Soil Washing S.r.l. reserves the right to bring any alteration at any time which is deemed to be necessary in order to improve its production.

NOTE: the photos used for the realization of this brochure refer to the plant supplied to General Smontaggi.
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