



GROUND IMPROVEMENT METHODS AND EQUIPMENT

DIESEKO GROUP

AN INTRODUCTION TO **DIESEKO** **GROUP** GROUND IMPROVEMENT EQUIPMENT

The Dieseko Group, which was established in 1974, is a manufacturer of a wide range of products for the foundation industry. The range is divided into five product lines: vibratory hammers and impact hammers, piling and drilling rigs, soil improvement equipment, dredging equipment and hydraulic power units.

Dieseko Group is owner of the brands PVE Piling & Vibro Equipment, ICE International Construction Equipment and Woltman Piling & Drilling Rigs. Dieseko Group also supplies Bell Dredging equipment.

Dieseko Group engineers develop foundation equipment in accordance with the latest regulations. The experienced engineers in the sales and rental department have a profound knowledge of the equipment and are always standing by to advise clients on their specific needs. Spare parts are in stock for all machines, which can be shipped quickly to dealers and clients worldwide, to avoid downtime on projects. Service engineers are available 24/7 to support clients on site. With over 60 dealers and branches worldwide, Dieseko Group is a reliable partner for all foundation contractors for consultation, sales, rental and financing.

DIESEKO GROUP GROUND IMPROVEMENT



DRAINAGE



COMPACTION



REPLACEMENT

DRAINAGE COMPACTION REPLACEMENT



Every project is unique and has its own foundation requirements. For soil layers with insufficient bearing capacity with high risk of settlements, ground improvement is a must. For this reason Dieseko Group offers a wide range of equipment for different methods.

We offer equipment for compaction methods for soil layers, especially sand, with relative loose density. For soil layers with poor permeability Dieseko Group offers equipment for the installation of vertical drains. In compressible soil layers with insufficient bearing capacity soil replacement equipment for stone, grout, concrete, gravel material, sand or chalk is available.



Deep
vibrating



Vibrating



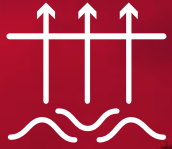
Resonating



Hammering



Drilling



DRAINAGE

DRAIN MACHINE

In order to accelerate soil embankments to settle, vertical drains will support soft soils with a low permeability to transport pore water away. By transporting pore water, the pore water pressures decrease which enable soil embankments to settle faster reducing the construction time of projects. With a leader guided vertical drainage rig, prefabricated vertical strip drains are driven into the soft soils at high speed with a winch driven rod. After the required depth has been reached, the lost drain tip will anchor itself into the soil and the vertical strip drain is left in the soil while the rod is being extracted.



VIBRO PLATE

The vibro plate is a concept for compacting the seabed.



VIBRO DRAINING

An alternative way to drive vertical strip drains into soils is driving a temporary casing or rod by a vibratory hammer. The work sequence is more or less the same compared to installing vertical drains by a winch driven rod. The method of vibro draining can have an advantage if stiffer or denser soil layers have to be passed. Vibro draining therefore can be more suitable for soils where denser soil layers are present, which can be penetrated easier with the help of a vibratory hammer.





COMPACTION

RAPID IMPACT COMPACTION

With the Rapid Impact Compaction (RIC) method soil is subject to vibrations caused by an impact hammer providing soil grains with a better distribution and density. The Rapid Impact Compaction ground improvement technique can be applied for final treatment of the upper strata. In general the RIC technique is suitable for surface consolidation, foundations support and liquefaction mitigation.

The PVE range of RIC rigs are hydraulic powered compaction machines with a strong boom, easy self-erecting boom connection with PVE impact hammer, normal range from 7 up to 16 tonnes hammer.



VIBROFLOT DEEP VIBRATION COMPACTION

Under the influence of the induced vibration, the soil particles are rearranged and compacted. The vibrating and oscillating movement of the Vibroflot is generated by the hydraulic powered eccentric weight. At full water pressure the oscillating vibrator penetrates to the design depth and is surged up and down to agitate the soil. At full depth the water flow is reduced or stopped. The volume reduction of the soil can reach compaction values up to 15%.





REPLACEMENT

STONE COLUMNS

Stone columns refer to columns of compacted gravel size stone particles to improve the performance of soft or loose soils. The method is used to increase bearing capacity, reduce foundation settlements, improve slope stability, reduce seismic subsidence, reduce lateral spreading and liquefaction potential, permit construction on loose soft fills.

VIBROFLOT BOTTOM FEED STONE COLUMNS

With the bottom feed method the stone particles are fed to the tip of the Vibroflot through a material transfer pipe which is fastened to the side of the Vibroflot. A stone hopper is filled with stones on the ground with a wheeled loader and a separate cable lifts the hopper to a material storage container at the top of the transfer pipe. The stone particles are transported and compacted with the Vibroflot.

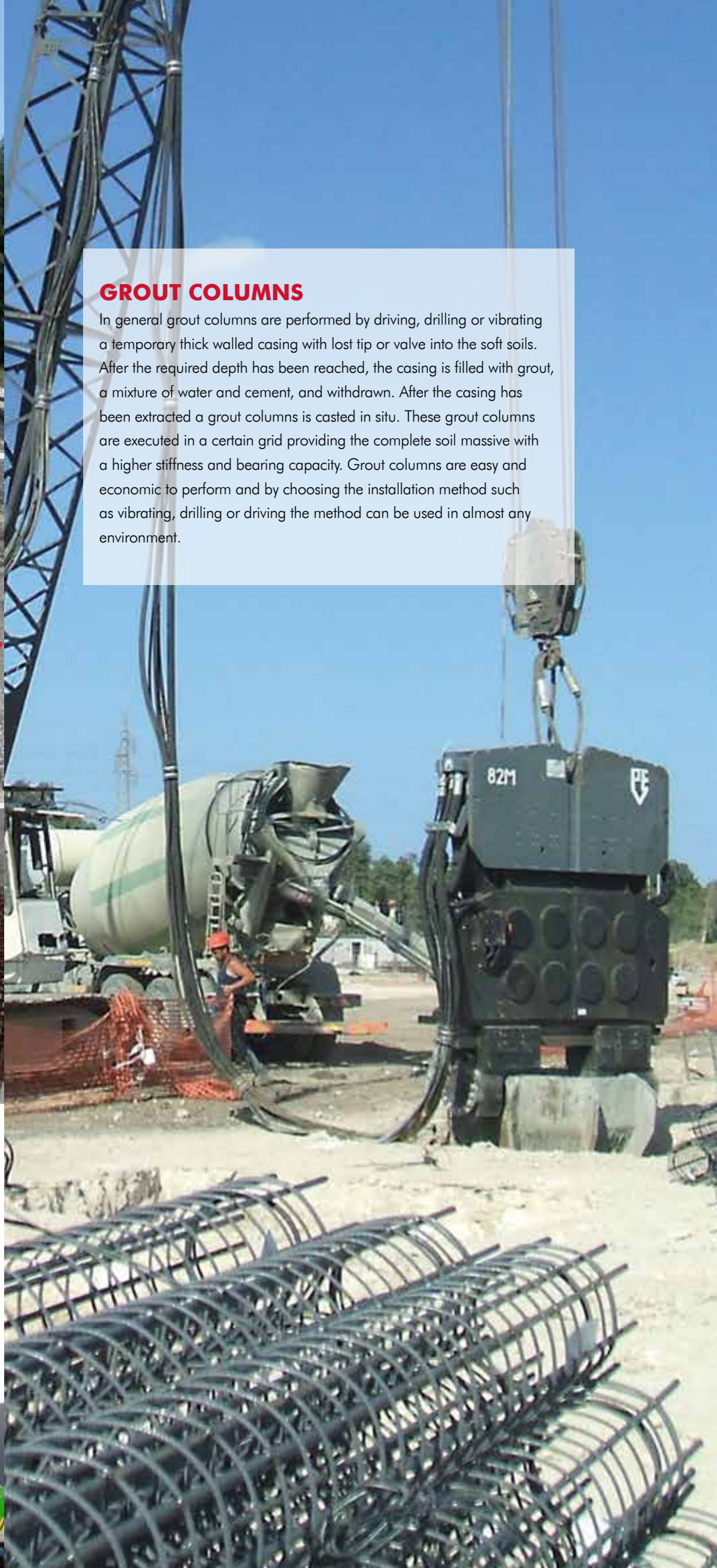
VIBROFLOT WET TOP FEED STONE COLUMNS

This method can be applied for densification and reinforcement of granular soils. While compacting the soil with a Vibroflot a wheel loader moves granular material around the Vibroflot shaft at work level. The granular material is disposed along the Vibroflot shaft supported by water jetting at the same time. While pulling and lowering the Vibroflot in the soil shaft the adding of granular material can be repeated. After the Vibroflot has been withdrawn completely sand- or stone columns will remain in the soil.

GEOTEXTILE ENCASED SAND AND STONE COLUMNS

Almost similar to grout columns also sand- and stone columns can be performed by drilling, driving or vibrating a thick walled steel casing into the soil. After the required depth has been reached, the casing a geotextile bag is placed into the casing which then can be filled with sand or granular materials creating columns after the temporary casing has been extracted.





GROUT COLUMNS

In general grout columns are performed by driving, drilling or vibrating a temporary thick walled casing with lost tip or valve into the soft soils. After the required depth has been reached, the casing is filled with grout, a mixture of water and cement, and withdrawn. After the casing has been extracted a grout columns is casted in situ. These grout columns are executed in a certain grid providing the complete soil massive with a higher stiffness and bearing capacity. Grout columns are easy and economic to perform and by choosing the installation method such as vibrating, drilling or driving the method can be used in almost any environment.



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