



ALLU PM & PF

Stabilizing System

New concept of soil improvement



Soil Stabilizing Method

Stabilization is a process of improving the strength of the soil.

This can be achieved by adding the required amount of binder agent into the soil.

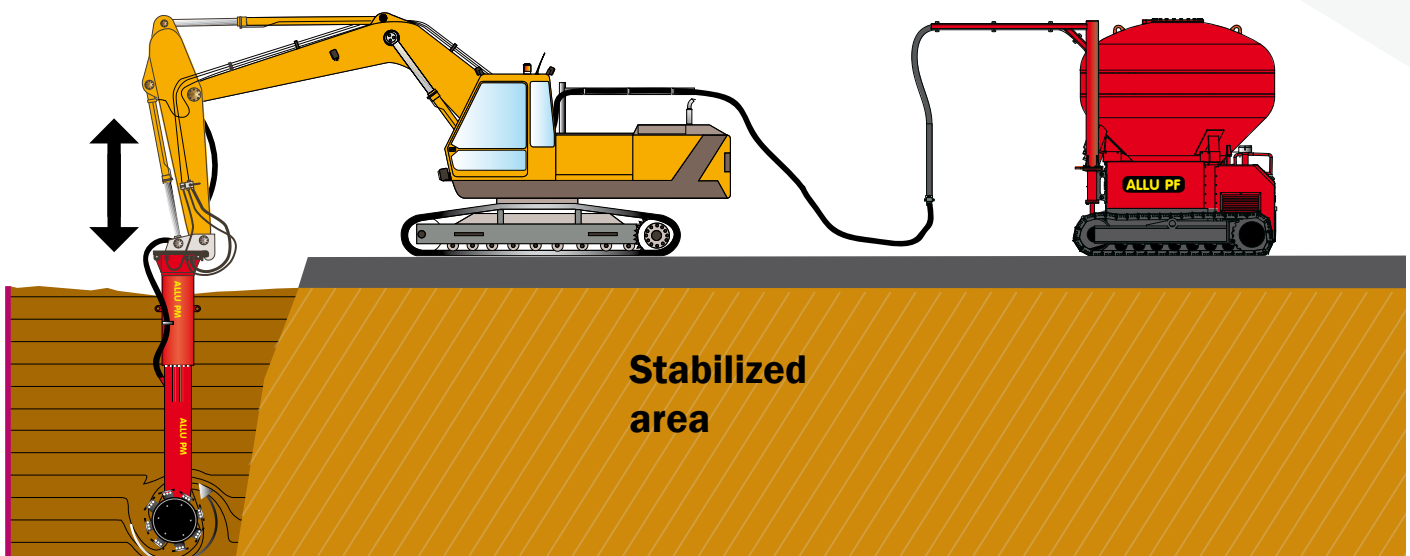
Weight stabilizing method

Weight stabilization is a method of stabilization of soft soils by adding a binder to increase the strength of soil. This may be faster and more cost effective solution compared to the prior art piling or replacing soil. For example, various types of clay, peat, mud or soft soil can be converted into the solid ground by using the method of soil stabilization.

ALLU Stabilizing System allows to stabilize soil of a bog wherein walking is hardly possible. Stabilizing method may additionally be applied to treat contaminated areas by encapsulating contaminants within the soil depth preventing the occurrence and distribution of contaminants in the environment.

Advantages of ALLU soil stabilization

- Moist at a site is not an obstacle to perform works.
- Does not require a removal of bad soil.
- Significantly reduces the amount of imported material.
- The processed material can be used as buildings foundation.
- Eliminates transportation costs and environmental impact.
- Low operational costs.
- Mixture is more homogeneous in comparison to other methods.
- It is possible to achieve a wide range of strength.
- Industrial waste can also be used as a raw material.





Applications of soil stabilization technology:

Works to stabilize soil prior road construction and installation of foundations

- Foundations of industrial buildings and bridges
- Parks, parking lots, sports grounds and storage areas
- Protection against “sagging” of adjacent bases
- Reduction of earth pressure force
- Stabilizing of very soft soils for tunnel construction projects
- Building of roads, streets and railways
- Foundations of pools, landfill space, etc.
- Protective layers under water
- At cabling and pipes laying sites
- Noise embankments
- Protection of groundwater
- Slopes of the rivers, lakes, slopes of roads, etc.
- Erosion Control
- Frost and permafrost protective layers

Processing of contaminated soil

- Isolation of contaminated land
- Neutralization of toxic waste

Mixing of different materials

- Industrial waste disposal
- Fixing the liquid waste

Soil stabilization enables to use wet or viscous materials for construction purposes.



ALLU Stabilizing System components

ALLU PM

ALLU PM Power Mix is a hydraulic equipment attachments for excavators. When ALLU Power Mix is attached to the excavator, it turns into a mobile and efficient mixing plants.

Optimum design

ALLU Power Mix is able to efficiently handle very hard materials, such as different varieties of clay, peat, silt, sludge or polluted soil. Mixing efficiency is calculated based on the optimal horizontal position of rollers and the unique design of mixing elements. The rollers move and mix material in three directions simultaneously.

Processing of the material to a depth of 5 meters

ALLU Power Mix can process the material to a depth of 5 meters, depending on the equipment of the excavator and the condition of the material. Since ALLU Power Mix is an additional attachments, excavator can also be used to perform other operational tasks. ALLU Power Mix is a perfect tool for both large and small amount of works to perform.

Designed for time-consuming tasks

ALLU Power Mix has a solid steel welded construction, all wear parts are made of wear-resistant steel, and can be replaced. The radial piston motor is power-supplied by the hydraulic system of an excavator. The rotation is transmitted to the roller through the chain drive. The design requires minimal maintenance.

Easy to mount

ALLU Power Mix can easily be mounted on an excavator with the fingers or the quick-mounting adapter.



ALLU PM 200

Max operational depth:
2 meters

Hydraulic system:
Reverse, 230 Bar,
200 l/min

Weight:
1900 kg. + adapter

Basic machine:
20-30 tons

ALLU PM 300

Max operational depth:
3 meters

Hydraulic system:
Reverse, 230 Bar,
200 l/min

Weight:
2400 kg. + adapter

Basic machine:
25-35 tons

ALLU PM 500

Max operational depth:
5 meters

Hydraulic system:
Reverse, 230 Bar,
200 l/min

Weight:
4200 kg. + adapter

Basic machine:
30-40 tons

* Other operational depths are under request

ALLU PF 7 И PF 7+7

Feeder ALLU PF 7 using compressed air supplies the necessary binder through the air hose into the ground, directly in the roller mixer ALLU PM. The feeder is mounted on self-propelled chassis and is controlled remotely, allowing the feeder to follow excavator at the area of treatment.

Engine:

74,5 kW diesel engine

Compressor:

Operating pressure max 8 Bar
Capacity 6,5 m³/min.

Tank:

Cubic capacity 7 m³
Max operating pressure 8 Bar

Feeder:

Capacity, adjusted to 5 kg./sec.

Weight (empty):

PF 7 7900 kg.
PF 7+7 13500 kg.

Options:

Dust reduction system.



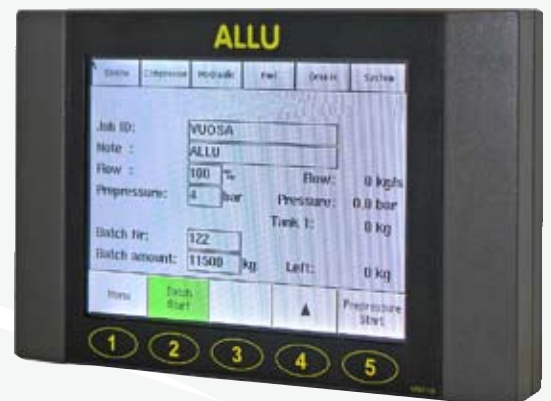
ALLU PF 7



ALLU PF 7+7

ALLU DAC.

ALLU DAC. (Data Acquisition System) provides data collection, management and reporting. system provides control of the whole Stabilisation System ALLU, making the system a friendly and easy to use, and provides the ability to transfer data to other computers. This ensures the scope of works to be completely documented, providing quality control at any stage.



ALLU Finland updates technology process in accordance with ever-changing needs of the customers, develops new approaches and solutions, aiming to be a leader in this sector.



Project to use ALLU Stabilizing System

Industrial and parking zone



Kivikko township is located in the eastern part of Helsinki, the capital of Finland. About 12 hectares of land and streets in Kivikko are located in the swamps and absolutely not suitable for construction purposes. In this area two separate tests on the stabilization were performed. In the first case, the method of soil stabilization was used solely, in the second case, the method of soil stabilization and strengthening the soil by piles used together.

At the first site soil stabilization method was delivered to a depth of 3 meters.



Swamp in a week after stabilization

At the second site supposed to be used for industrial objects construction, method of soil stabilization and strengthening the soil by piles were used together. The required strength and load bearing capacity were achieved. The results revealed a very good example of the perspectives that can be achieved by the method of stabilization.

Sportsground foundation



In Finland where the temperature varies from -40 to + 35C°, many sportsgrounds have problems with freezing and thaw. Sportsground in Luopioinen in central Finland, is a typical example of such a problem. For this reason it was chosen as a pilot project.

After laboratory tests ash from the furnaces and paper mill and fiber clay from a nearby factory were added to the soil. During laboratory studies it was found that the uniformity of the mixture is very important. ALLU Power Mix was selected as a mixer, and its properties of

spraying and mixing gave very good result.

The fibrous clay and ashes were scattered on the surface. ALLU Power Mix ALLU Power Mix sprayed and mixed lumps of clay, at the same time feeding a binder additive from the tank into the soil. The construction of playground was completed in September 2002. After the experience gained at this site, other projects based on ALLU stabilizing equipment were run.



Rail Road construction

The construction of high-speed railway in the southern part of Finland, in an area with soft turf, was the most recent contract wherein Stabilizing System was used.

ALLU Stabilizing System was applied to stabilize soft turf creating a working platform for a 70 ton pile machine. The binder additive fed by ALLU PF feeder mixed by ALLU Power Mix at a depth of 5 meters.



Originally, excavation of large amount of soft soil and filling the pit by the stone was assumed. That would lead to many problems for the contractor associated with the search for a suitable place for exported soil, as well as with the purchase and delivery of stone to fill the pit. Bridge construction was an alternative option. As a result, the contractor selected ALLU method of stabilization, yet obtaining advantages in terms of price and in comparison with other methods under consideration.



The foundation for the road pavement



ALLU PM 500 mixer worked at wetlands in Key Largo, Florida. The existing two-lane highway was expanded to a four-lane highway. The main ground at the site was extremely wet and contained peat and a lot of vegetation.

At the beginning the customer preset a test plot of land(6x6 m, 3,6 m. depth) in a swing moor. Tests revealed that teh required stabilization was achieved. The first construction stage was 14,4 km in terms of length and 12-15 m in terms of width with 4 m stabilizing depth. Cement and furnace slag were used as binders. Pursuant to specifications the achieved strength it was to be 20.7 kPa, but tests performed on the next day

showed 41.3 kPa as the result. Other existing methods of soil stabilization, such as replacing the soil, compared to economic performance of the new method, are expensive options. Applying ALLU PM for soil stabilizing the customer has a good chance to save time and reduce the expenses.



Soil stabilizing method cost is far below the cost of traditional methods of work, such as replacing the soil.

ALLU DOES IT...

ALLU products for soil improvement



ALLU Bolting grinders
Bolting, grinding, mixing, aeration and loading in one operation



ALLU Stabilizing System
Mixing of soil and a binder during stabilization process



ALLU Vibrating plate
Vibrating plates of high performance capacity for various construction works



ALLU Collar turners
Mixing and aeration of different materials from compost to contaminated soil



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Additional information available at: www.allu.net