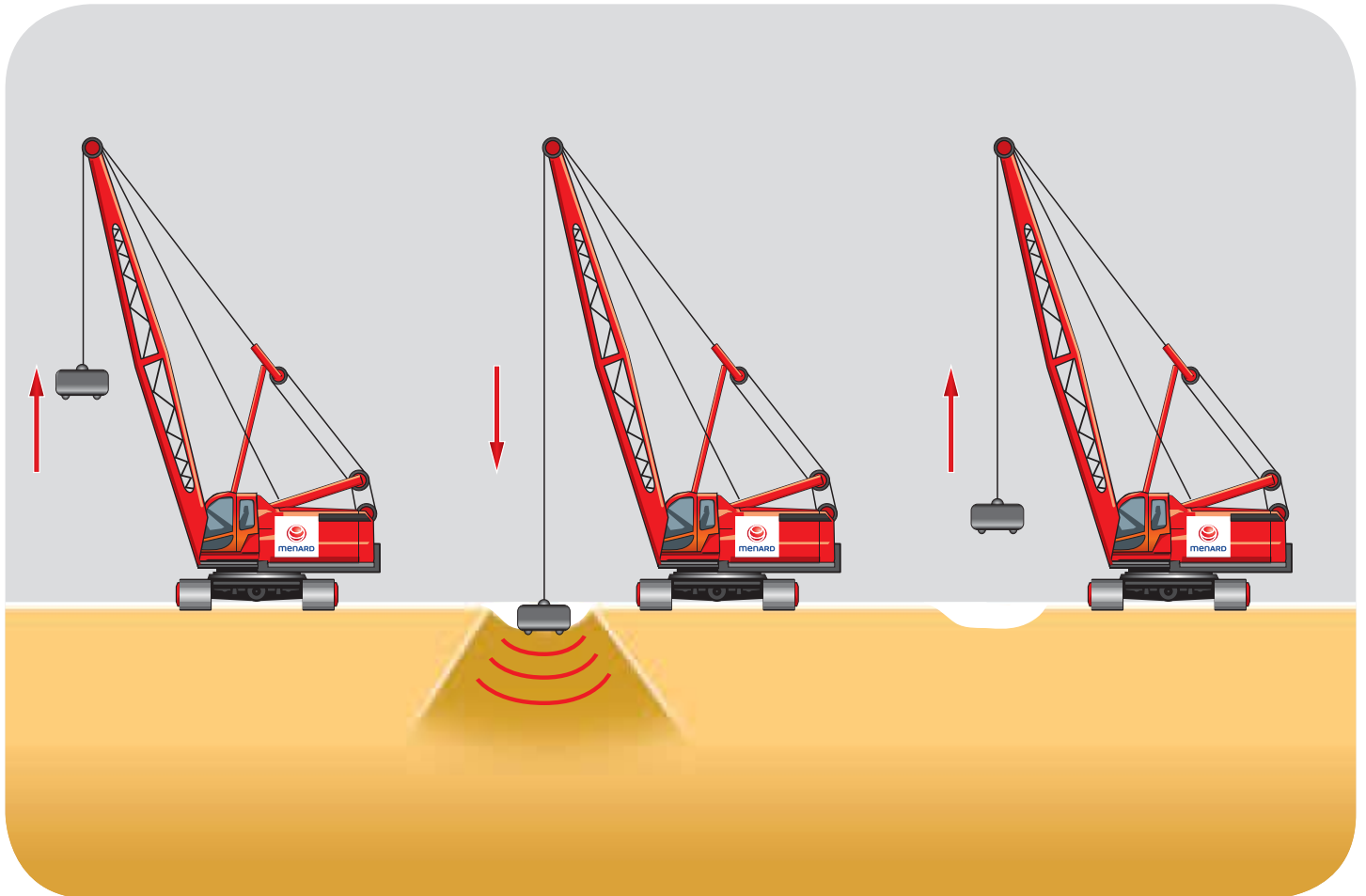


# Dynamic Compaction (DC)



ground improvement specialists

The Dynamic Compaction technology, also known as the method of dynamic consolidation, is a technology invented and developed by Menard company. Since the late 1960s the Dynamic Compaction has been developed on the numerous sites all over the world for various soil conditions and for a variety of applications such as: roads, airports, large halls and more. This technology patented by Louis Menard was extensively tested and optimized hence its safe and economic application today.



## Technology specification

The basic principle behind the technique consists in the transmission of high energy waves in order to improve weak subsoil. As a result of the impact the soil is compacted depending on its condition, structure and depth. The energy is transferred to the subsoil by multiple impacts with properly shaped weight (steel poulder) with a weight ranging from 10 up to 40 ton free falling from a height ranging from 5 up to 40 m.

In order to perform an effective dynamic consolidation the lattice-boom cranes are used obtaining sufficiently high impact energy.

The Dynamic Compaction method consists of two pounding stages where in the first stage deep layers are compacted and in the second stage intermediate layers. After completion of the two stages the surface compaction (so-called 'ironing') is carried out within the entire improved area.

The Dynamic Compaction is normally preceded by the development of a test plot where the grid spacing is determined along with the impact energy which is needed to achieve the required compaction, i.e. weight and shape of the poulder and the height of its drop.

## Application

The Dynamic Compaction is applicable to any kind of non-cohesive soils even in the presence of rocky fraction. This technology is particularly effective with non-organic, heterogeneous anthropogenic fills and in reclaimed areas with different characteristics (in particular, for abandoned landfills, abandoned open-pit mines and quarries, uncompacted dumps).

The method is used for improvement of the subsoil under industrial and commercial halls, heavy warehouses, tanks, aprons, road and rail embankments and other large or linear structures.

The Dynamic Compaction is capable to improve many types of soils to high strength parameter values.

The depth of the compaction most often varies between 3.0 and 7.0 m.

## Projects

### Infrastructure:

#### Road and rail embankments:

- Central road , Grudziądz – 3,450 m<sup>2</sup>
- A2 highway, Stryków - Konotopa section – 37,000 m<sup>2</sup>
- A1 highway, Świerklany - Gorzyczki section – 9,000 m<sup>2</sup>
- Rahway River Bridge, Middlesex & Union Counties, NJ, USA – 5,200 m<sup>2</sup>

### Enclosed buildings:

#### Shopping centers, halls, warehouses:

- Pogoria Shopping Center, Dąbrowa Górnicza – 30,000 m<sup>2</sup>
- Kaust University, Saudi Arabia – 2,700,000 m<sup>2</sup>

### Special structures:

#### Wastewater treatment plants, silos, tanks, wind farms:

- Oil tank, Becancour, Quebec, Canada – 4,080 m<sup>2</sup>
- Glaise tank, Trois Rivières, Quebec, Canada – 4,400 m<sup>2</sup>







## Advantages:

- **High performance** – the Dynamic Consolidation is highly effective which makes it economical for improvement of large areas.
- **Environmental reclamation**  
– the Dynamic Compaction method can be used on the areas of former landfill sites, abandoned open-pit mines and quarries, uncompacted dumps. The technology contributes to reclamation of such areas.
- **Versatility for non-cohesive soils**  
– the possibility to use this technology for improvement of any non-cohesive soils.
- **Simplicity of implementation**  
– the application of this technology does not require material supplies or additional equipment. Successful improvement depends on the proper selection of impact energy.
- **Economy** – high performance and simplicity make the DC technology one of the most economically beneficial method of the soil improvement.
- **Performance monitoring** – the dynamic probing allows for controlling the effect of the Dynamic Compaction few days after its implementation. Hence, for the further stages of improvement the solution can be optimized (impact point spacing, number of impacts per point).

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