



**FREDRICH**  
SPEZIALTIEFBAU

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**Honeycomb method**  
Fredrich System





### AT A GLANCE

Soil replacement by the honeycomb method is particularly suitable for contaminated sites or for ground with poor bearing capacity. In a number of projects, we have replaced and remediated soil contaminated with oil residues at petrol stations, and for this the honeycomb method is more cost-efficient than the use of large-diameter augering because it does not involve any overlapping. Replacement depths of up to 11 metres below the work level are achievable.

### FABRICATION METHOD

A vibration hammer is used to install thick-walled, honeycomb-shaped steel sections into the ground to the required depth. Then an excavator with a clamshell bucket removes the soil from within the honeycomb. Any groundwater that enters can be pumped away. Subsequently, the honeycomb is filled with compactable material and then removed. In order to ensure removal of the soil over the complete area, we use several honeycombs simultaneously, accurately positioned next to each other. The soil is thus replaced over the entire work site on a rolling basis and without any overlapping. This low-vibration method also permits soil replacement close to buildings or railway lines.

### COST-EFFICIENCY

With this method there is no overlapping of the honeycomb pipes inserted to the required depth, thus preventing double replacement of already decontaminated soil. Compared to large-diameter augering, this means a cost saving of 30% to 50%, depending on the ground conditions. By developing and adapting the required plant, and with our specially trained workforce, Fredrich is able to provide a high rate of soil replacement. 200-300 m<sup>3</sup> per day is possible, depending on the soil and depth.



The small area of excavation within the honeycomb and the high working speed mean that soil replacement below the groundwater level is possible without the time-consuming and costly dewatering. Particularly in contaminated areas considerable savings can be achieved.

The installed filling material is immediately compacted in the replacement area by the nature of the method, so that recompaction is very rarely necessary, though possible.



### PROJECT EXAMPLE

Along the Berlin-Dresden railway line, we replaced around 40,000 m<sup>3</sup> of poor load-bearing peat down to a depth of eleven metres, without any interruption to normal rail services. The client for extension of the ICE line from 2005 to 2006 was the Wünsdorf consortium. The challenge was that the work had to be carried out on a stretch of four kilometres right next to one track while the other track was still in use. Therefore subsidence had to be prevented at all costs and the excavators had limited manoeuvrability due to the proximity of the high-voltage overhead lines. Thanks to many years of experience with the honeycomb method, our team successfully met the tight deadline of one year.

