

# Modernisation of the Oil Refinery Pancevo, Serbia



**For the foundation of new blocks and pipelines in the Oil Refinery Pancevo Keller applied four different methods of foundation, depending on the type of object, loads and local soil conditions.**

**Investor :**  
Oil Industry of Serbia - NIS

**Main Contractor :**  
Deneza M Inzinjering

**Static :**  
CB&I Keller

**Geological surveyor :**  
CB&I- IMS

**Quantity of executed works :**  
14.615 m of stone columns / 2590 pieces  
11.035 m of DSM columns / 1003 pieces  
5.000 m of micro piles / 375 pieces  
1.488 m of bored piles / 78 pieces

**Time of execution :**  
July 2010 - October 2011

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## Vibro stone columns

were executed for soil improvement under the new plants for oil production. The requirements of the designer were to reach bearing capacities of 250 KPa on the improved soil and a maximum settlement of 15 mm which both were met.

## DSM columns

were used for the foundation of facilities with higher loads. By the use of that method natural soil was mixed with cement suspension using the mechanical force of mixing tools resulting in columns made of "soil cement".

## Micro piles

were used for the foundation of a pipe rack in the refinery at hardly accessible positions. On this site three different type of micro piles were made depending on the different load bearing capacities required.

## Bored piles

with a diameter of 0.88 m were used for the foundation of pipe racks in an area with deep levels of bearing soil layers.

