

Hydro-static Levelling New Innovative Sensor for Settlement Monitoring of High Rise Tower Foundations

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KEY WORDS: Monitoring Concepts for Static and Dynamic Deformations of Engineering and Geotechnical Structures, Applications in Geotechnical and Structural Engineering, Multi-Sensor Systems and Sensor-Networks, Innovative Concepts for Sensors and Methods, Automation of Monitoring Measurements and Interpretation

ABSTRACT:

There is a huge interest in High Rise Building Monitoring in order to understand their behavior and evaluate their performance to be compare with the design aspects. Short and long term monitoring can be applied for different perspective view. Short term monitoring is applied in order to respond to a specific concern, while long term monitoring will also answer questions related to long term performance and/or tie into building operation and maintenance programs. One of the hottest topics for High rise Towers Monitoring is the Monitoring of Settlement.

Settlement Monitoring can be achieved in several methods and techniques. It can be done manually or automatically. Usually, it is either surveying or geotechnical solution to detect the settlement. In this paper it could be a smart idea to present a join Geoditic and Geotechnical solution to detect the settlement in an innovative solution that will combine the geotechnical sensors and highly precise GNSS instrumentations.

In this paper, the Authors will discuss using the Hydro-static sensors in High Rise Tower to detect the settlement with the benefits of GNSS Antenna as a Reference Point. This system will be run automatically and getting the data and reports in a PC. The Authors will discuss the value of fixing the sensors in the core wall and the surrounding columns to reflect the settlement behavior of the foundation and even to calculate the differential settlement that will happened because of different loading capacity in the core wall and columns. This system is used during the construction as a short term monitoring and will stay after the construction as a long term monitoring for the foundation settlement.

The paper will review the performances of Geodetic-Geotechnical sensors and analysis methods regarding the context of a solution that would address the today interests of the experts. Key successful projects will be used to illustrate that topic.