FAKOPP DynaRoot

Dynamic root evaluation system

The stability of urban trees is a key question that affects everyone. Diseased and unstable urban trees pose much risk for everyone, and are a serious liability for municipalities in case of an accident. Tree stability assessment is therefore of the utmost importance. In the meantime it tends to be much neglected in many areas. At present, there is only one accepted method for tree stability assessment. The pulling test, while well established and accepted, has several drawbacks, both in terms of reliability and ease of use. Dynamic root stability determination is based on real life wind loads, and is therefore more appropriate for assessing real life risks. It is also much simpler to carry out than the traditional pulling test, with the only drawback being that it requires windy weather.

Revolutionary new concept

- EASY TO INSTALL ALTERNATIVE TO TRADITIONAL PULLING TEST
- ALLOWS SIMULTANEOUS ASSESSMENT OF MULTIPLE TREES
- FOLLOWS A STATISTICAL APPROACH TO CALCULATE TRADITIONAL SAFETY FACTORS
- REQUIRES WINDY WEATHER
- WIRELESS DATA TRANSFER

1 Dual axis ultrasonic anemometer:

an instrument for measuring wind velocity at or near the tree to be evaluated. The closer to the better, but, depending on wind velocity **DynaRoot** may provide reliable data even with measurements taken several kilometres/miles away. The anemometer provides wind velocity data of sufficient frequency, Ideally the anemometer should be clear of buildings or other objects that may obstruct the wind, at a height of at least 10 m.

Specifications:
Sampling rate: 1 Hz
Measurement range: 0-150 km/h
Accuracy: 0.2 km/h
Integrated GPS
Data storage capacity: 8 GB (SD card)
Best location: open field, 10 m height, undisturbed by buildings or other large objects
Completely weather proof

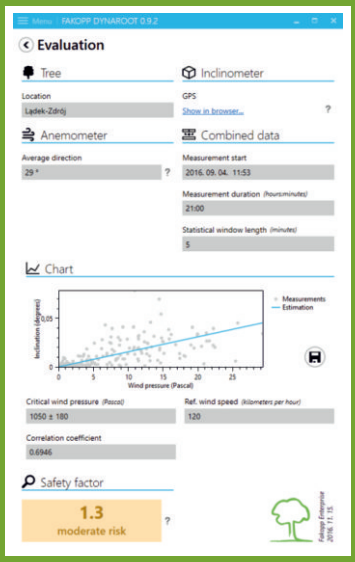
2 Dual axis inclinometer:

an instrument affixed to the root collar that measures the inclination of the trunk in two different directions. The instrument provides very accurate inclination data with sufficient frequency.

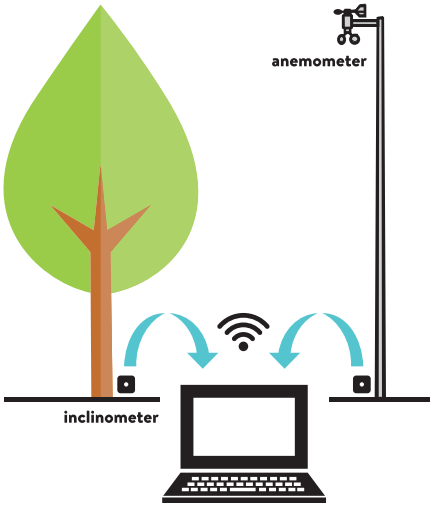
Specifications:
Measurement range ± 2 degrees
Resolution: 0.001 degree
Temperature compensated
Sampling rate: 10 Hz
Integrated GPS
Data storage capacity: 8 GB (SD card)
Mounted by a single screw
Operating voltage and current:
12V, 20 mA
Completely weather proof, IP65

3 Evaluation software:

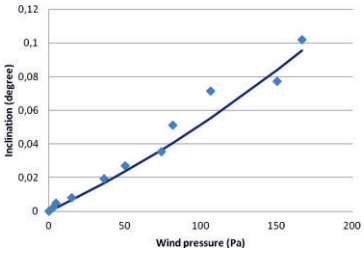
a PC software for evaluating wind velocity, x and y inclination. The data, recorded over a period of several hours, are transferred from the anemometer and inclinometer on memory cards or wirelessly via Wi-Fi. The software breaks the data down into shorter intervals, and calculates statistic parameters for each interval that are used for the tree stability evaluation.



- Simple yet efficient software for determining the safety factor
- Automatic merging of wind velocity and inclination data
- Diagram, critical wind pressure, correlation coefficient and safety factor calculation
- Runs under MS Windows.



The Safety Factor calculation is not unlike the one used for the pulling test, except, in this case, wind pressure is used instead of force, and statistical parameters used instead of the momentary wind pressure and inclination values. There is a tangential relationship between the wind pressure and the inclination of the tree, and the critical wind pressure can be calculated from the curves. This critical value is used for calculating the SF, which is interpreted much the same way as the one calculated from the static pulling test.



FAKOPP DynaRoot – *let the wind work for you!*

FAKOPP

Manufactured by FAKOPP Bt.
26 Fenyo u, Agfalva, H-9423, Hungary
+36 99 330 099
office@fakopp.com
www.fakopp.com