

PiCUS TreeMotion

Wind reaction measurement of trees
under real conditions



Measure the behaviour of the tree in natural wind

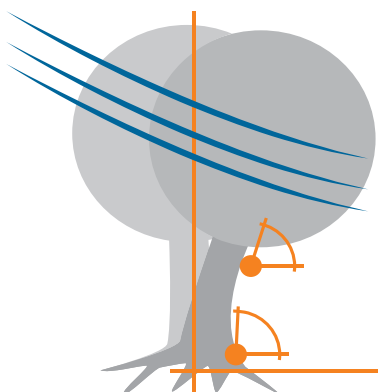
The TreeMotion measures the inclination of the tree in the wind. This allows you to assess the stability of a tree.

Assessment under realistic conditions

The wind reaction measurement of the PiCUS TreeMotion sensor records the swinging movement of trees under real conditions and allows conclusions to be drawn about the anchoring of the roots in the soil. In addition to the properties of the tree, all factors influencing the wind in the environment are taken into account. This allows the stability to be assessed in the actual wind exposure.

A base sensor measures the root plate inclination directly at the base of the trunk. A control sensor measures the inclination at a height of 2 to 3 metres so that the real wind reaction of the tree can be distinguished from sources of interference. The PiCUS TreeMotion sensor can record the measurement autonomously over hours, days or weeks. The data evaluation is done comfortably in the office.

Prerequisites for successful measurements are gusts of more than 45 km/h and a measurement time of at least two hours.





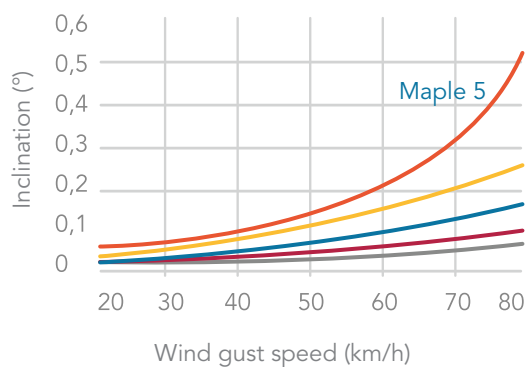
Analysing entire groups of trees at once

Compare the inclination values of several neighbouring trees to identify individual trees at risk.

Fast and with little effort

A good application of the TreeMotion sensor is the comparative analysis of groups of trees. In this case, several trees are equipped with sensors at the same time before an expected storm. In this way, for example, all trees of an avenue can be observed with little effort.

On the basis of the wind inclination curves, it is immediately apparent when a tree has an unusually high inclination value. As neighbouring trees are expected to have similar wind conditions, the high inclination value could indicate a less stability. The tree in question can then be examined more closely using the PiCUS Sonic Tomograph or another measuring method.



The diagram shows the wind tipping curves of a group of maple trees. The direct comparison clearly shows that maple 5 has a higher inclination than the other four. The conspicuous tree should therefore be examined closely for defects.



Wind reaction measurement with significance

How firmly is the tree anchored to the ground?

The TreeMotion provides you with meaningful measurement data.



Tilt measurement in 3D

The sensors measure angle and direction of the swinging movement of the tree in the wind over the time.



Automatic evaluation

The measurement data can be transferred from the sensors into the supplied TMS PC software for automatic data evaluation.



Tree monitoring during construction work

Not only wind influences, but also interventions in the root zone, e.g. during construction work, can be measured and their consequences on the stability can be assessed.



Optional extension

The TMS anemometer complements the TreeMotion sensor by recording wind direction and wind speed data in the immediate vicinity of the tree to be examined. This enables a good comparability of inclination measurements and wind conditions.



TMS-3-Smartphone-App

Easy operation of the sensors and clear status display with live measurement mode.

TreeMotion function range:

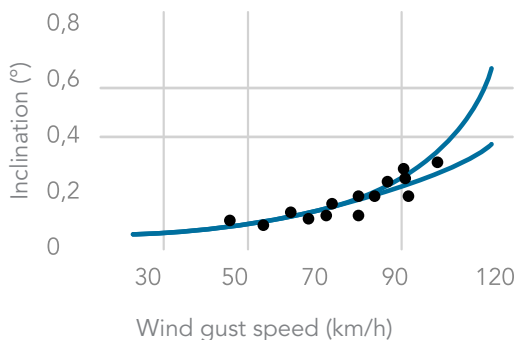
| | |
|---------------------------|--|
| Sensors: | Up to 10 sensors included |
| Accuracy: | Inclination measurement accurate to 0.03° |
| Inconspicuousness: | reduced risk of vandalism due to small sensors (61 mm x 41 mm x 20 mm) |
| Duration: | 2 weeks |
| Charging station: | 10-fold inductive charging station integrated in the case |

Evaluation and use of the results

The evaluation illustrates the tree behaviour in the wind and provides additional information for other measurement methods.

The tree behaviour as a diagram

The TMS PC software displays the correlation between the inclination of the tree and wind speed in a diagram. The wind speed can either be measured with the TMS anemometer and directly imported into the software or manually transferred from other sources. In addition, extrapolation can be used to predict how a tree might behave at wind speeds 10 to 20 km/h higher than those measured.



Exemplary diagram shows measured data points and wind tipping curve calculated from them

Combinable measurement methods

Results of wind reaction measurements also provide useful additional information for other measurement methods. For example, if a sonic tomography or an electrical resistance tomography detects a defect in the lower trunk area, the TreeMotion sensor can be used to collect further information on the tree's stability. Repeated wind response measurements can also be used to monitor the development of the tree's stability.

More information
via QR code!



Do you have any questions?
We are happy to
assist you personally

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