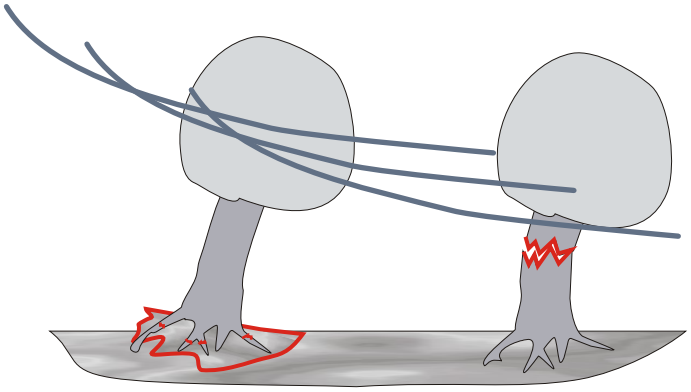
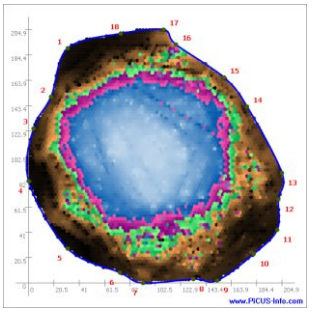
PiCUS TreeQinetic

Static Tree Pulling Test Equipment

Uprooting and stem breakage are two types of major tree failure.

The **TreeQinetic pulling test** is designed to assess the breaking and uprooting safety of a tree by applying a measured load through a cable and simultaneously recording the reaction of the tree.

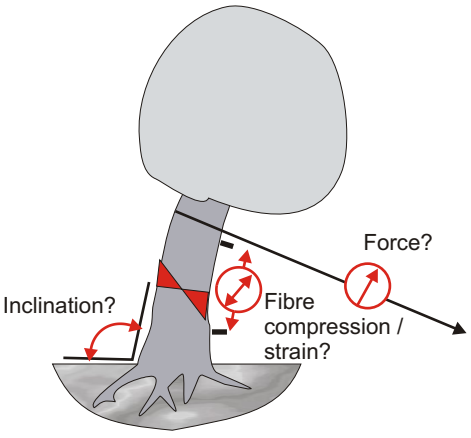




Stem decay may cause trunk breaking.
How much decay is too much?

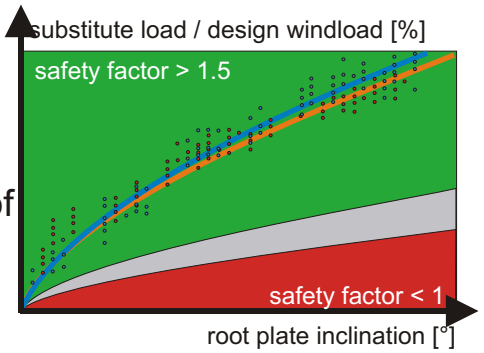
Are the roots strong enough? Perform a pulling test with the **TreeQinetic Inclinometer**!

Can the stem break in winds? Perform a pulling test with the **TreeQinetic Elastometer**! Sonic Tomograph shows locations of internal defects which assists in placing the Elastometers.

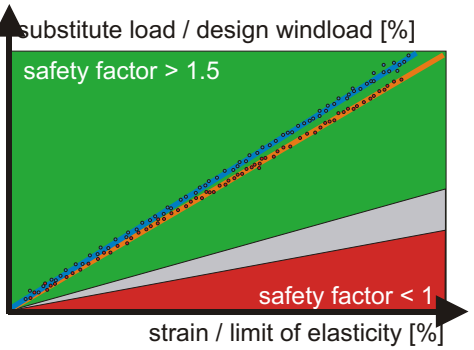


Shematic of the pulling test

Inclinometer - safety against uprooting: Estimation of the uprooting safety analysing the inclination of the root plate.



Elastometer - breaking safety: Estimation of the breaking safety of the stem by analysing the deformation of the marginal wood fibres.



- **Information about root and stem stability**
- **Stand-alone data processing with advanced wind load analysis software**
- **Information for long-term tree maintenance**
- **Measure tree safety after root damage**

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PiCUS TreeQinetic

Static Pulling Test

Traditional tree risk assessment is focussed on determining the extent of cavities or hollowness in tree trunks by boring holes. Using these invasive tree assessment methods can not only damage living cells but may also encourage fungal growth (LIESE, DUJESIEFKEN, 1996) and the spread of decay. New engineering based statics integrated methods (SIM) developed by WESSOLLY and SINN at the University of Stuttgart allow for non-invasive and quantified estimates of a tree´s breaking and uprooting safety. Statics integrated inspections are carried out with pulling tests (elasto-inclino method) that exert a wind substituting load on the tree using a winch and a steel cable. The reaction of the tree to an applied load is measured with high resolution devices (elastometer and inclinometer) and the data obtained are compared with those of sound trees. In all safety calculations using the SIM, three major components are considered: wind-load, the material properties of green wood and the surface of the load bearing structure (trunk diameter and extent of hollowness). Tree inspectors and practitioners may use a more simplified variation, the SIA method (**s**tatics **i**ntegrated **a**ssessment) which also follows international engineering conventions and allows for quick on-site-tree stability assessment.

(by Erk Brudi / Philip van Wassenaer)

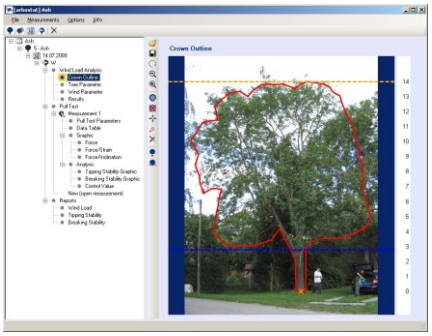
TreeQinetic Measuring Hardware

- **Wireless data transfer to PC**
- **Forcemeter with inbuildt rope angle measurement**
- **Elastometer accuracy better than 1µm**
- **Inclinometer accuracy 0,005°**

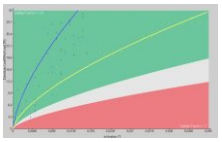
New compact forcemeter

Exerting a wind substituting load using a winch.

arbostat software for data analysis



- **Optional analysis software**
- **Latest tree failure criterias in-buildt**
- **Best wind load analysis function**
- **Creates easy to understand results**



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