



# DYNAMIC PILE INTEGRITY TEST

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## PRINCIPLE

A dilatational wave is released by means of impulse induction, caused by hammering on the pile head. The strength of the produced vibration and the time delay of the wave from the pile head to the reflector (pile base, imperfection) are measured.

The pile length is measured and changes in the quality or bad spots that may influence the pile load capacity are detected

## APPLICATION

By rammed or drilled cast-in-place concrete piles (reinforced or non-reinforced) as well as finished piles of steel, reinforced concrete or wood.

## REQUIREMENTS

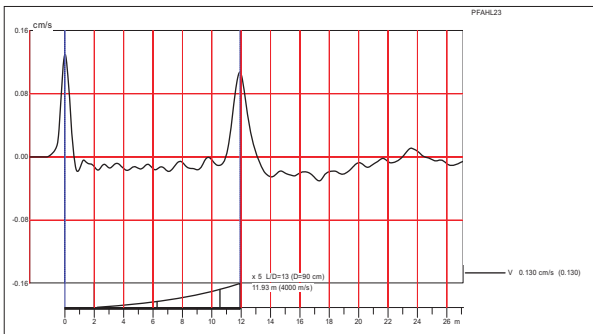
Cast-in-place concrete piles must be at least 10 days old. The pile head must be freely accessible, dry and scabbled down to the 'healthy' concrete.



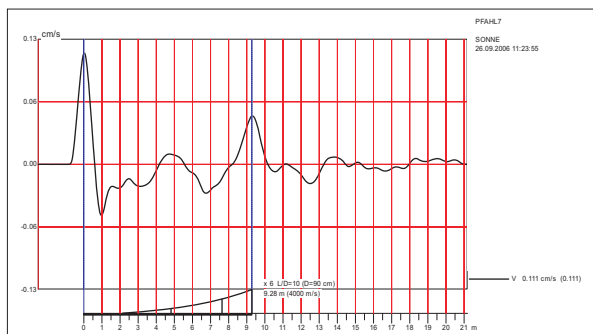
Integrity tester PIT Collector von Pile Dynamics Inc.



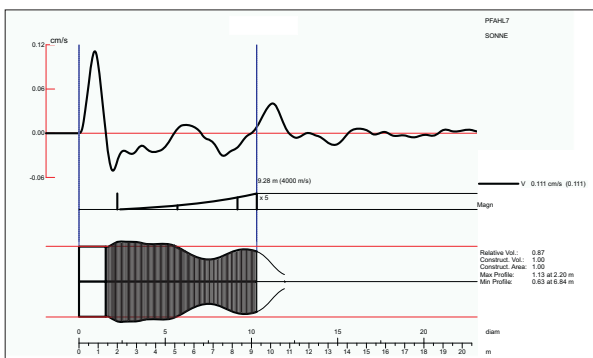
**Analysis with PIT-W®**



Measurement signal of a pile without imperfections



Measurement signal of a pile with indication of an imperfection (necking, gravel nest etc.) by 4.5 m



Impedance profile for elimination of ground influence on the measurement signal -> attribute accentuation and interpretation support



Result of core drilling for verifying the integrity test: cavity in the imperfection area

Evaluation according to the recommendations of the working committee "Pfähle" EA-Pfähle 2007  
 e.g. Category A1 the pile is alright (top photo)  
 Category B the pile is not alright, strong quality reduction (2nd photo)

**REFERENCES**

- New US-Embassy in Berlin, Pile integrity test on 400 cast-in-place concrete piles, awarding authority: Grund- und Sonderbau Berlin, Period of time: July till November 2005
- Central Gallery in Dresden, Pile integrity test on 50 cast-in-place concrete piles, awarding authority: Kondor-Wessels-Bouw Berlin, Period of time: Januar 2008
- Flood protection wall in Eilenburg, Pile integrity test on 140 cast-in-place concrete piles of a tangent bored pile wall, awarding authority: Planungsgesellschaft Scholz + Lewis Dresden, Period of time: September till Dezember 2006
- Railroad line Neubrandenburg Altentreptow, Pile integrity test on 28 cast-in-place concrete piles, awarding authority: Projekt- und Servicegesellschaft Berlin, Period of time: Oktober till November 2005
- Port of Constanta (Romania), Pile integrity test on 10 cast-in-place concrete piles, awarding authority: GrundBauer Romania, Period of time: November 2003
- Expansion of the Marie-Elisabeth-Lüders-Hause in Berlin, Pile length determination on 12 historical piles, awarding authority: Bundesbaugesellschaft Berlin, Period of time: July 2006
- Berlin State Library, Pile length determination on about 40 wood piles, awarding authority: Bundesamt für Bauwesen und Raumordnung, Period of time: February till April 2004
- Railroad tunnel in Rosengarten (Frankfurt/Oder), Pile integrity test on 12 cast-in-place concrete piles, awarding authority: BRB Prüflabor Bernau, Period of time: November till December 2007
- Other bridge constructions for example in Rathenow, Buckow, Drewitz and Altlandsberg