



Hammer Performance Analyzer (HPA) Version 1.0

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What is the HPA software ?

HPA is a Microsoft Windows based hammer performance analyzing software that:

- Digitizes the velocity of a hammer in real time, through a Doppler radar antenna.
- Displays the digitized velocity against time.
- Automatically detects blows, peak time and velocity.
- Post-processes the blow curve for further analysis to find real hammer drop acceleration impact time, peak and impact velocities, stroke and energy, etc.
- Reports summarized results in different formats.

What can you do with the HPA software program?

1) Record hammer velocity. Two methods are available as follows:

- Record hammer velocity variation against time without automatically blow-detect feature on and save hammer velocity vs. time into file. Input the data from the file and manually or automatically detect blows (This is recommended for slow computers or environments where too much noise is caused by the interference with radar antenna).
- Record with blow automatically blow-detect feature on. This can be used for faster computers (compatible to Pentium Pro. 200 with MMX system) and reasonably low noise on the radar signal. In this case, the number of blows, peak and impact velocities are obtained and displayed while recording. There is also a choice to save raw data, in addition to blow related information.

2) Hammer performance analysis. Two types of output are generated as follows:

- A summary on blows includes:

Project information: project name, pile name, hammer name and weight, date and time.

Statistics for a given number of blows: number of blows, maximum, minimum, average and standard deviation values of the peak velocity, impact velocity, BPM (blows/minute), hammer drop acceleration, stroke, kinetic impact energy and potential energy.

Graph: peak velocity vs. time.



- Results on a specific blow includes:

Project information: project name, pile name, hammer name and weight, date and time.

Analysis results: blow number, peak velocity, impact velocity, blow start time, peak time, impact time, drop acceleration, stroke, kinetic impact energy and potential energy.

Graph: velocity vs. time for a given blow.

3) Report the results.

- The above results can be printed or saved as text files.
- Two unit systems are supported: US and SI.

System Requirements

Hardware:

- A Doppler 3 Radar Antenna.
- Sound Card with microphone input and capable of sampling at 44,100 Hz.
- HPA was tested in a Pentium Pro. 200 with MMX system (DIMENSION XPS M200s equipped with Sound Blaster 16 by Creative Technology Ltd) and a Pentium 100 LapTop.

Operating System:

HPA was designed for and tested in the MS Windows 95 environment

Limitation:

- The time counter is good up to 49 days.