

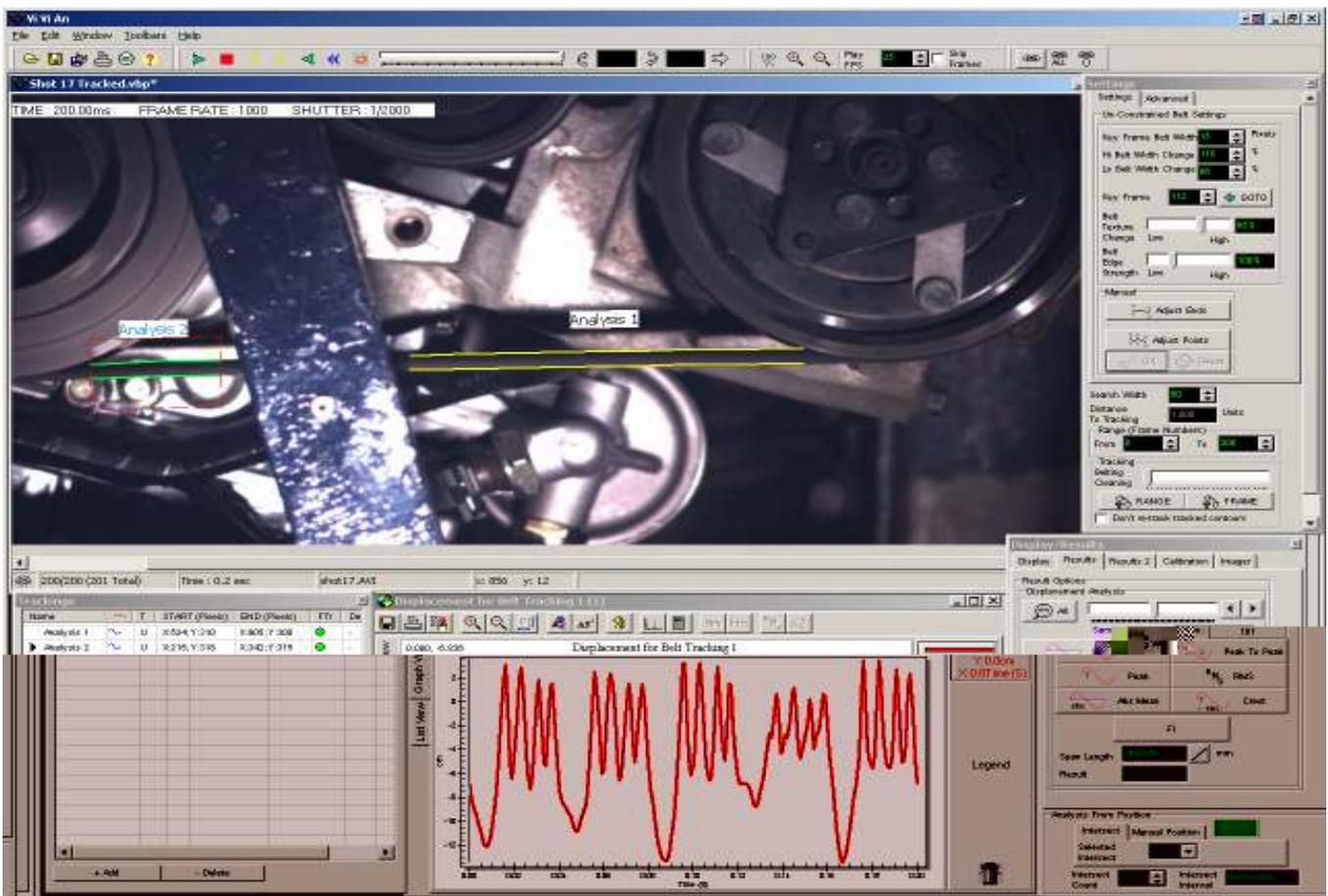


Video Vibration Analysis

Patent Pending

A new Motion Analysis Tool from
Pixoft Diagnostic Imaging Ltd

Pixoft Diagnostic Imaging Ltd are very pleased to announce the release of **Vivian** motion analysis software. This system is a World First in motion analysis and provides a powerful diagnostic tool to support your engine development process. It uses unique image processing techniques to automatically detect the position of a belt (e.g. Drive Belt, V-Belt, FEAD), or chain, over the frames of a video sequence. After detection it will present the displacement and vibration frequency of the belt at any position along the span of the belt. This process is non-contact, non-invasive and highly intuitive – you measure what you see.



Benefits

The software is a unique tool to aid the engine development process, enabling vibration sources to be identified and quantified. All engine developers will benefit from reductions in engine noise, whilst there is particular benefit to manufacturers of diesel and high mileage engines where the longevity of the belt and belt driven components is more critical. In short the software is invaluable in identifying the root cause of noise and potential component failure.

How does it Work?

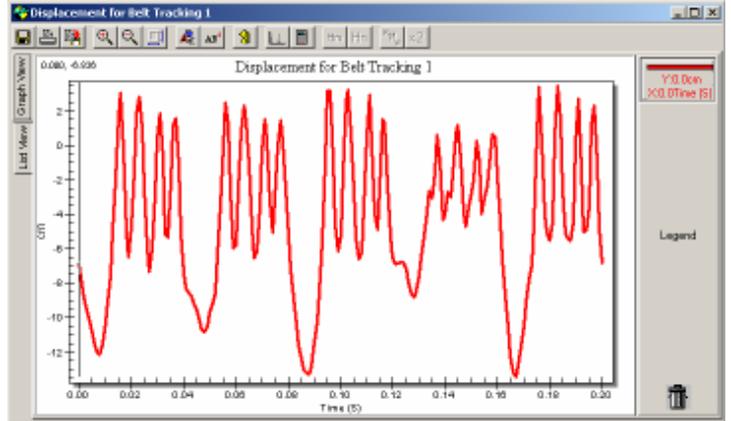
The software is designed to work in conjunction with a video camera (usually High Speed). The user will load a previously recorded movie file of a drive belt into the application. After specifying the two end points of the belt on any single frame in the movie, the software will engage a number of highly sophisticated image processing algorithms to accurately locate the position of the belt in each of the frames in the movie. Any number of belt spans can be analysed *concurrently* in the same image.

What are the Results?

Once the automatic tracking has completed the user can plot the displacement of the belt, **at any position along the span of the belt**, against time. Using the displacement data, the system will also calculate the Mean, Abs Mean, Peak, Peak to Peak, RMS and Crest values.

A “Flutter Index” (normalised amplitude) is also calculated. This quantifies the level of flutter for the belt.

The system will also take the results into the Fourier domain and plot the **vibration frequency** of the belt **at any position** along the span of the belt. All results can be exported, printed and copied to the clipboard.

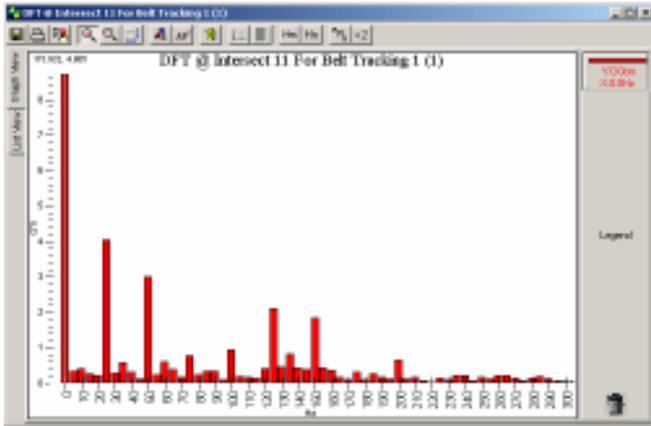


Single Point Vibration

The software also allows for the analysis of single points (rather than a belt span). This is particularly useful for analysing the vibration of exhaust systems etc. The Software will track targets such as a quadrant target, a light spot, a dark spot or any defined feature in the image. Additionally, belt tracking can be tied to single point tracking such that the system can eliminate the motion and roll of the engine block to give the true relative motion of the belt.

Advanced Features

The software can overlay the results from the tracking in one movie onto the belt motion observed in another movie, for immediate visual comparisons.



Where multiple recordings of the same setup are made (at different engine speeds, for example) ViViAn can Batch Process the images. The user can define the analysis on one recording and the software system will use this information and apply it to any number of further recordings. The results can be automatically saved and exported as part of the Batch Processing procedure.

The software will also detect the “visual” width of the belt. This will change in the image as the belt twists. The width measurement can be used to evaluate the degree of twist in the belt.

If the camera system used is able to take an external synchronisation signal (*we recommend cameras from NAC Image Technology Inc*) then the captured frame rate

of the camera can be synchronised to the crank angle rotation of the engine. ViViAn will manage this “variable” timing operation and adjust the results accordingly. Using Crank Angle synchronisation will assist in the accurate comparison of separate recordings.

The system (optionally) allows for the results to be burnt directly to CD/DVD together with the source movies and the re-distributable application files. This allows for end users to assess the results of the analysis, in electronic format, from their own PC, without needing the full version of ViViAn.

Please contact Pixoft Diagnostic Imaging Limited or your NAC Image Technology representative for more information.

Pixoft Diagnostic Imaging Ltd

Unit 211, The Custard Factory, Gibb Street, Digbeth, Birmingham, B9 4AA, United Kingdom

☎ +44 (0)121 772 5440

☎ +44 (0)870 052 2912

✉ info@pixoft.co.uk

🌐 www.pixoft.co.uk