Single Channel Impact Testing Using the 2120

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Machinery Health Management	**Handheld Analyzers**	**2120**	

Impact testing is particularly useful for determining the resonant frequencies of a structure. Also called "bump testing", this technique involves hitting the structure to excite the resonances of the structure and capturing those frequencies with a spectrum analyzer. This note covers the setup of the CSI 2120 analyzer for a typical impact test and transference of data into AMS™ Suite: Machinery Health™ Manager. Theory of resonance testing and detailed explanations of this setup is subjects of more extensive write-ups than a technical note can provide.

This setup will work in either Monitor Mode or Aquire Spectrum.

1. On the CSI 2120, press the Analyze key.
   - Note: It may be helpful to use MONITOR WAVEFORM to determine a full scale range although it is not absolutely necessary. This should be done prior to performing the next step.

2. Press ACQUIRE SPECTRUM. Note that in order to store data to a route measurement point, normal route data must be collected before acquired data can be stored.

3. Set the 1st page up as follows:
   - FREQUENCY: 1000 Hz (1000 Hz is typical but you should choose a range that covers any machine frequencies such a gears).
   - LOW CUTOFF: 0 Hz (It will default to the lowest frequency given the chosen resolution).
   - LINES: 400
   - DEMODULATE: NO
   - AVERAGES: 4
   - SST CONTROL: NO
   - INIT SETUP: NO

4. On the next page:
   - AVERG MODE: NORMAL
   - TRIG MODE: PRE-TRG
   - TRIG LEVEL: 0.5 (Assuming Velocity. These are units of the measurement point OR units set up in UTILITY. This will vary depending on how stiff the structure is)
   - % PRE TRIG: 25 to 50
   - FS RANGE: Set to 0 for Autorange
   - A-WEIGHT: NO
   - TRIAX CTRL: OFF

5. Press the ENTER key and wait for the message: WAITING FOR TRIGGER.

6. Using a dead blow type hammer, strike the structure in the direction the sensor is mounted. It may take a few hits before the reading is taken. This is normal as the analyzer is setting the input gain for the signal. After 2 or 3 hits, the analyzer will indicate there are 3 averages left and then signal: WAITING FOR TRIGGER. Continue this process until all averages are taken.

7. When all 4 averages are complete the analyzer will display the spectrum showing resonant frequencies that were excited from the impacts. You may move the cursor around and check the frequencies.

8. Press the ENTER key and choose STORE DATA. It is suggested that you choose STORE BOTH. The data will be stored to the measurement point at which you pressed the ANALYZE key.

9. You may now repeat this process as many times as you wish. Any stored data will be dumped into the AMS Machinery Manager database along with the route data.

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