Torque Converter Vane Test: Detect and Verify "Vane" Type and Integrity

Highlights:

- Defect detection and classification
  - Straight vane
  - Angled vane
  - Angled & beveled vane
  - Vane spacing
  - Variations in vane height (TIR)
- Low cost laser detection
- 100% data storage for traceability and process control
- Password protected on-line pass/fail criteria definition
- PLC data highway capable
- Network server archive by serial number
- Bar code capability

Sciemetric's Signature Analysis System provides an ideal platform for production testing. Pushing sub-assembly component testing upstream not only improves final product quality but also reduces cost impacts associated with post sales warranty defects and increased embedded costs which occur at each additional step in the assembly line.

Three distinct torque converter assemblies are "mixed" in the production process thereby requiring an accurate method to identify and verify the type of vane (straight, angled, and angled with bent "beveled" blades). The Sciemetric Signature Analysis System shown in the above photograph is capable of "reading" the assembly barcode, verifying the blade configuration, and reporting the results to both the PLC and plant network server (a QC traceability file).

Using a low cost laser and a rotary encoder, the Sciemetric Signature Analysis System with it's built-in Windows® based InspeXion® software contains all the necessary tools required to develop various defect "checks" including TIR, blade stagger and blade orientation. Direct display of results is presented in a clear and concise screen, easily understood by plant operation personnel.

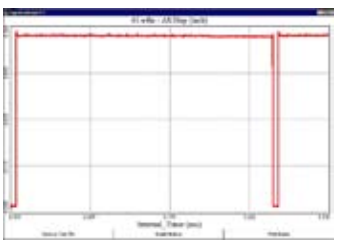
In the example shown on the right, optimum results were obtained by "tilting" the laser detection head relative to the vertical blade plane. Although the laser beam is diffracted by the sharp edges, very repeatable results (shown in plots) were obtained (relative, not absolute measurements).

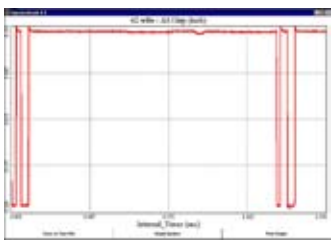
It should be noted that prior tests utilizing a linear proximity sensor were performed, but the resulting curves did not provide enough differentiation to assure a stable and accurate production test station.

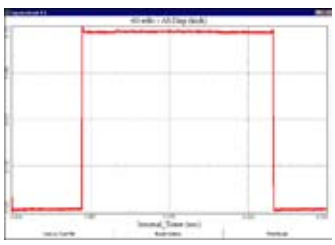
"ANGLED"

"STRAIGHT"

"BEVELED"







InspeXion® Screens showing Unique Signature Waveforms Produced by Each Vane Type

AN132

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