

■ Pop Rivet Monitor: Signature Analysis of Crimp Force to Verify Rivet Quality

Highlights:

- Single or multiple channel
- Piezo resistive load sensor
- Automatic triggering
- High speed waveform capture and analysis
- Multiple characteristic checks
- Multiple part configuration
- PASS/FAIL control outputs
- Configurable menu buttons
- Password protection
- Compact size

Threaded studs are often welded onto metal surfaces and then used to hold and clamp various electrical wiring.

An oversized cap slides over the threaded stud and is then swaged or crimped around the threaded surface while at the same time clamping the wires underneath the cap. The swaging action creates an outside hexagonal surface which can be later used to unscrew the cap if required for subsequent service.

A piezo-resistive load cell is mounted integral to the nose of the rivet tool to monitor crimp force. The piezo style of sensor provides two major benefits for this application over the use of traditional strain gage load cells: a) superior dynamic range and b) negligible deflection during the exertion of force.

The entire crimping force waveform (force vs. time) is captured by the Signature Analysis system and the software then analyzes the waveform in order to identify defects and deviations in the process. Single rivet tools can be monitored with the lower cost SigMETER® product while multiple (synchronous) rivet heads are more cost effectively monitored with a larger channel count system also available from Sciometric.

The high speed of the Signature Analysis equipment allows 100% of the installed rivets to be verified leading to significant improvements in quality.



InspeXion Screen showing Force vs. Time Crimping Waveform



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