Signal.X
TECHNOLOGIES LLC

We deploy software products and engineering services in the most demanding production and laboratory environments.

Project Spotlight: **STAX and Shield Production Test Machine**

Objective:

Deploy a production end-of-line (EOL) test machine for electric power steering components. Enable customer to deliver high-quality parts using advanced vibration signal analysis to detect failures. Deliver a test machine that is flexible and easy to maintain.

Solution Benefits:

- Detects device-under-test (DUT) failures using vibration feedback while moving the test part. Machine integrates a full suite of sensors including load cells and accelerometers to cover a wide range of detectable failures.
- Signal.X STAX and Shield for cRIO: A purpose-built EOL test platform that covers automation, data acquisition, and signal processing.
- Signal.X NVH expertise ensures machine is designed from the ground up for repeatability.
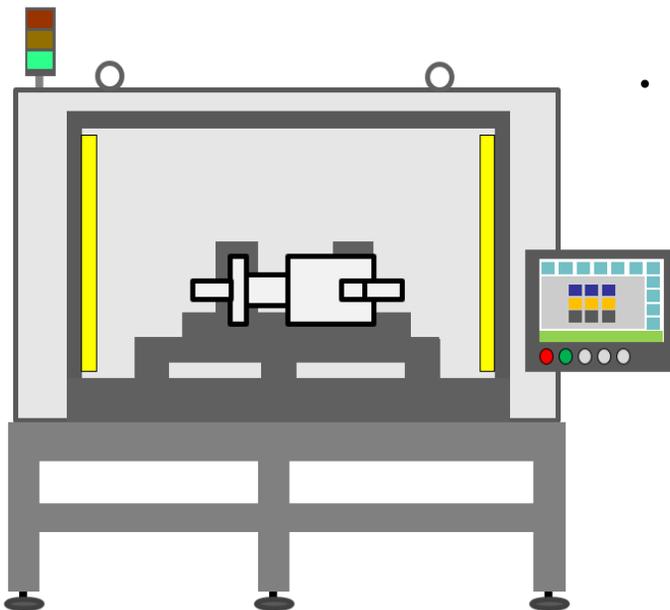
Technology Highlights:

Machine Construction

- Signal.X can scale from a single machine to a suite of machines by harnessing the resources of our build partner network.
- The machine is designed to be completely isolated from environmental influences.
- The data quality is enhanced through the introduction of resonance control using advanced damping methods.
- All machine components are located on a common base, making it compact and easy to move or reposition.
- Special attention is given to clamping to ensure repeatable and informative dynamic measurements.
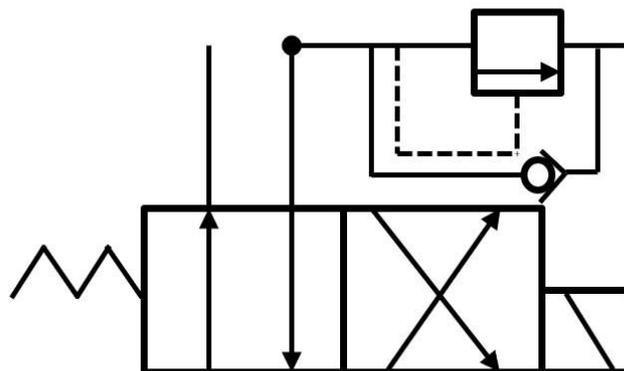
Machine Control & Acquisition

- A single National Instruments CompactRIO controller running STAX automation platform handles all machine automation. This solution replaces a traditional PLC.
- The same controller is running Shield for cRIO - NVH assessment platform. Shield is acquiring accelerometer, load cell and current sensor data and performing advanced signal processing for pass/fail determination on the DUT.

Trend Analysis: Results Viewer

- View metric trends over time to help to identify manufacturing anomalies.
- Filter results based on date/time, serial number, part type, pass/fail, and more.
- View waveforms from individual tests, or overlay from multiple tests.
- Export results summary or waveforms directly to MS Excel.
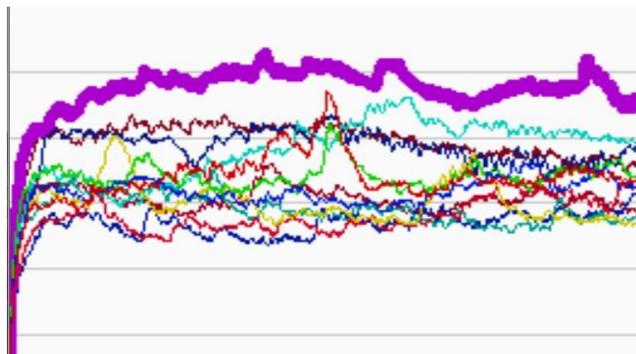
About Signal.X:

Since 2004, Signal.X has specialized in test & measurement products for noise, vibration & harshness (NVH), production and laboratory test automation, functional test design, large data management, and custom application development.