

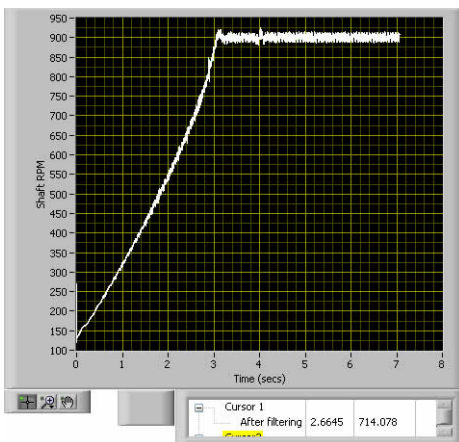


TORSIONAL VIBRATION TESTING

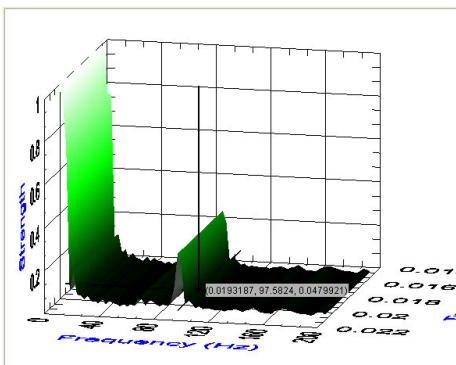
Resonance Frequencies

When a machine ramps up to speed and then reaches setpoint, we can sometimes see a brief ringing at the shaft's natural resonance frequency (coming up to setpoint is a bit like hitting the shaft with a hammer, while it's in place).

In this graph, we have captured a machine startup cycle, and have applied pre-processing to eliminate glitches in the shaft encoder (we can work with a variety of devices from shaft encoders to optical strips).



Here we are looking at the resonance energy over the duration of the startup ramp, looking for transient events.

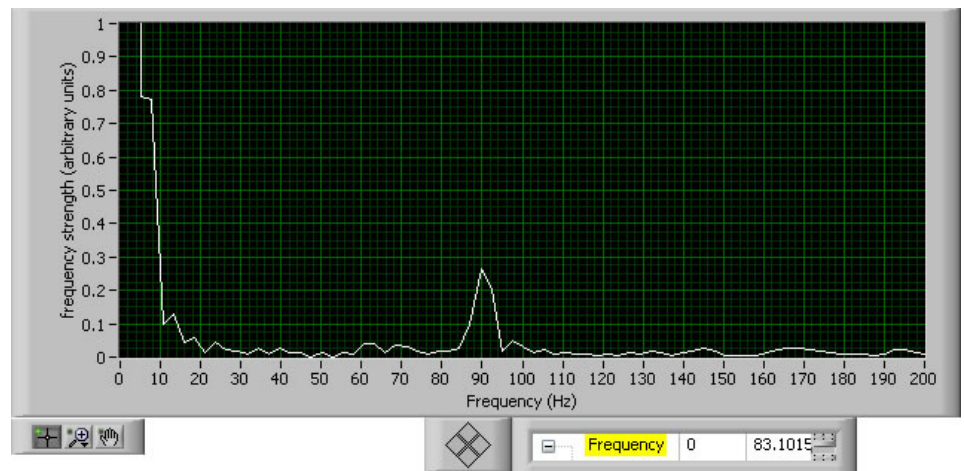


We look at torsional vibrations over time, which can be useful for detecting resonance frequencies which might otherwise be difficult to isolate.

When a machine ramps up to speed and then reaches setpoint, we can sometimes see a brief ringing at the shaft's natural resonance frequency (coming up to setpoint is a bit like hitting the shaft with a hammer, while it's in place).

Here we see the resonances at a particular point during a machine's startup cycle.

Orders can be marked in red: the resonance energy is shown in white.



National Instruments

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Our Performance Testing system was developed with National Instruments technology.

We've been using LabVIEW since 1988, when LabVIEW 2.0 was still in beta testing. Since then, we've used LabVIEW to develop applications for data acquisition and data visualization in fields ranging from:

- Magnetic bearing control
- Electronic Flow Measurement validation
- Performance testing
- Torsional vibration analysis
- Commodity trading & risk analysis
- Airborne LIDAR and camera control

We use the 80 MHz NI 6602 timer/counter for torsional measurements.

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