S.HIMMELSTEIN & COMPANY

The World's Best Torque Instruments Since 1960

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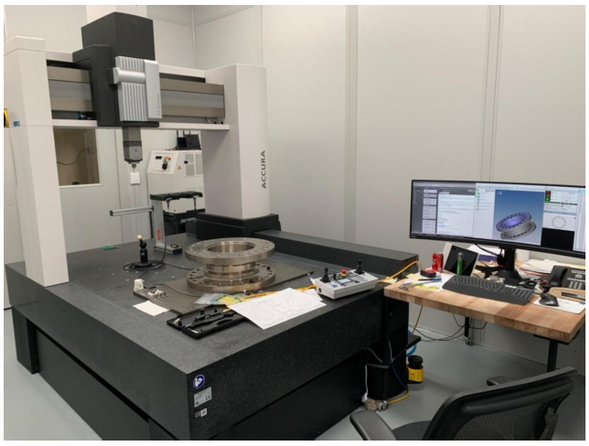
Coordinate Measuring Machine for Highly Accurate Measurements Leads to Even Better Performing Torque Sensors for You



We purchased and installed a coordinate measuring machine in late 2020. The intended use is to perform extremely accurate measurement of parts manufactured in our machine shop. This will further confirm our parts are within tolerance. Better measurement of our machined parts and tighter control of tolerances will ultimately lead to even better performing torque sensors for you.

We also assembled an environmentally controlled room for the CMM. Find out why in this press release.

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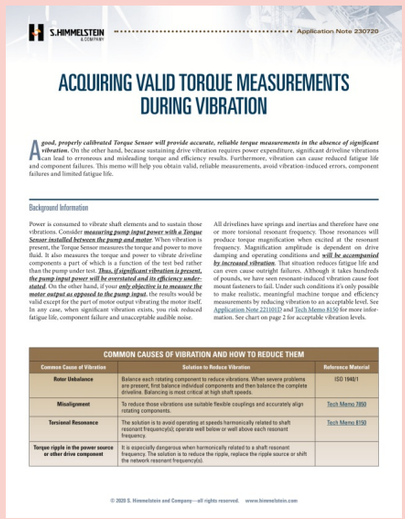
Save the Day! Learn How to Avoid Vibration Issues

Experiencing significant driveline vibrations? Mr. Himmelstein wrote Tech memo "Acquiring Valid Torque Measurements During Vibration" for you! Learn how to obtain valid, reliable measurements, avoid vibration-induced errors, component failures and limited fatigue life.

Questions? We're here to help: 1-847-843-3300



S.HIMMELSTEIN & COMPANY — Application Note 230720

ACQUIRING VALID TORQUE MEASUREMENTS DURING VIBRATION

A *good, properly calibrated Torque Sensor will provide accurate, reliable torque measurements in the absence of significant vibration.* On the other hand, because sustaining drive vibration requires power expenditure, significant driveline vibrations can lead to erroneous and misleading torque and efficiency results. Furthermore, vibration can cause reduced fatigue life and component failures. This memo will help you obtain valid, reliable measurements, avoid vibration-induced errors, component failures and limited fatigue life.

Background Information

Power is consumed to vibrate shaft elements and to sustain those vibrations. Consider ***measuring pump input power with a Torque Sensor installed between the pump and motor.*** When vibration is present, the Torque Sensor measures the torque and power to move fluid. It also measures the torque and power to vibrate driveline components a part of which is a function of the test bed rather than the pump under test. ***Thus, if significant vibration is present, the pump input power will be overstated and its efficiency understated.*** On the other hand, if your ***only objective is to measure the motor output as opposed to the pump input***, the results would be valid except for the part of motor output vibrating the motor itself. In any case, when significant vibration exists, you risk reduced fatigue life, component failure and unacceptable audible noise.

All drivelines have springs and inertias and therefore have one or more torsional resonant frequency. Those resonances will produce torque magnification when excited at the resonant frequency. Magnification amplitude is dependent on drive damping and operating conditions and ***will be accompanied by increased vibration.*** That situation reduces fatigue life and can even cause outright failures. Although it takes hundreds of pounds, we have seen resonant-induced vibration cause foot mount fasteners to fail. Under such conditions it's only possible to make realistic, meaningful machine torque and efficiency measurements by reducing vibration to an acceptable level. See Application Note 221012 and Tech Memo 8150 for more information. See chart on page 2 for acceptable vibration levels.

COMMON CAUSES OF VIBRATION AND HOW TO REDUCE THEM

Common Cause of Vibration	Solution to Reduce Vibration	Reference Material
Rotor Unbalance	Balance each rotating component to reduce vibrations. When severe problems are present, first balance individual components and then balance the complete driveline. Balancing is most critical at high shaft speeds.	ISO 1940/1
Misalignment	To reduce those vibrations use suitable flexible couplings and accurately align rotating components.	Tech Memo 7850
Torsional Resonance	The solution is to avoid operating at speeds harmonically related to shaft resonant frequency(s); operate well below or well above each resonant frequency.	Tech Memo 8150
Torque ripple in the power source or other drive component	It is especially dangerous when harmonically related to a shaft resonant frequency. The solution is to reduce the ripple, replace the ripple source or shift the network resonant frequency(s).	

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When Accuracy is Important, You Now Have Even More Ultra Precise Options

Looking for the perfect way to measure low torque ranges? The MCRT® 48600V low capacity torque sensor with a high speed rating, analog and digital outputs, and ultra precise accuracy is your answer. Torque ranges from 0.625 to 12.5 lbf-in. Combined nonlinearity and hysteresis is ±0.05%. Read more.

Newly engineered MCRT® 48850V/48851V non-contact, ultra precise digital torque sensors with spline drive per AND 10262 & AND 20002 have analog and digital outputs and capacities from 50 to 10,000 lbf-in. Speed rating up to 30,000 rpm. Combined nonlinearity and hysteresis is ±0.03%. See the specs!

Is it Time to Calibrate? Learn About Our Accredited Laboratory

We provide accredited ISO/IEC 17025:2017 calibrations from 10 ozf-in to 4,000,000 lbf-in for Himmelstein transducers as well as those from virtually any other manufacturer. The 4,000,000 lbf-in stand is one of only four worldwide that are accredited for calibrations above 1,000,000 lbf-in (113 kNm) and it has the lowest measurement uncertainty of any. Find out why you can rely on us and schedule your calibration today!

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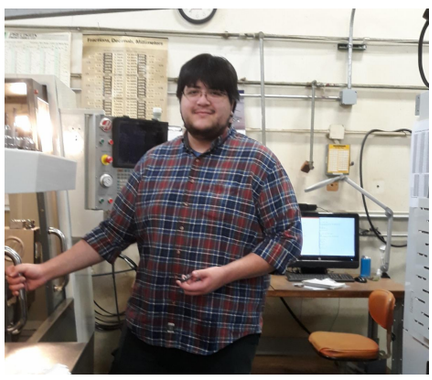
New Hires Help Speed Up Production



Gabriel Mendez recently joined our team as a Machinist Apprentice. His presence and growing knowledge will assist us in providing the best lead times for your torque sensor needs. This guy is smart!

Valerie Ivanov was hired in June 2020. He is a machinist and works on the Okuma programming and making parts for the lathe. "Val" comes to us from Bulgaria and we are happy to have him!

Find Videos on our Website

We have dedicated a page on our website for you to easily view all of our videos. Check out our webinar, learn about products, get real time instructions, find out more about Himmelstein, and visit our ISO 17025:2017 accredited calibration laboratory. Let us know what you'd like to see!

More Bearingless Torque Sensors to Suit Your Application

Himmelstein's family of bearingless digital torque sensors grew in 2020. In January, we announced the large capacity MCRT® 86011V with ranges of 500, 750, and 1,000 kNm. Also new in 2020, the MCRT® 88711V dual range models have 500/100 kNm, 750/150 kNm and 1,000/200 kNm ranges. Bearingless torque sensors are perfect for inline rotating torque measurements with high accuracy and where space is limited. See the entire line.

Himmelstein is Fully Operational

We are open and are not expecting any disruptions in the production of your torque sensors and other equipment. Feel free to contact us if you have any questions.

Himmelstein's torque measurement devices are proudly made in America.

S.HIMMELSTEIN & COMPANY

Designing and Making the Worlds Best Torque Instruments Since 1960

www.himmelstein.com 800-632-7873

Or contact us at *sales@himmelstein.com*

Focused exclusively on torque sensors since 1960, Himmelstein designs and makes the world's best torque sensors, transfer standard, and instrumentation. Products include rotating and reaction sensors from 10 ozf-in to 22,000,000 lbf-in in virtually every mechanical configuration. All are calibrated CW and CCW to full capacity in our ISO/IEC17025:2017 accredited laboratory.

Stay in Touch!