



Morehouse
THE FORCE IN CALIBRATION SINCE 1925

ISO/IEC 17025 / ANSI/NCSLI Z540.3 Accredited

5 IN 1 FORCE VERIFICATION SYSTEM



1. A MOREHOUSE ULTRAPRECISION LOAD CELL
2. HIGH ACCURACY DIGITAL INDICATOR (SENSING A/D USB)
3. MINI COMPUTER & MOREHOUSE SOFTWARE
4. LOAD CELL CABLE
5. CUSTOM CUT PELICAN CASE

MONITORING YOUR PROCESS BY PUTTING PRACTICES IN PLACE TO ENSURE THAT YOUR MEASUREMENTS ARE ACCURATE IS ESSENTIAL TO LIMITING YOUR RISK AND KEEPING YOUR BOTTOM LINE INTACT.

A GOOD STABLE MOREHOUSE FORCE VERIFICATION SYSTEM CAN BE USED TO DO THE FOLLOWING:

- *FORCE VERIFICATION**
- *SPC – STATISTICAL PROCESS CONTROL**
- *ILC – INTRALABORATORY CHECKS**
- *PROFICIENCY TESTING**
- *A TEST STANDARD TO DO**

REPEATABILITY AND REPRODUCIBILITY TESTS USED TO CALCULATE CALIBRATION AND MEASUREMENT CAPABILITY (CMC)



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1. FORCE VERIFICATION

Have you ever questioned if your system is functioning properly?

A good force measurement system should be able to take any guesswork out of the equation. The ability to obtain objective evidence based on a quick measurement provides the verification needed to ensure proper operation.

2. STATISTICAL PROCESS CONTROL (SPC)

This process is similar to verification, with the exception of a documented control process in which an artifact is used to monitor performance of the measurement process. A good load cell system can be used as a check standard to monitor that the process is in control. It can provide the objective evidence and reduce risk. If the process is continually monitored and an out-of-control situation is found, the root cause analysis can be performed to ensure proper corrective action before the machine or process actually goes out of tolerance.

3. INTRA-LABORATORY CHECKS (ILC)

The force system can be used to compare machines, operators or processes. If you are using control charts and the process output is approaching control limits, the system can be used to test what the issue is and to determine which machine, operator or process needs to be corrected.

4. PROFICIENCY TESTING

This often requires an artifact with a very low uncertainty. If the load cell system is calibrated by dead weight primary standards, the system can be used to satisfy Proficiency Testing requirements. This should be done immediately after the system is received.

5. REPEATABILITY & REPRODUCIBILITY

Per ISO 5725, the general term for variability between repeated measurements is precision. Two conditions of precision, termed repeatability and reproducibility conditions, have been found necessary and, for many practical cases, useful for describing the variability of a measurement method, under repeatability conditions. A device with very high resolution and low overall uncertainty will allow the end user to lower their Calibration and Measurement Capability (CMC). When calculating CMC, the resolution of the system being used must be figured into the calculations. The lab will need to perform repeatability studies. An artifact with low sensitivity to side loading, temperature compensation and stability will be a lab's best asset. A good system will often decrease the variation in output between multiple measurements. It will also allow the lab to test the true performance between technicians.

R & R data may be derived from control charts if they are set up properly.



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