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How Often Does a Quartzdyne Pressure Transducer Need to be Recalibrated?

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The best approach to this issue is recalibrating only those transducers that demonstrate the need for it. In fact we often receive transducers from customers for an annual recalibration. Upon comparing the old and new coefficients, it's clear to us that most transducers are still within specification prior to the recalibration.

When transducers are not exposed to significant pressure or temperature (i.e., sitting in stock), the calibration remains valid indefinitely. Recalibration becomes necessary when the instrument is exposed to long periods of high stress, such as a 12-month high-pressure, high-temperature (HPHT) test. Quartzdyne made significant advances in the long-term stability of our quartz pressure transducers over the past few years. (Please refer to the technote on drift improvements on our website.) These improvements have made it possible for customers to extend the period of recalibration. That translates to increased tool up-time, less hassle, and fewer operational expenses.

We use 0.01% of reading deadweight testers and 0.01°C precision stirred-liquid baths to calibrate our transducers. Since deadweight testers and baths are both expensive and non portable, many customers might benefit from setting up a simplified calibration check system (SCCS), especially if it is portable to the field. We recommend checking our quartz pressure transducers every two years against a SCCS or a deadweight tester. For less than $7000 in parts you can setup the SCCS shown in Figure 1:

- pressure generation device (hand pump, www.enerpac.com)
- secondary pressure standard (Quartzdyne 0.01% FS DS transducer and Q-Link)
- pressure fittings and valves (www.highpressure.com, www.autoclaveengineers.com)
- dial pressure gauge (optional, www.highpressure.com, www.autoclaveengineers.com)
- thermal chamber (optional)
- computer

Ensure that the quartz tool is thermally stable when performing a pressure calibration check. Wrapping the tool in insulation or placing it inside a closed thermal chamber will buffer room temperature variations. Likewise enclosing the secondary pressure standard in insulating foam will improve its accuracy performance by attenuating room temperature effects. If the two transducers are placed at different elevations, a head correction must be applied.

Performing one pressure loop at ambient temperature will be adequate verification of the calibration. Performing pressure loops at several temperatures is unnecessary to determine whether a transducer is out-of-spec. (Non conforming transducers generally exhibit an offset (zero shift) or change in scale-factor—both are readily apparent at room temperature.) Once the tool is stabilized at room temperature, follow these steps:

1. Apply approximately 20% FS pressure.
2. Close valve and wait five minutes for the pV event to settle.
3. Take simultaneous readings of the transducer and the pressure standard.
4. Repeat steps 2 and 3 at 60%, 100%, 80%, 40%, and at ambient pressure.

Compare readings between the two transducers: errors should be less than 0.03% FS. (The secondary standard has an error of 0.01% FS; our downhole gauges are 0.02% FS.) Since Quartzdyne's published accuracy specifications are conservative, you should generally expect errors less than 0.02% FS. Generate and sign a calibration validation form to complete the process: the tool is now certified for continued service.

Quartzdyne will continue to offer recalibration services on our quartz pressure transducers. Contact sales@quartzdyne.com to have recalibration costs and turnaround time quoted.

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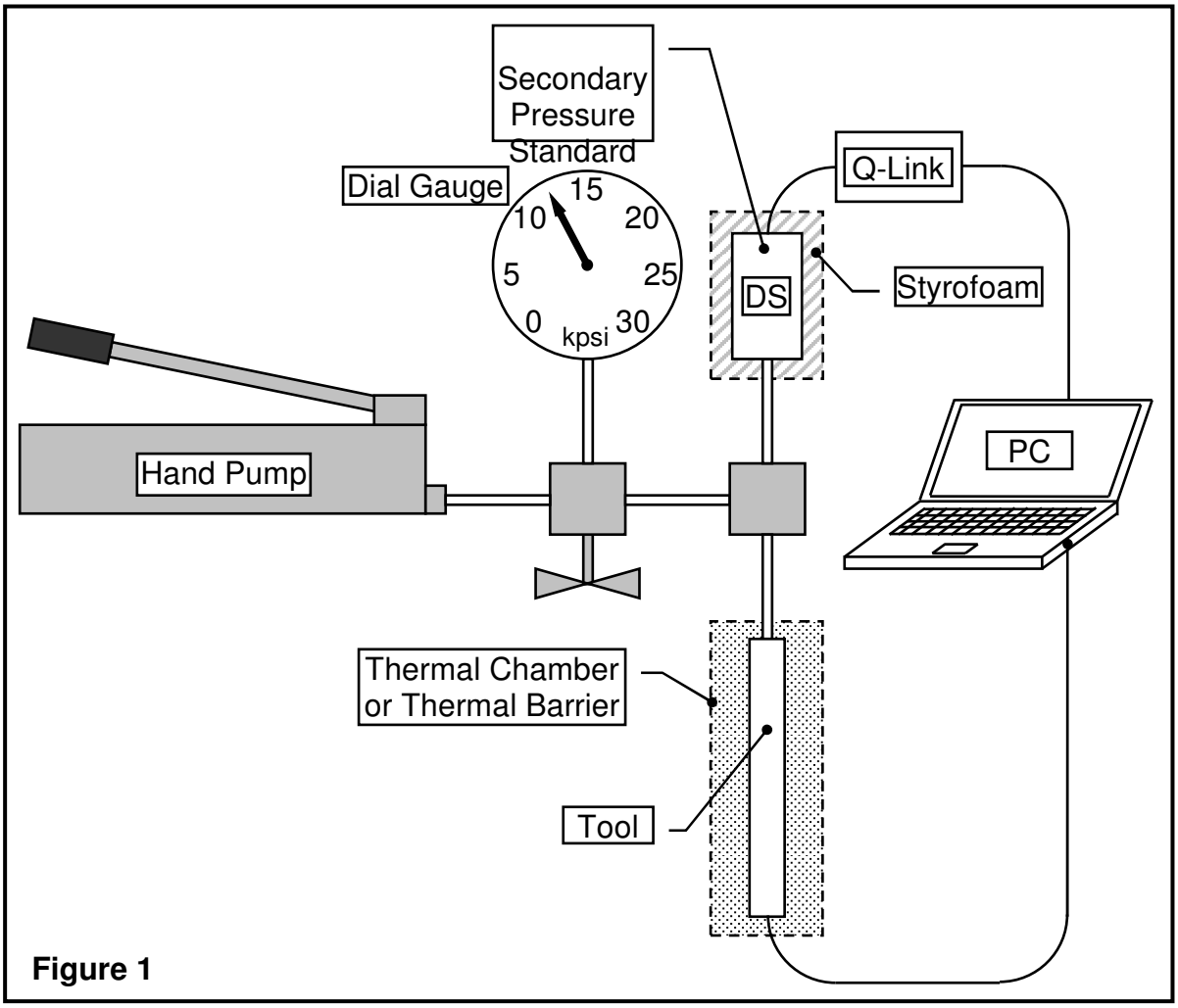

Figure 1