SWACSM Abstract

Effect of Device Warm-Up Time on Load-Voltage Relationship in S-Type Load Cells

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ABSTRACT
Warm up time may have an effect on voltage readings taken from s-type load cells, making prior load- voltage calibration equations inaccurate. **PURPOSE:** To evaluate the effect of warm up time on load- voltage relationship in s-type load cells. **METHODS:** Dead weight calibrations were performed on two load cells using 200kg after 15 minutes, 1 hour, and 2 hours of warm up time. A linear model was created to estimate the influence of warm up time on the load-voltage relationship (i.e. voltage = β0 + β1•load + β2•power.source(plug) + β3•time + β4•load • time.) **RESULTS:** Time did not affect voltage in one testedload cell (i.e. no main (p=0.2396) or interaction effect for load x time (p=0.7492)). In the second load cell, there was a significant interaction effect of load x time (p=0.0079). At 200kg (i.e. the maximum tested load), each minute of additional warm up time would change measured voltage by about -0.00005 volts on average. **CONCLUSION:** Although time did affect voltage and the load-voltage relationship, the size of the effect may be practically irrelevant.