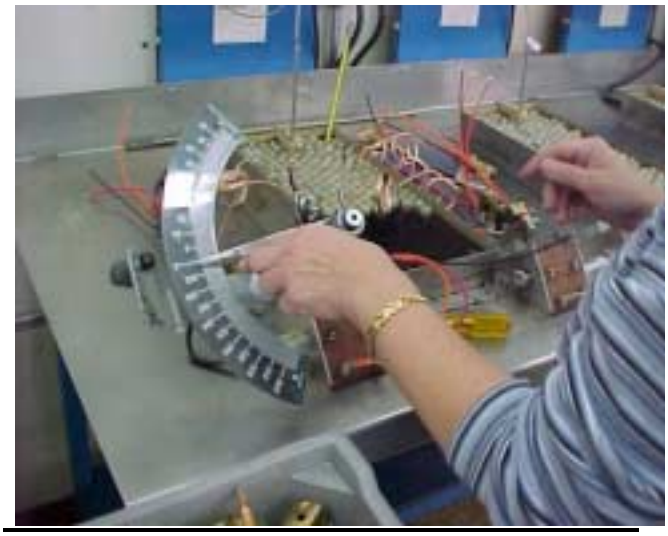
Semi-Automatic Thermostat Calibration Station

Old Station



New Station

THE NEED

The operators at Peco Manufacturing, in Portland, Oregon were using a manual calibration station to perform the single point calibration on their thermostats. The process required the operator to extend one arm out away from their body in an unsupported position while rotating the thermostat shaft back and forth numerous times by swinging a pointer temporarily attached to the thermostat shaft. With the operator's other hand they would turn an Allen driver in their fingers to adjust the calibration set screw to the proper setting. The entire process would take approximately 93 seconds to complete. A solution was desired that would preserve or enhance operator productivity and substantially reduce/eliminate the injury risks associated with the operation.

THE SOLUTION

The thermostat components were not tooled for the levels of precision required for full automation. Therefore we took the approach of a semi-automated machine that eliminated the calibration motions that were creating the injury risks and changed the operator's motion patterns to ones that were more neutral and required less stress and force applied. The result was a machine whereby the operator loads and unloads the parts in the nest and aligns and inserts the Allen driver in the set screw with near zero force. The machine was designed and built by Engineering and Prototype Services in Portland, Oregon.

THE BENEFIT

A pre (existing process) and post (new process) ergonomic assessment confirmed that ergonomic and safety/health risks had been eliminated or reduced. The required motions for the operator have been reduced to holding the parts in a neutral position while loading and unloading the parts. The productivity of the operation was also improved as well as the repeatability of the calibration beyond the ability of the most experienced operator.

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