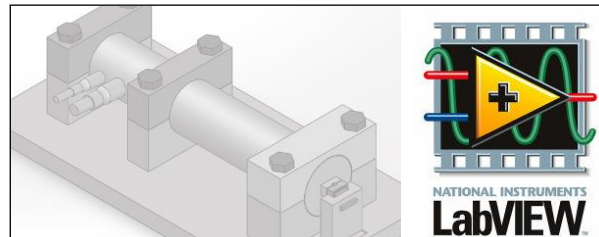


Development of a control system for a micro-sized fatigue testing machine



Fatigue testing is the process of applying repetitive loads to a specimen in a manner that replicates the service conditions to evaluate the mechanical properties and the behavior of the material in service. Micro-sized fatigue testing machine is crucial in special applications where researchers could not prepare the standard size specimens to be tested on the conventional fatigue testing machine such as in the fields of microelectromechanical systems, additive manufacturing and in bioengineering.

Objective

As part of Interdent project TP02, the aim of the current work is to develop a LabVIEW user interface to fully control the micro-sized fatigue testing process. This includes setting up the predetermined test parameters (loads and frequency) and online monitoring/measuring the number of cycles before failure. Piezoelectric actuator is used to apply loads to the specimens while a strain gauge load cell is used to measure the applied force. The test should be terminated if the failure is attained or a predetermined number of cycles has been reached. Currently, the building of the machine is at the phase of the manufacturing of the physical structure and the prospective candidate should select the equipment needed for controlling the machine as well as writing the Labview program.

This work is supervised by the department of materials engineering.

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