Non-Destructive Evaluation of Slot-Die-Coated Lithium Secondary Battery Electrodes by In-Line Laser Caliper and IR Thermography Methods

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Supplementary Information

Figure S1: Expanded intensity profile of laser spot as seen by sensor's camera



Figure S2: Diagram of a laser Caliper System



Figure S3: laser caliper set-up before mounting the slot-die coater



Figure S4: As the insulated slot-die coater oven heats up to temperature, the outer wall also increases in temperature to a lesser degree. The chart above shows this almost linear increase over the course of an hour



Figure S5: As the mounting hardware heats up, the laser displacement sensors move further apart, creating the perception that a sample is becoming thinner. Overall, a predicted approximate ten micron shift did occur, though the middle undulations may require further investigation.



Figure S6: Thickness measurements, though slightly variable, showed a standard deviation of 0.0007 mm



Figure S7: The distance measurements from the two sensors, with a standard deviation of 0.119 mm each, are highly variable when compared to the combined thickness output



Figure S8: Error resulting from having a single analog to digital converter. The spacing between arrows depend on the speed a sample passes through the laser caliper







Figure S10: the optical micrograph of a HE5050 cathode showing the defect