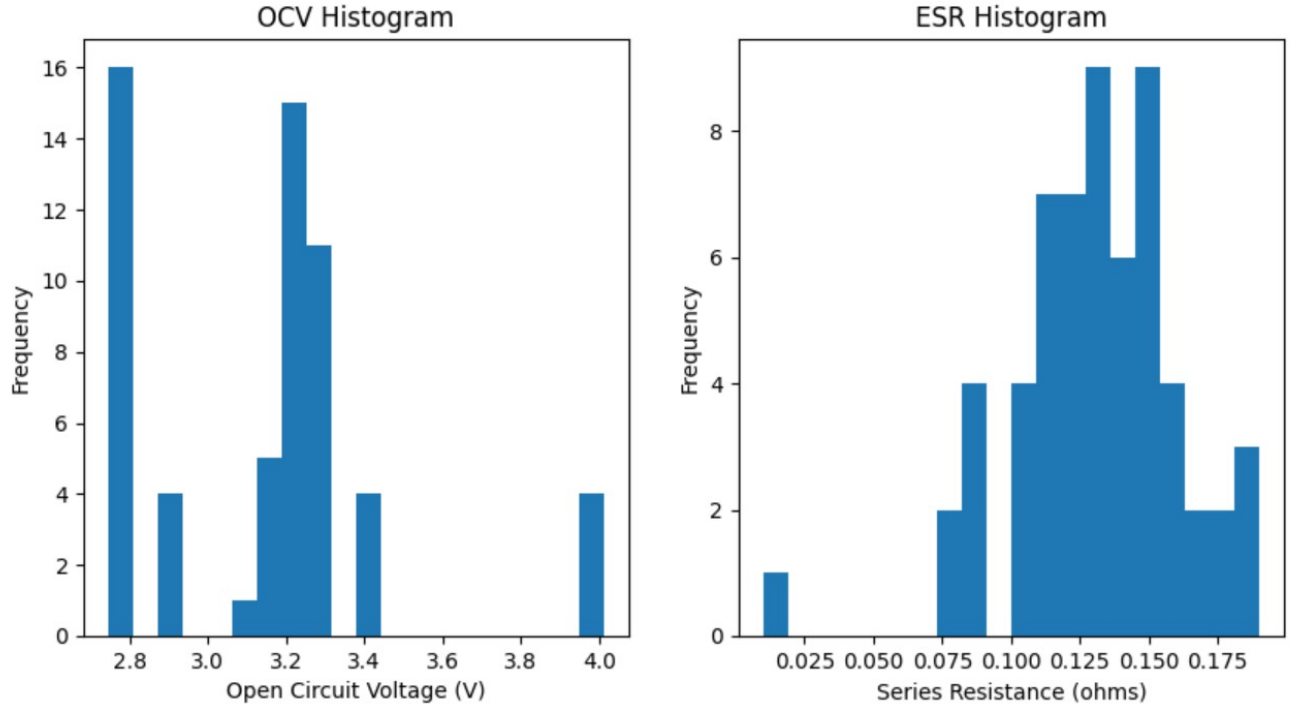
Test Battery Cell Statistics (5/11/2023)

Purpose: The 18650 cells that are used for the gasoline prototype are harvested from plastic shells that were for use in an unknown device. Given this, the quality of these cells is questionable. Properties of each cell are measured and analyzed in an attempt to find the health of the pack in general and to bin out poorly performing cells. This is all done before test battery pack charging is attempted with the generator.

Description: The open circuit voltage (OCV) and loaded voltage of each cell is measured and recorded. A rough estimate of the cell equivalent series resistance (ESR) can then be calculated using ohms law. The distributions for the ESR and OCV are plotted with a histogram using Python.

Results:



Notes: The loaded voltage of each cell did not reach a constant value within the several seconds needed to take the measurement.

Analysis: None of the cell open circuit voltages seem to be out of the general allowed operating range for a lithium-ion cell. The ESR of most of the cells do seem quite high, but this could be related to the rough measurement method. The highest ESR cells should be binned out of the test pack.