The cooling plate is simulated in Star-CCM+. There are 3 regions: the fluid, the cooling plate and the heat transfer pad. The assumption is an input temperature of 38°C at a mass flow rate of 0.125 kg/s. The simulation is performed in a symmetry setup. The outlet of the fluid is a pressure outlet. The cells are impressed on predetermined areas on the heat transfer pad via a heat source of 500W. The inlet of the fluid is located at the bottom right, the outlet of the fluid at the top right.

The hottest cell is located at the top left, as shown in the picture. The hottest cell reaches a temperature of 41.3°C. The reason why the hottest point is at this position is that the fluid is already heated by the previous cells, the flow velocity is very low as the flow is against gravity and only a small area of the cell surface is in direct contact with the fluid.

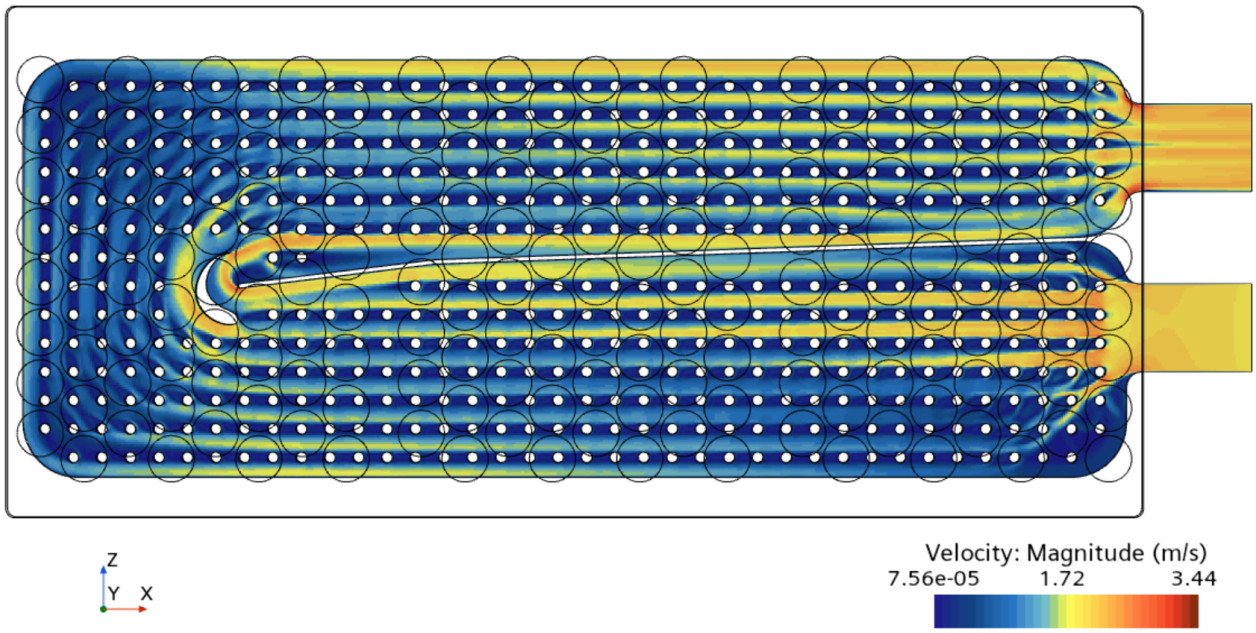

Figure 1: Water Flow Simulation of the Cooling Plate

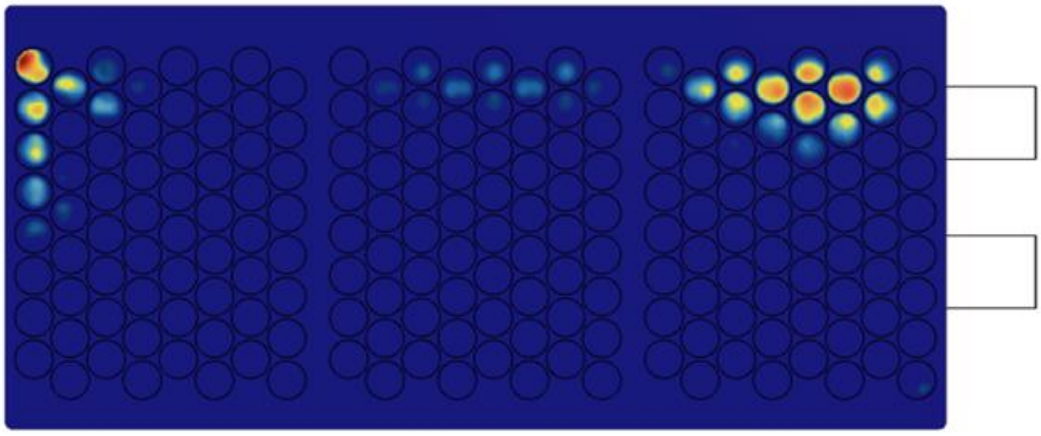

Figure 2: Heatmap of the Cooling Plate

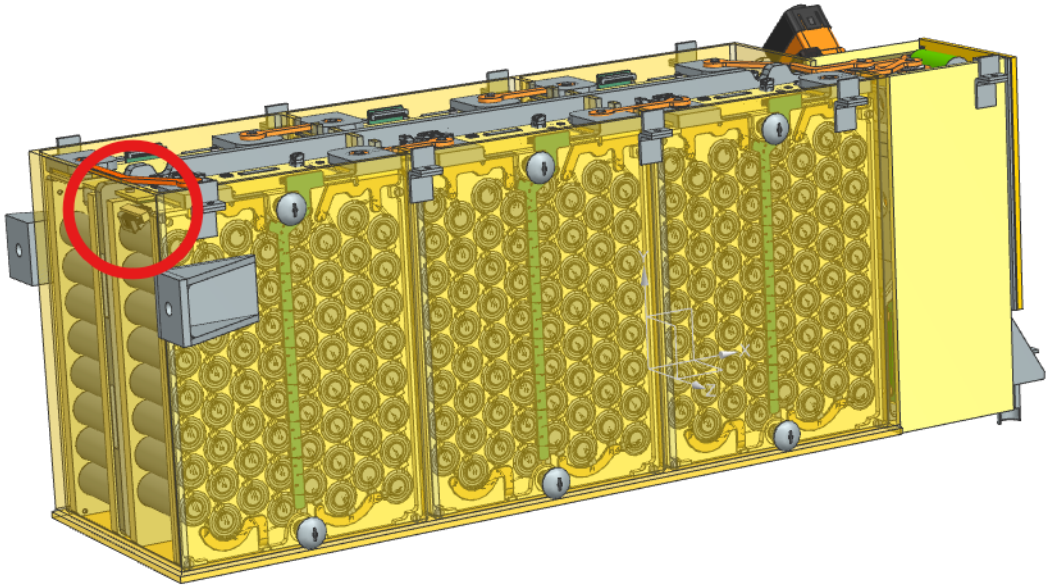

Figure 3: iButton Accumulator View

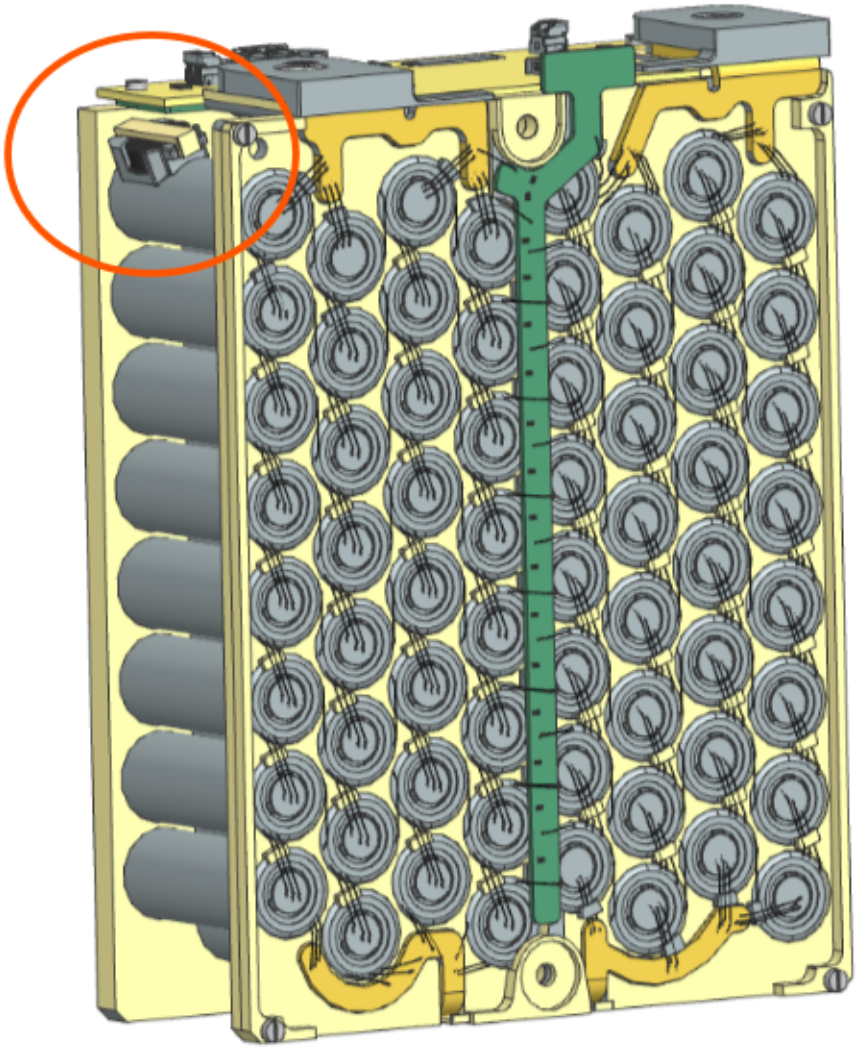

Figure 4: iButton Accumulator View

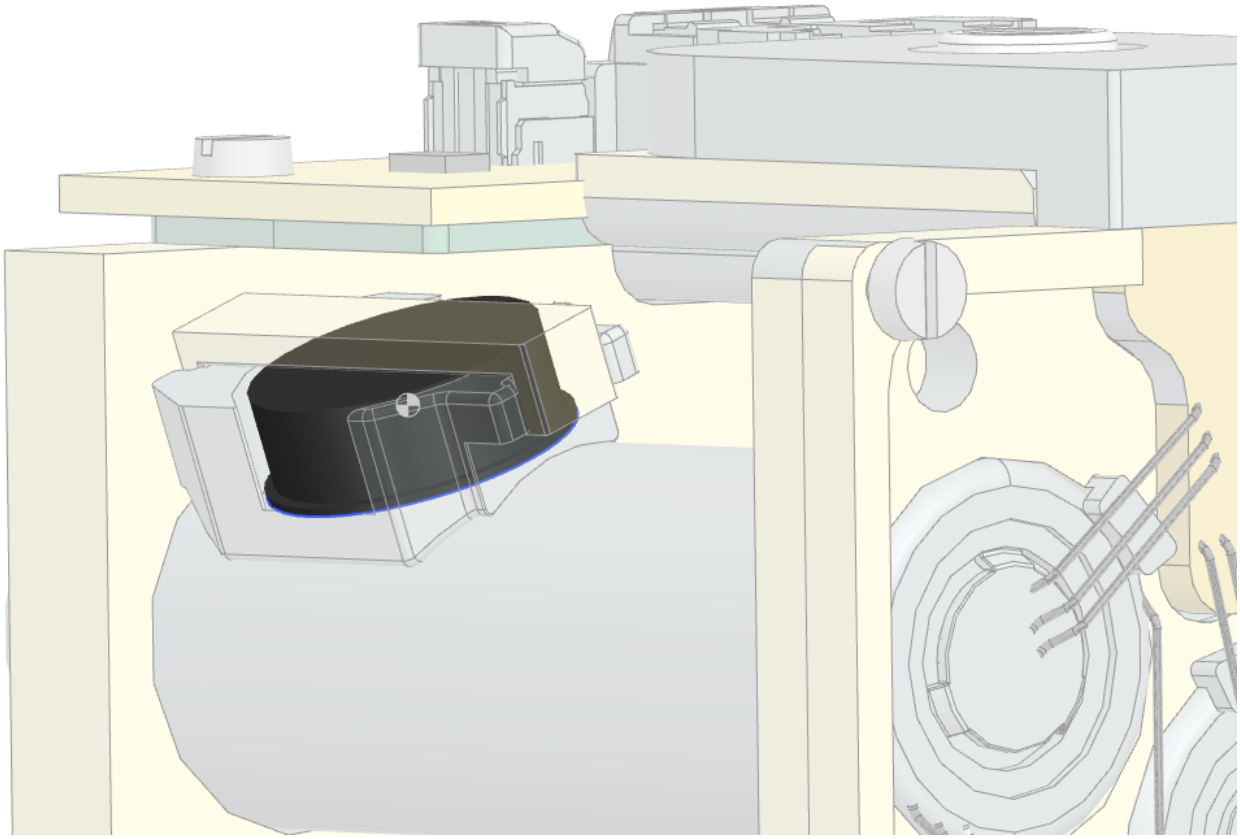

Figure 5: iButton Cell View