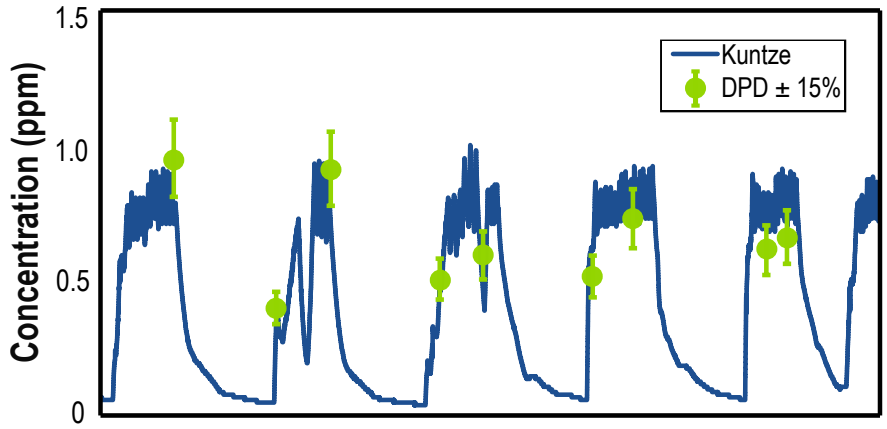
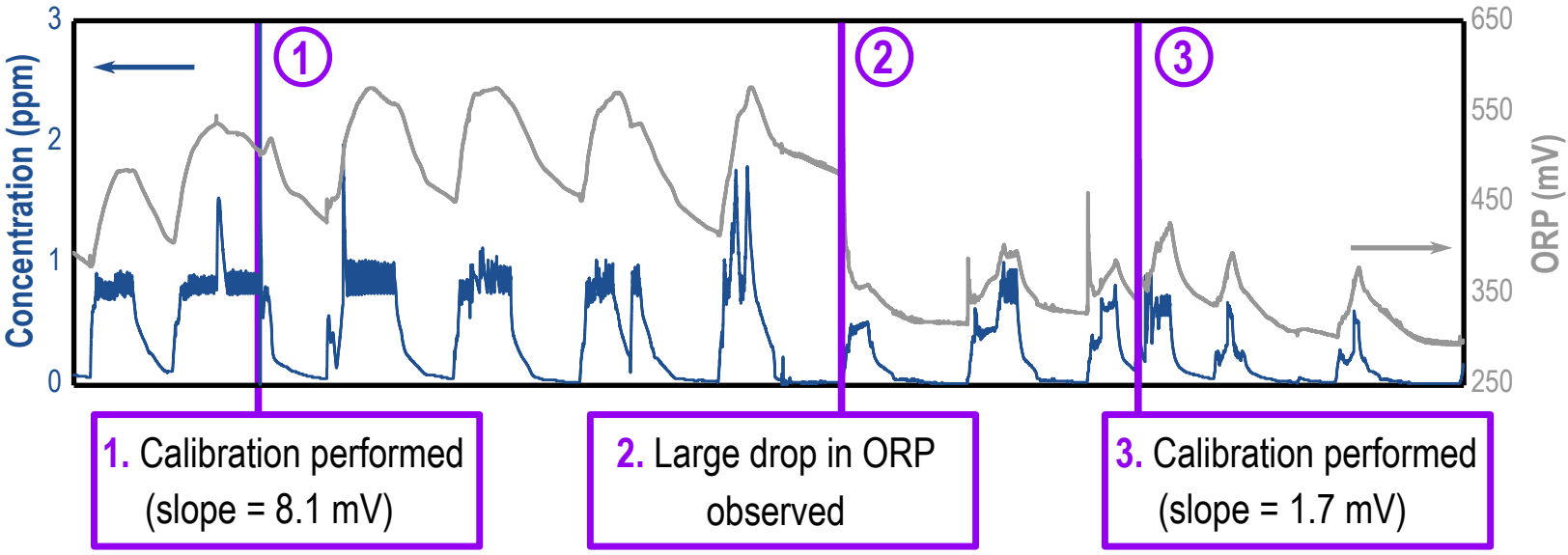
Industry Case Study: Cooling Tower Application

Background Information

> This analyzer was installed on a cooling tower using free chlorine and activated bromine chemistry.
> The operators noticed that they were having a hard time meeting their minimum target oxidant residual.
> Around the same time, the operators also noticed a large drop in their ORP measurement.
> Using Cloud Connect® and input from the tower operators, the Kuntze support team looked further into the issue.



> The plot to the left shows the Kuntze analyzer signal (blue line) overlaid with the DPDs (green circles) taken by the operators.
> The DPDs match up well with the Kuntze analyzer signal, showing the Krypton® Multi system is capable of accurately measuring oxidant in this application.



1. Calibration performed (slope = 8.1 mV)

2. Large drop in ORP observed

3. Calibration performed (slope = 1.7 mV)

> The above plot shows the cooling tower's oxidant concentration (blue line) and the ORP measurement (grey line).
1. This calibration slope of 8.1 mV provided the "baseline" for how the sensor responded in the cooling tower.
2. This was the point where the operators had difficulties maintaining their oxidant residual. There was also a large drop in the ORP measurement at this time, which indicated that something in the tower's chemistry had changed.
3. The calibration performed at this point had a much lower slope (1.7 mV) compared to the calibration at point 1.
> By interpreting the differences in the calibration slopes and the large drop in ORP, the Kuntze support team advised the tower operators to look for any external anomalies which could have changed the tower's chemistry.
> Further investigation showed that the corrosion inhibitor sensor had failed, resulting in a massive inhibitor overdose.
>> The corrosion inhibitor consumed the available oxidant, which is why the concentration was lower than expected