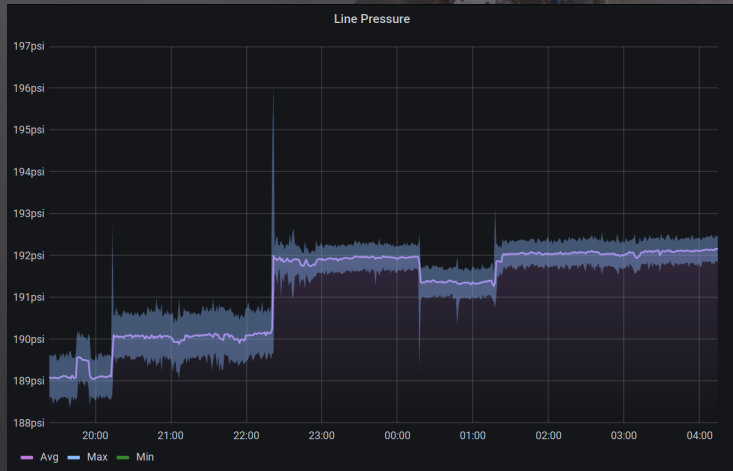Case Study:
Zone Metering and PRV Chamber Monitoring

End User:
Lake Forrest Park Water District
Seattle, WA USA

System Integrator:
Mundall Engineering and Consulting
Sumas, WA USA

Background:

Due to the large elevation differences throughout the service area, the water district contains several different pressure zones maintained by pressure reducing valves enclosed in vaults buried below the city; the district needed a way to monitor these vaults for correct operation.

Challenges:

Low Power
When adding telemetry to its vaults, the district was faced with the challenge of running the telemetry equipment without utility power; this is because the cost to bring in utility power to the underground vaults below the city would have ruled out the project entirely.

While traditional SCADA equipment required too much power to run off-grid, the district was able to run the Flexs Q series PLC from a small inline microturbine that operated off the pressure differential between each pressure zone.

High Speed Measurement
The district wanted a way to track transient pressure events such as water hammers, dips and spikes but in order to catch these events they needed a device with a very high measurement rate.

While specialized input cards exist for high end PLC's the power consumption of these cards was too high, thankfully the Flexs Q5 could measure and process signals at up to 64 thousand times per second which meant that it wouldn't miss any events.

Currently, the FlexSCADA PLC monitors and logs a number of parameters including

Water Flow
PRV Upstream and Downstream Pressure
Ambient and Water Temperature
Chamber Flood Detection
Intrusion Detection
Transient Events (Pressure spikes and dips, water hammers, etc)

Total power consumption including sensors for each telemetry station was recorded at less than 0.7 watts!