Query 4

Query overview
The goal of this query is to employ a variety of visualization strategies, introduced in Tuesday's lecture, to enhance your analysis of your assigned systems.

Due Date
1:15 pm Thursday, May 3. Please submit your analysis through the class wiki page.

What to submit: Building Level and System Analysis
Continue to provide screenshots and annotations within the wiki.

Include the following:

1. (1 point) Select system points for analysis given an assigned system, given the system description in the Sequence of Operations and reference to the SEE IT systems. The task is to identify the SEE IT specific point numbers that refer to parameters mentioned in the Sequence of Operations.
2. (2 points) Synthesize the functional intent and data context given the relevant content of the Sequence of Operations manual, the Altitude system view of your subsystem and SEE IT plots. Specifically, quote the applicable functional description in the Sequence of Operations and show one or two if-then rules that operationalizes at least part of the full intent described in the Sequence of Operations.
   a. Label clauses in the if and then segments of the rule for later use.
3. (1 points) Annotate the Altitude systems diagram and your functional rule(s) to show the cross references.
4. (2 points) Access and graph the data for the points you identified in (1) above.
   a. Show at least four weeks of data;
   b. Show a smaller interval of interest;
   c. Illustrate use of at least two graph types, i.e., at least two of time series, scatter, and carpet;
   d. Annotate the graphs to explain their significant features and any implications.
   Annotate
      i. **Functional Areas:** any predominant pattern(s) that align with the functional intent, and describe the meaning of the pattern(s).
      ii. **Problem Areas:** any anomalies in data or patterns that you can identify. Briefly describe what they mean, or could mean.
5. (2 points) Assess data conformance to functional intent.
   a. Assess the conformance of measured point values to your assumed normal point value ranges. Try to annotate any yellow or red status anomalies using a simple convention that is clear and, hopefully, not too cluttered.
b. Consider different annotation conventions for different plot types and different time horizons.

6. (2 points) In Excel or using another tool, apply your rule(s) to the exported SEE IT data and explain significant features and implications for a building operator of your findings.
   a. Consider:
      i. A month of data at 60 minute or less sampling period;
      ii. A shorter interval at a shorter sampling period.
   b. Using manual or automatically generated annotation, identify the assessed state of individual points and the system at each sampled time period.

7. (1 point) Identify obvious potential causes. Consider your energy audit and those of other students as well as your engineering analysis of the intended and actual behavior of your points and system.

8. (1 point) Document and discuss your findings for a building operator and your successor students.
   a. Suggest any hypotheses that you or someone else might explore to clarify system performance and causes of any assessed abnormalities.
   b. Include a process workflow to describe your data analysis process. Give just enough detail in the workflow and its annotations that a future student might be able to replicate your process.

9. (1 point) ORID analysis. Please briefly summarize
   - Objective: What facts did you see this week? What factual statements can you make based on the data?
   - Reflective: What surprised you? What encouraged or discouraged you?
   - Interpretive: What sense do you make of what you did this week?
   - Decisional: What are our proposed next steps? What is your action plan for next steps?