Problems and troubleshooting

Common Problems and Troubleshooting

Problems with tubing and connectors

When the connections of tubes are leaking, you should check the tubes to make sure they are fully plugged into the connectors-- the tube can not be easily pulled out if it is fully inserted. To ensure no leaking, you need to verify each connection is robust before beginning the experiment. If there is a leak at the top of the settling column, stop any experiment and drain the column. You may need to remove the turbidimeter to adjust the connection.

Problems with apparatus

1. If the apparatus is not on when you turn on the switch, that is because the power strip sometimes trips the GFI protection. When you meet this problem, press the GFI reset button which is on the outlet behind the water tank.

2. If raw water pump is running at backwash, then press the START/STOP button on the raw water pump.

3. If influent turbidity is too high (meaning it is at least 10 NTU more than the target turbidity max), use a 1L plastic container to scoop out some water from the raw water bucket. This water will automatically be replaced by clean tap water to keep the volume constant and you should see the turbidity go down.

4. If the alum pump is not running at loading state, first ask yourself if this is the first cycle. If it is the first cycle, then this is normal because the alum dose is set to be zero at the first replication. If it's not the first cycle, go to settling state and then click loading state to see if the coagulant dose incrementally increases. If there is an increase, then the valve (between the rapid mixer and raw water pump) may be mistakenly closed. If it is not, then check if the set points are set correctly by locating the set points at rule editor to ensure the variables match the code. Process Controller Set Points used to control the experimental apparatus.

5. If water is filling up the flow accumulator, check the cap of the accumulator to make sure it's tight.

6. If residual turbidity is not decreasing as coagulant dose increases, the coagulant dose may be too low due to one of the following: 1) inaccurate running rate of coagulant pump; 2) the air inside the coagulant pump tube; 3) water trapped in the coagulant pump tubes; 4) malfunctioning of valves that connect with the coagulant pump; or 5) the loading duration is too short (not taking into account the wrong set-up on Process Controller). If the pumps were recently calibrated, the first reason can be ruled out. If the residual turbidity does not significantly decrease after a residence time, the second cause can be eliminated. You can check for water trapped in the coagulant pump tubes by opening the tube connection between the coagulant pump and the rapid mix unit. If there is water present, it may be due to high pressure during backwash.

Problems with Process Controller

If you turn on all the switches, and none of the green indicator lights on Process Controller are on, that means you are not connecting with the right server or the server may have crashed. Check the main server to make sure it is functioning properly and check the data server on Process Controller (should be “aguadata.cee.Cornell.edu”). When you're operating from one state, sometimes nothing is shown on the “current state” and the “state list” is not shown at “rules and states” at the next state. When this happens you need to reload the method file and save it in your experiment folder.

Problems with Data Processor

1. If you're having trouble loading the data from Metafile of Data Processor, first you need to check the directory to make sure it's on the right track to locate the Metafile (an excel spreadsheet in the “data processor” folder). Second check all of the information for a certain MetID (the one retrieves your experiment). Pay attention to the dates and duration (if your experiments span 2 days, you need to put in the both dates and a duration of 2).

2. Sometimes the graph on the MathCAD file of Date Processor is not shown due to memory loss, then you may have to restart the computer to reload the data.

3. Sometimes the results of the first cycle of the experiments didn't show up on Data Processor. You need to manually replace "Operator changed the state" with "State Time" for backwash state on the statelog excel file.