

## MBR Air Scour Blowers Operation

The MBR air scour blowers provide air to the MBR basins to provide scouring of the membranes. The system operates with two duty blowers and one standby blower.

## MBR Process Control Screens

The MBR air scour blowers are controlled through SCADA from the MBR Plant Overview screen. The access to these screens is discussed in the following sections.

### MBR Process Main Screen

The automatic operation of the MBR process is controlled through the SCADA system on the membrane main screen (**Figure 6.5.3.4-1**). The screen is accessed by clicking on the **MBR button <1>** on the top of the screen. The MBR air scour blowers are accessed by selecting the **air scour blowers icon <2>**.

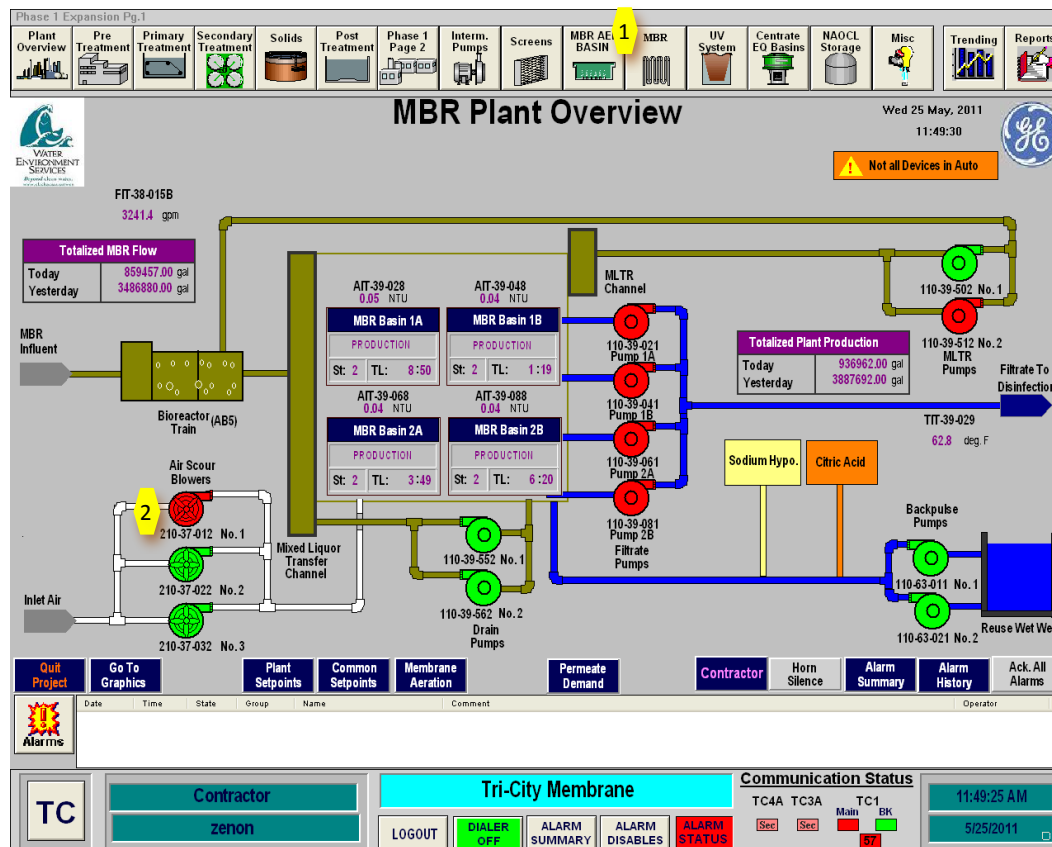


Figure 6.5.3.4-1 – Membrane System Control Panel

### MBR Air Scour Blower Controls

The MBR air scour blower controls are accessed through the MBR Air Scour Blower screen as shown in **Figure 6.5.3.4-2**. This screen provides access to each air scour blower by clicking on the **blower icon <3>**. If the blower icon is red, the blower is on and off if it is green. Next to each blower icon is the operating status of each blower. If the blower is operating, the status shows the operating horsepower, the discharge pressure, operating temperature, rpm and air flow rate. The blower priority and runtime is shown where the discharge piping meets on the flow diagram. The blower priority is the sequence in which the blowers will come on.

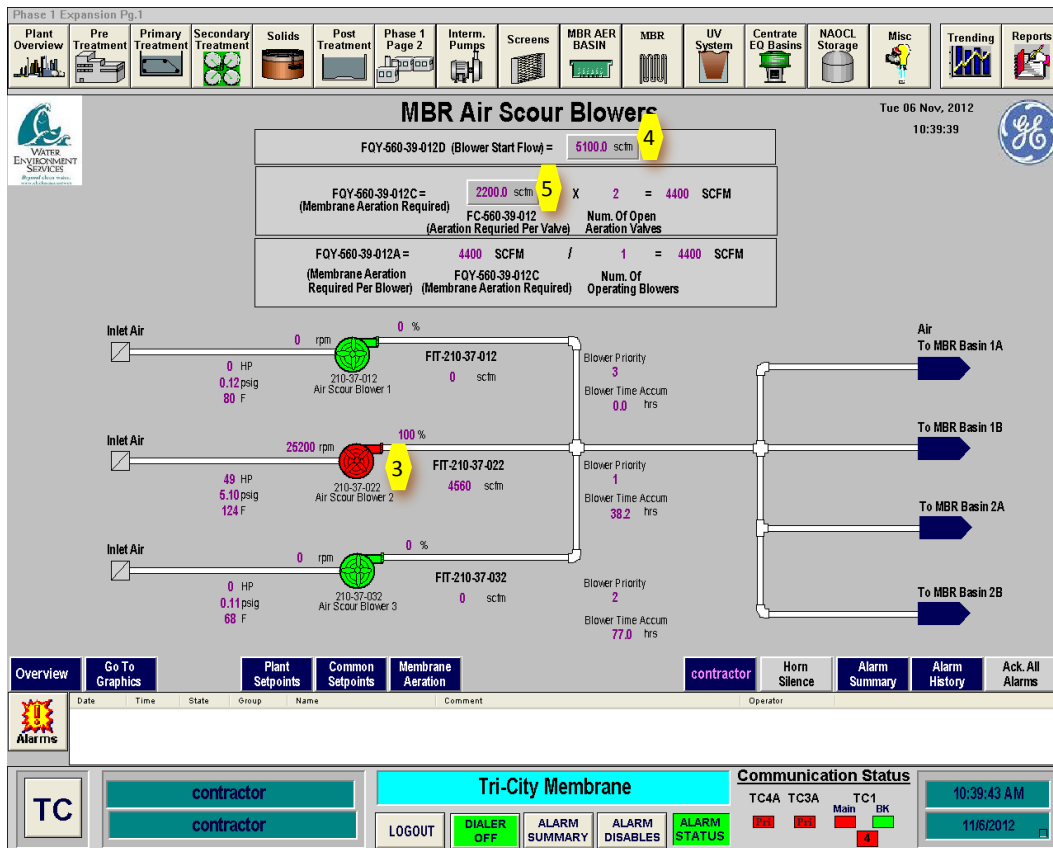


Figure 6.5.3.4-2 – MBR Air Scour Blower Control Screen

This screen also provides two setpoint input boxes. The **Blower Start Flow Box <4>** allows for the flow that the blowers go on startup. Once they reach this flow and stabilize, they will then move to setpoint air flow. The **Aeration Required Per Valve <5>** is the setpoint for the airflow rate to each open valve. The number of open valves is dependent on the aeration mode. Each aeration mode: constant flow, 10/10 and 10/30 aeration each require a different number of open valves. Therefore, the airflow setpoint for the blowers will be the number of open valves, dependent on the aeration mode, times the airflow setpoint per valve.

Clicking on the **blower icon <3>** will give the membrane aeration blower control popup box as shown in **Figure 6.5.3.4-3**. This control box allows the operator to set the blower in AUTO or START or STOP the blower manually. The normal mode for each of the blowers is **AUTO <6>**. For the blower to operate in AUTO, the blower must be in REMOTE on the blower control panel located on the face of each air scour blower.

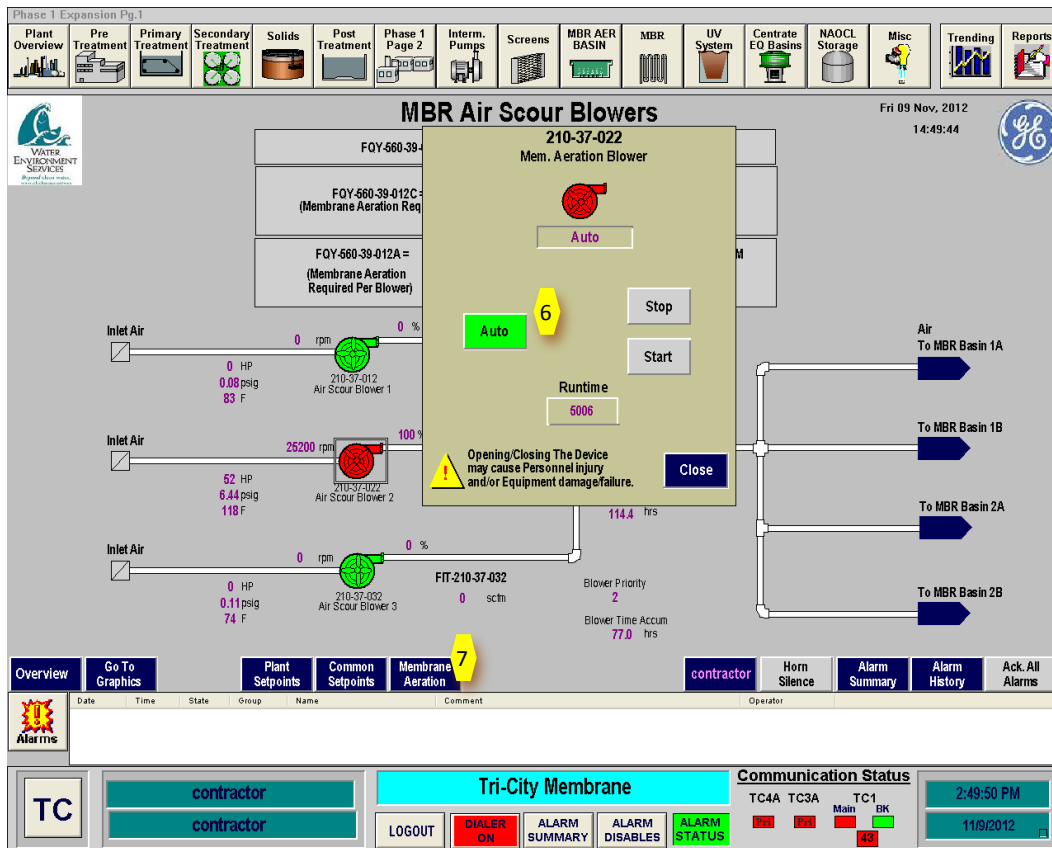


Figure 6.5.3.4-3 –MBR Air Scour Blower Popup Box

### MBR Air Scour Blower Controller Screen

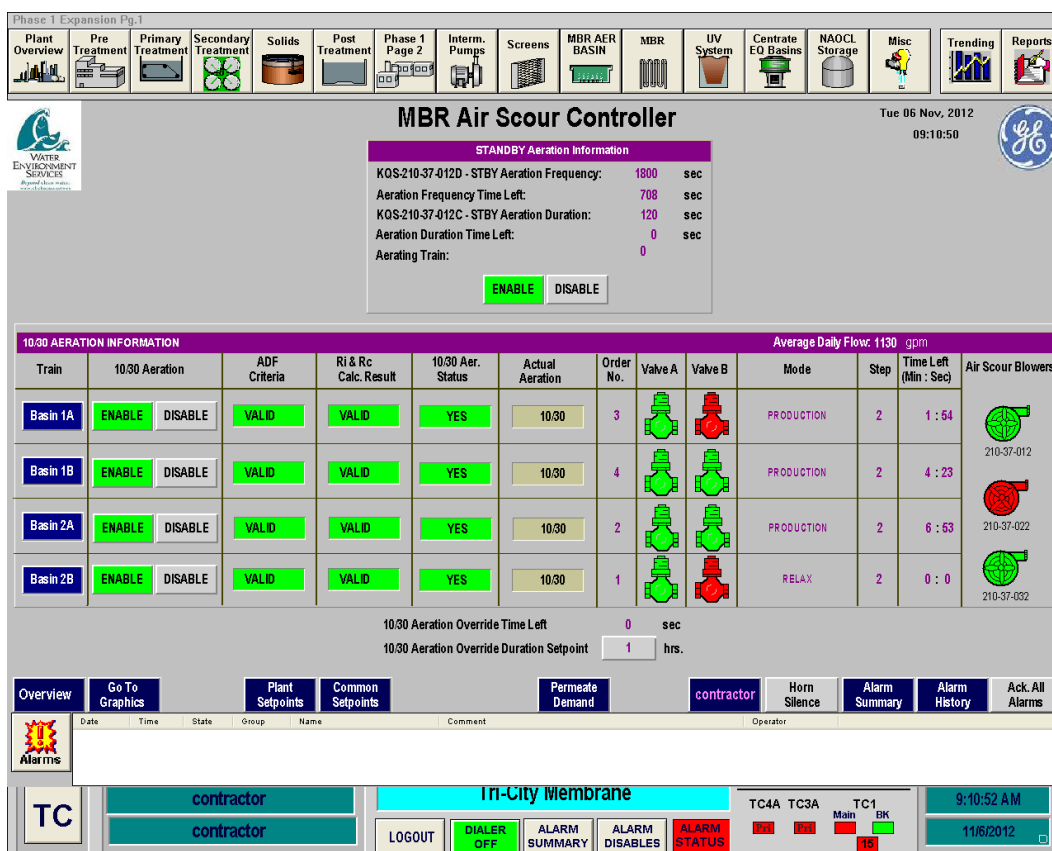
Clicking on the **Membrane Aeration** button <7> located on the bottom of the MBR Plant Overview screen or the MBR Air Scour Blower screen (Figure 6.5.3.4-3) and each of the MBR Basin screens goes to the MBR Air Scour Controller screen shown in Figure 6.5.3.1-11. This screen provides status and control for the MBR air scour blowers.

The operating blowers and open valves are highlighted in red. The closed valves and blowers that are not on are shown in green. If a blower is failed, it will be shown as yellow.

There are a number of air scour control variables that are displayed on this screen for each of the basins. These are:

- **10/30 Aeration** – The operator can enable or disable the 10/30 aeration mode for a specific basin by selecting the 10/30 aeration button. The mode is shown with the button as a green color.
- **ADF Criteria** – The ADF criteria is based on the average daily flow setpoint shown on the purple bar above the 10/30 Aeration Information. If the flow to a basin exceeds this flow rate, the 10/30 aeration mode will become invalid and the basin will go to constant aeration.
- **Ri & RC Calc Result** – This is a calculation of the rate the TMP changes during a production cycle. If this rate is too high, it signifies that the membranes are plugging and the result will change to invalid with the basin going to constant aeration.
- **10/30 Aeration Status** – This value will show Yes when all of the variables are appropriate for 10/30 aeration.

- **Actual Aeration** – This box shows that actual mode of aeration that the basin is operating.
- **Order No** – This box shows the order in which the basin is in within the production cycle.
- **Mode** – This box shows the operating mode of the basin. The modes can be production, relax, off, recovery clean or maintenance clean.
- **Step** – This box shows the step of the production cycle, recovery clean or maintenance clean that the basin is in.
- **Time Left** – This box shows the time left in the step the basin is in.



## MBR Air Scour Blower Startup Sequence

Step	Action	Location
	Confirm Equipment is in Off	
1	Open the Breaker on the MCC for each MBR Air Scour Blower	MBR Electrical Room
2	Open the Breaker in each MBR Air Scour blower	MBR Blower

3	Open Air Scour Blower is OFF on SCADA	MBR Air Scour Blower Screen
	Ready Equipment	
NOTE	It is assumed that the MBR system is OFF	
1	Close the Breaker on the MCC for each MBR Air Scour Blower	MBR Electrical Room
2	Close the Breaker in each MBR Air Scour blower	MBR Blower
3	Set each MBR Air Scour Blower to REMOTE on the each blowers control panel	MBR Blower Control Panel
4	Place the Air Scour Blower in AUTO on SCADA	MBR Air Scour Blower Screen