Aeration Blower Controls

Aeration Blowers are primarily used in wastewater and food processing plants to introduce and manage oxygen. It is also the largest consumer of plant energy. A complete system usually consists of individual controllers for each blower with a master controller to integrate the individual process control and blower control panels. Other specialized controllers are provided to meet specific process needs, such as controlling a group of aeration tanks to maintain dissolved oxygen concentration. Systems can include airflow transmitters, bearing vibration and temperature sensors, analytic instruments, control valves, and VFDs.

General Information

The Aeration Control Panel works in conjunction with the Blower motor starters and transformers located in a (MCC) Motor Control Center. The task of these Blowers is to charge the sewage water with air to promote the oxygenation of the sewage.

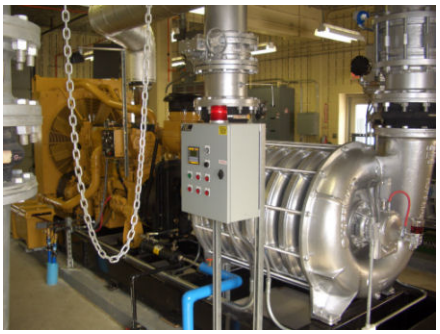
Any Blower can be started by pushing its start button. The ammeters indicate the amount of current being drawn by the Blower motors; this instrument is also calibrated to indicate the cubic feet of air (CFM) moved per minute. When the water level drops (no restriction of air flow), the Blower current increases to the surge level, a panel surge light comes on indicating this condition. Each Blower has its own running light and a failure light for indicating these conditions. Each Blower is equipped with a vibration sensor.

Excessive vibration will turn off the Blower and a vibration light will signal the condition. Reset buttons are provided to restart the Blower which has been shut down due to excessive vibration. The elapsed time meters keep a perpetual record of Blower usage, this enables operating personnel to monitor the maintenance and wear of the blowers.

Fox Lake

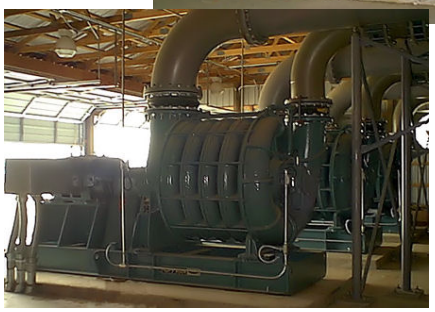
The pictorial view is an Aeration Blower located in Fox Lake IL and the Control Panel includes:

- AMMETER: scaled in amperes, calibrated in CFM, displayed on the Operator Interface (HMI)
- SURGE LIGHT: indicates low air demand
- ELAPSED TIME METERS: enables pump usage to be balanced
- RUN/FAIL LIGHTS: indicates status of blowers
- ON/OFF SWITCHES: controls operation of the blowers
- VIBRATION: excessive blower vibration
- ALARM RESET



Timberville
TLC provides a complete system to operate three large 700HP Blower Motors and all Control Panels to operate the System.
The System is comprised of;

- Service Switch Gear and Distribution Panels
- Three Reduced Voltage Starters
- Three Surge Protection Panels
- Three Switching panels
- One PLC Panel to sequence operation in maintaining set dissolved oxygen (DO) settings



Engineering Specifications

The Aeration Blower Control Panel shall be built by TLC Controls Inc., Mt. Prospect, IL 60056, and shall include the following:

The controls shall be enclosed in a NEMA 12 Cabinet and shall operate at 110 Volts AC.
Each Blower shall have its own start/stop button. Individual Blower ammeters indicate the amount of current being drawn by the individual Blower motors; this instrument shall also be calibrated to indicate the cubic feet of air (CFM) being moved by that particular Blower.
Each Blower shall be provided with surge shutdown and time delays for restart. A running light shall indicate which Blowers are in operation; a fail light and timer shall be provided to show that a fault condition exists. Reset buttons shall be provided to reset the Blower, which has been shut down due to surge current. Protection controls shall be designed so that when volumetric demand of the Blower is increased to the surge volume, the Blower shall shutdown. Each Blower shall have a vibration sensor to monitor the operating condition; excessive vibration shuts down the Blower. A vibration light signals when this condition exists.
Elapsed time meters for each Blower shall keep a perpetual record of Blower usage for monitoring maintenance and provide equal wear.

A terminal strip shall be provided for all external-wiring connections in the control panel for monitoring the following:

- Low oil pressure for each blower
- Power failure
- Motor running
- Monitor pressure switches
- Surge shutdown
- Vibration shutdown
- Starter failure (motor)
- Overload signal indicated

This Specification refers to applications where blower motor starters as well as the control transformers are installed in a Control Center (MCC) - Remote from this panel.