GREENHECK
Building Value in Air.

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Greenheck Kitchen Controls

Provide Greenheck Kitchen Controls as shown on plans and in accordance with the following specification:

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The Greenheck Kitchen Control system shall be a UL listed outlet center which shall standardly consist of a NEMA-1 Stainless Steel Enclosure within a Stainless Steel Enclosure Panel, Printed Circuit Board (PCB), Full Color Touchscreen User Interface, hood, audible alarm, sensor(s) and Variable Frequency Drive(s) (VFD) or Motor Starters, with options for room temperature sensors and fan control through relays or 0-10 VDC signals. The PCB shall be capable of controlling multiple exhaust and supply fans via VFDs or analog signals. The control system shall utilize a combined control panel and hood light power connection with options for 110-120V / 50-60Hz / 1Ph input voltage or 220-240V / 50-60Hz / 1Ph input voltage, to be protected by a 15 Amp breaker. The control system shall be equipped with either Modbus or BACnet MSTP Building Management interfacing, and also be able to control up to 8 different ECM fans, alongside a 3-phase makeup air unit, without the need for added expansion boards or controllers. Standard Kitchen Control enclosure fitted with handled, quarter-turn, slotted latched doors, or optional prison package configuration with handled, tamper-proof quarter turn latched doors.

The user interface shall be a full color touch screen with fan and light control, gas valve reset (optional), and balancing interfacing for proper kitchen fan balancing. The touchscreen shall have the capability to simultaneously control all fans and lights connected to the control panel with a single button. The touch screen shall be configured to push fit into a junction box, with no visible/exposed screws.

- In the event of the failure consisting of, but not limited to temperature sensor(s), VFD(s) and fire, the touch screen will automatically go to a fault page, which will describe the current fault. The fault will remain until the failure is corrected.
- The touchscreen shall be lighted, full color, and utilize simple plug and play connections. Touchscreen shall be mounted on the exhaust hood, a utility cabinet on the hood or wall, or shipped loose for remote mounting. If touchscreen is shipped loose for remote mounting, it shall be provided alongside optional 50ft or 100ft plug and play CAT5E cable for connection to main control PCB. All touchscreen mounting options will set the full color touchscreen centered on a stainless-steel faceplate, with no visible screws or fasteners on the faceplate,

Variable Volume System Operation (GKC-DCV):

The variable volume (DCV: Demand Control Ventilation) Kitchen Controls shall utilize resistive type temperature sensors that are mounted in the capture tank of the hood to monitor exhaust air temperatures, and an optional room temperature sensor, shipped loose, to be installed to detect ambient air temperatures in the kitchen space. Temperature sensors shall be made of stainless steel and shall be installed in a UL approved coupling.

The system shall be capable of serving as an IMC compliant auto start-up control to automatically start the fans during cooking operations. Auto start-up operation is controlled by the measurement of an excess offset temperature between the exhaust temperature caused by cooking and the ambient room temperature in the kitchen (default offset temperature: 10°F, adjustable). If not equipped with a room temperature sensor, auto start-up operation shall be controlled by the measurement of an excess offset temperature between the exhaust temperature caused by cooking and the constant, preset room temperature (default preset room temperature set point: 75°F, adjustable. Default offset temperature: 10°F, adjustable. Default auto start-up initiates at 85°F as measured by the hood temperature sensor(s)). If any fan(s) are activated through the auto start-up operation, the fan(s) will not shut off automatically until the measured hood temperature(s) remain [temp interlock hysteresis]°F below the room temperature (preset or actual) for the length of the hysteresis timer (default temp interlock hysteresis: 5°F, adjustable. Default hysteresis timer: 5 minutes).

After fan initiation is triggered, either manually, through the touchscreen, or through the auto start-up operation, the controller shall modulate the speed of the fans via VFD(s) or analog signal(s), from maximum speed down to a minimum speed percentage (minimum speed to be determined by building test and balance, minimum speed is factory defaulted to 50%). After fan initiation is triggered, the initial activation temperature is recorded as the room temperature at activation plus the offset temperature (default offset temperature: 10°F, adjustable). If not equipped with a room temperature sensor, the activation temperature shall be recorded as the preset room temperature plus the offset temperature (default preset room temperature set point: 75°F, adjustable. Default offset temperature: 10°F, adjustable. Default activation temperature shall be 85°F as measured by the hood temperature sensor(s)). Speed modulation of the fans shall be controlled through the difference between activation temperature and the highest current temperature recorded at the hood temperature sensor(s). Minimum fan speed shall occur when the current hood temperature equals the activation temperature, and maximum fan speed shall occur when the current hood temperature is equal to or exceeds the activation temperature plus the modulation temp range (modulation temp range default: 30°F, adjustable). Speed control shall be controlled through VFD(s) or analog signal(s) shall allow modulation of the fan speeds. The controller must be compatible with modulating turndown of up to 50% of maximum fan speed. Upon pressing the “Max Fan” button, exhaust fan speeds shall go to maximum speed for 10 minutes (adjustable), or until the “Max Fan” button is pressed again, which shall return the system to full temperature control.

If provided, variable frequency drives shall be Yaskawa brand (or equivalent) mounted in the control enclosure, a utility cabinet, or at the exhaust/supply fan itself. If variable frequency drives are mounted within the control enclosure, enclosure shall be equipped with a cooling fan and louver to facilitate ventilation for the variable frequency drives. Variable drives shall provide thermal overload protection to fans and eliminate the need for magnetic starters for 3 phase motors. To ensure proper building pressurization, the supply fans shall respond to changes in the exhaust fans speeds. The speed of the associated supply fan(s) is either determined by the weighted average percent speed of that supply fan(s) associated exhaust fan(s) (default) or is controlled by maintaining the original design exhaust/supply CFM differential.

Additional Information:

In a fire condition, the control panel shall be capable of forcing the exhaust to maximum speed, shutdown of supply air, and shutdown of lights regardless of current fan speeds via integration with a fire system.

Optional features may include, but are not limited to:

- BACnet IP Building Management System Interface
- Fan Proving Options
    - Optional “Supply Only” proving; proving supply fan(s) are operational within a configurable time limit before exhaust fan(s) can operate
    - Optional “Exhaust and Supply” proving; supply must prove operation before exhaust can operate. After initial operation, both must prove operation within a time limit to keep all fans running.
- High Temperature Alarm
- Wash Interface
- Prison Package Configuration
    - Replaces exterior, visible screws with tamper proof screws and provides a keyed door latch.

Due to continuous research Greenheck reserves the right to change specifications without notice.