

## Energy Management System Specification

### Application:

The Energy Management System (EMS) is capable of saving energy during idle cooking periods. The EMS is designed to automatically reduce exhaust and supply airflow quantities, while ensuring hood performance is maintained. The EMS uses high and low speeds that shall be adjusted by variable frequency drives. A temperature switch in the exhaust duct shall control airflow set points and modulate the fans during cooking operation to maximize energy savings. A 100% airflow override button shall be supplied with an adjustable timer.

### Construction:

Controls shall be listed by ETL (UL 508A). The control interface shall include (1) fan switch, (1) hood light switch, (1) 100% airflow override push button and indicator lights. Indicator lights shall include a "power" light, a "fans on" light, and a "100% airflow override" light. The control interface shall be screen printed on stainless steel and be able to be installed on the face of the hood, face of the utility cabinet, or on the face of the control enclosure.

The control enclosure shall be NEMA 1 rated and listed for installation inside of the exhaust hood utility cabinet. The control enclosure may be constructed of stainless steel or painted steel.

Variable frequency drives shall allow full adjustment of minimum and maximum frequency set-point for proper kitchen balance. Drives shall contain motor thermal overload protection. Acceleration and deceleration times shall be fully adjustable. Drives are capable of controlling up to 20HP motor each.

Resistive Temperature Detector (RTD) shall be mounted in the exhaust hood riser(s). Temperature probe shall be constructed of Stainless Steel. System shall be factory pre-set to modulate fan speed between 85°F and 130°F for 600°F and 700°F cooking applications and between 85 °F and 90°F for 400°F cooking applications. Set-points shall be fully adjustable through the temperature controllers inside the control panel based on application needs.

The 100% override timer shall be adjustable from .05 seconds to 30 days. Timer is energized with 100% Airflow Override button. When button is depressed, time starts and fans go to high speed. Upon timeout, fans return to low speed or speed dictated by temperature sensors.

The panels include color coded wiring with as-built wiring diagrams, and spare terminals controlled by the fire system micro switch. The panel is factory pre-wired to shut down supply fans in a fire condition. There is also a factory pre-wire option to turn on the exhaust fans in a fire condition (if required).



## EMS Suggested Specifications

### **Adjustable Set Points**

Fully adjustable set points for Fan High Speed, Fan Low Speed, Fan Activation Temperature, Fan High Speed Temperature, and Ramping Rate. The use of Variable Frequency Drives allow for a 20% reduction in airflow at the appliance idle temperature.

### **Fully Modulating Digital Temperature Control**

Temperature control fully modulates fans between high and low speed set points based on data readings from the temperature sensor mounted in the exhaust hood riser. Digital temperature control is included for every exhaust fan being controlled by the EMS.

### **Temperature Sensor**

The temperature sensor used is a digital Resistance Temperature Detector (RTD). One sensor is installed per exhaust fan.

### **Factory Pre-wired**

The EMS comes with a factory pre-wired control panel capable of controlling up to four inverter duty motors. The control panel is factory pre-wired to shut off the supply fans in a fire condition. Other pre-wire options include exhaust on in fire condition, package unit air damper control with exhaust on in fire condition and water wash control. The control panel can be installed in an exhaust hood utility cabinet or wall mounted utility cabinet.

### **Control Interface**

The typical control interface shall include (1) fan switch, (1) hood light switch, (1) 100% airflow override push button, and indicator lights. Indicator lights shall include a "power" light, a "fans on" light, and a "100% airflow override" light. The control interface can be installed on the face of the hood, the face of the hood utility cabinet, or the face of a wall mounted utility cabinet.

## Typical Installation in Utility Cabinet

