

Select Air Systems

Energy Controlling Unit (ECU)

1. What is Select Air System's ECU?

The ECU is an energy management system for commercial kitchen hoods. In the past, the exhaust and supply air fans for kitchen hoods have operated at 100% of their airflow at all times. The airflows for hoods are designed to fully capture the hood during maximum cooking operations. During the times of minimum to moderate cooking loads, the fans operating at 100% are exhausting and replacing air at rates far in excess of what is needed. This represents a tremendous waste of energy in terms of the fan motors as well as the energy required of the HVAC to replace the exhausted air. The ECU detects the level of heat under the hood and reduces the speed of the exhaust and supply fans to match the current cooking load.

2. How does the ECU operate?

The ECU uses a combination of heat sensors, variable frequency drives (VFD's) and programmable logic controllers (PLC's) to reduce the energy cost of the kitchen hood. Heat sensors are placed in the hoods near the exhaust collars. These heat sensors send a signal back to a temperature transducer that displays on the ECU the current temperature under the hood. This transducer then sends a signal to the PLC to report the current hood temperature. The PLC compares that temperature to the set points that Select Air Systems pre-programs into the PLC. The PLC then sends a signal to both the exhaust and supply fan VFD's. The VFD's then control the output to the fans, speeding them up or slowing them down to match the current hood temperature level.

3. Additional Features

The ECU has additional features that offer benefits to the end user.

A. All ECU's come standard with a "Cleaning" mode feature. When in this mode, the exhaust fan comes on at full speed and the supply fan shuts down. This allows the hood to exhaust any odors or fumes that may build up under the hood during routine cleaning of the hood and cooking equipment.

B. The ECU is also programmed to Auto-Start the fans if the heat sensors detect a build up of heat under the hood when the system is shut-down. The ECU will also turn on the exhaust fan and shut down the supply fan during a fire alarm.

C. The hood lights are controlled through the ECU. During normal operation, the lights are powered through the ECU and turned on by a switch on the front cover. During a fire alarm, the ECU will either shut down the hood lights or turn them on to meet local codes.

D. The ECU comes with a "100% Air" button. After pressing this button, the VFD's will send the fans to full speed for a period of three minutes. This is used to clear out any temporary build up of smoke under the hood. After the three minutes, the VFD's will send the fans back to the speed required of the current heat load under the hood.

E. The ECU can be ordered with an optional "By-pass" feature. In this mode, the VFD's are by-passed and the fans run at full speed. This allows the fans to continue to be operated if a VFD were to fail in the field. This is of benefit to a high volume kitchen that can not wait for a service technician to service a VFD.

F. The ECU can be interfaced with a Building Management System (BMS). This will allow the BMS to remotely monitor the ECU and the kitchen hood fans.