

How the Commercial Steam Fuel Economizer works with Heat Timer

The Intellidyne Fuel Economizer is a computer that works in conjunction with Heat Timer boiler controls. The Fuel Economizer is wired in series with the Heat Timer control and delays Heat Timer's call for the burner to fire when a burn is not necessary. The cumulative impact of delayed starts is less burner run time which results in lower fuel consumption.

The Fuel Economizer utilizes a more sophisticated method of determining the heating needs of a building than that used by Heat Timer. A steam pressure sensor is installed on the boiler's header, and a temperature sensor is installed on the return condensate line at the boiler. The Dynamic Cycle Management of the Fuel Economizer utilizes this real time information to measure a building's heating needs three times per second. The rate of changes in the measurements taken enable the Fuel Economizer's patented computer algorithm to determine the heating needs of the building.

When Heat Timer calls for a cycle to begin and the Fuel Economizer agrees heat is needed, the Fuel Economizer will remove itself from the circuit and allow the Heat Timer to run through the cycle as if the Fuel Economizer were not there. If Heat Timer sends a signal to begin a cycle, and the Fuel Economizer determines it is not necessary, the Fuel Economizer will delay the start of the cycle. Once the Fuel Economizer has delayed the start for what it determines is the appropriate amount of time, it will return control to Heat Timer which will run through the cycle.

Heat Timer relies on the outdoor thermometer to determine if heat is required, and then how long the burn time should be during a timed heating cycle. This "single variable" approach does not take into consideration the other variables that affect the demand for heat. These other variables include such things as the number of occupants, the effect of wind, solar boosting, (cloudy days vs. sunny days), etc. The Fuel Economizer is not reliant upon outdoor temperature to determine heating needs. Instead, its computer measures the heat demand of the building (the BTU's absorbed by the building), which it determines based upon the real time changes in steam pressure and condensate temperature.

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The Fuel Economizer provides: 1) a more accurate method of determining a building's heating needs, and 2) a more sophisticated algorithm to determine if a heating cycle is necessary. The cumulative effect of delaying the start of a cycle results in less burner run time and lower fuel consumption.

For boilers that provide domestic hot water, an additional temperature sensor is attached to the hot water supply at the boiler, and a relay is used to interface with the Heat Timer. This relay enables the Fuel Economizer to differentiate between a heat call and hot water call.

When Heat Timer is not calling for heat, or when it is in summer mode, the Fuel Economizer will hold off a domestic hot water burn when it is unnecessary. The existing aquastat is an unsophisticated device that simply maintains a given temperature in the boiler. There are numerous times when the boiler may fire to maintain temperature, even though there is no demand for hot water. When the demand for hot water increases, such as in the morning, the Fuel Economizer's computer senses this increased demand and allows the boiler to fire as necessary.