

Central Heating control systems

Central heating systems convert the chemical energy into thermal energy in a furnace room and transfer that energy into heat, which is then delivered to numerous spaces within a building. It is important for these systems to have thermostat controls to adjust the temperature, which is achieved by an embedded system.

Characteristics

Reactive Systems

The Heating Control System is a reactive system because it is continuously interacting with the environment through Sensors and Thermostats without terminating and it is ready to respond to the interrupts immediately.

Real-time Systems.

It is a real time system because it must respond to the stimulus in a period of time.

It could be both Soft real-time or Hard real-time according to the place it is used. E.g. in houses or offices it is a Soft real-time system because it can respond after the deadline without any damage. But in the use case of factories or storehouses it is a Hard real-time system because it could damage the stuff like goods or foodstuffs in the storehouse.

Continuous/discrete in time/data:

This is Discrete time and continuous in data system. The data which is received from thermostats are in a specific parts of time. And the data is the temperature which could be any number.

Dependable System

The Heating system is connected to the control system and the Thermostats to have full functionality and characterized by the following attributes:

Reliability: The system works completely alright, with very few errors and the thermostats and control system help to increase the quality

Availability: the system and services are mostly available.

Safety: the systems do not pose unacceptable risks to the environment or the health of users.

Security: most of the control systems are local and can not be accessed from the outside but there are some ways to protect the system from intruders.