

An Intelligent Fuzzy Controller for Air-Condition with Zigbee Sensors

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Abstract-In recent years, the research and development of energy-saving control in air-condition system has become a hot spot with the advance of science and technology. In this paper, we proposed a fuzzy control mechanism for air-condition system, which combines the fuzzy control and multi-point sensing technology. When people feel cooler or hotter indoor, the air condition should promptly detect the temperature variance and switch the temperate between hot and cool smoothly. Therein an intelligent fuzzy controller for air-condition with Zigbee sensors is used to provide the comfort and energy-saving benefit. Although traditional control system (shorten as TCS) and the proposed fuzzy control system (named as FCS) have a common goal of temperature control, they differ from each other in temperature switch decision made during the each ambient temperature phases. Under the operating policy to limit the air-condition power on/off power frequency, the simulation result present the FCS energy-saving ratio is about 1.3 times of the TCS. And FCS with 5 minutes control cycle has the best energy-saving rate. It's 2.7 times of FCS with 10 minutes control cycle for summertime in Taiwan.

Index terms: Zigbee Sensor, Fuzzy Theory, Energy Saving.