A web-based green houses and livestock and poultry barns monitoring and control system

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This paper describes the design and development of a Web-based Monitoring and Control System for real-time monitoring and control of environmental conditions in green houses and livestock and poultry barns. The system was developed for the purpose of measuring and controlling the temperature, humidity, and ammonia.
The monitoring process was automated through the use of the www, data collection, and database technology. Hardware used in the system was based on the microcontroller that reads data from 24 PWM ports. Using PWM technology to transfer data, allows sending data from sensors through long wires (up to 30 meters). Hardware has 2048 bytes EEPROM to save data (in manual or timed mode).
The hardware scans 24 sensors together at intervals programmable from one minute to one hour. The microcontroller receives the temperature, humidity, and ammonia sensor signals. Finally, the data are transmitted to the computer and after that are transmitted on www. In addition the hardware has 4 pair ports used as output to control 8 devices by controlling the value of 4 selected sensors.
The software of the system was developed using Microsoft Visual Basic. The software on the computer gets data form hardware and sends it to a registered site continuously (using a web service). By visiting this site, a registered user can inspect collected data and control the hardware configuration everywhere.
The Web based program can also inform user for a set of gathered data by sending an Email.