Abstract

Environment conditions can be maintained by the computerized control systems, where the system can be operated manually or automatically. By 2020, it will prove to be the utmost necessity everywhere in the world, particularly for agriculture for field micro-climate control. Today, in agriculture, the net house technology is a proven technology for optimum agricultural yield with most minimum natural resources in the countries with far below average rain fall, such as Israel. The production increases manifold irrespective of all adverse environmental conditions. It is necessary to maintain parameters such as temperature, humidity and luminous intensity under control. However, recent technologies including WSN based Environment Parameter Monitoring (shortly called as WSN-EPM) is very costly affair for developing countries
including India. Hence, the challenge is to design low cost and low power WSN - EPM.

It is needed to optimize many factors to achieve low power consumption which is prominently supported by many 8-bit embedded products, including recently launched by Microchip such as PIC16F193X family of microcontrollers (MCUs) featuring Microchip’s enhanced Mid-range 8-bit core-the PIC16F1934, PIC16LF1934, PIC16F1936, PIC16LF1936, PIC16F1937 and PIC16LF1937, announced recently in July 2009.

Most of the recent microcontrollers provide on chip A to D conversion facility so that applications like WSN are designed with optimum space and power requirements. [3], [4]. The authors have fabricated a very low cost product for environmental parameter monitoring of a net house after exhaustive study of recently launched embedded microcontrollers which need much less power for its operation and hence suitable for remote or field applications. The low cost product is found to be useful in Wireless Sensor Network application of environment parameter monitoring of a net house. Authors strongly believe that the outcome of such comparative studies is needed strongly by many agriculturists and numerous small and medium scale industries owners who are not much inclined to invest, initially, in research and development activities.

Reference

WSN based Low Cost and Low Power EPM Design and Field Micro-Climate Analysis using Recent Embedded Controllers.


Index Terms

Computer Science

Algorithms

Key words

Wireless Sensor Network (WSN)  aggregation point

Environment Parameter Monitoring (EPM)

Microcontroller

PIC

Sensor node

Low Power Device