

## Development of Hybrid Power Baby Incubator

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**ABSTRACT:** *The project's two main goals are to develop and construct a small, lightweight hybrid incubator that can run on both conventional power and solar power. The idea resulted in a portable, easily powered, affordable incubator that can be used in third-world countries. Given the high occurrence of preterm birth, an incubator—used to help a newborn maintain a steady temperature—is a priceless instrument in the fight against infant mortality. India's developing regions, where the final design has been put into practise, are plagued by these problems. When available, the one DC heater was powered by mains electricity. It was also powered by a battery that was recharged by a solar panel. The heaters can maintain a constant temperature of between 60% and 70% and between 34 and 37 °C.*

**KEYWORDS:** *Baby Incubator, Temperature Control, Humidity Control, Hybrid power.*

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### I.INTRODUCTION:

Preterm or premature babies are those who are born before 37 weeks of gestation. A preterm newborn needs an environment that is exactly like that of the womb in order to adapt to the outside world. Mammals really benefit from being homoeothermic, or having a relatively constant body temperature that is controlled independently of the ambient temperature. Premature babies' vital organs and enzymes develop to a very low degree, necessitating extra care in adjusting to environmental factors including temperature, humidity, light, and oxygen content. When it comes to temperature management, the infant has a number of drawbacks. A baby has little thermal insulation, a lot of surface area, and little mass to serve as a heat sink.

M. Shaib and M. Rashid[1]. The project focuses on the premature babies in the third trimester of pregnancy.

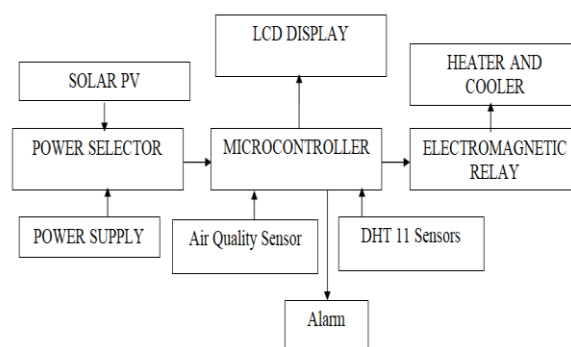
Faique Ahmed and Ali Sufyan[2]. In such cases, implementing IoT with hospital equipment such as a Baby Incubator, has become one of the main goals for us.

J.Dhanasony and S.Vijayalakshmi [3]. In this work, a cost-effective embedded device is designed and developed to monitor various physiological and physical parameters such as pulse rate of the baby, humidity, essential gas, temperature, and fingerprint sensor. Mingxin Zhao and Haodong Duan[4]. This paper designs a central real-time monitoring system for premature baby incubator by taking environmental temperature control as the main entry point. Megha Koli and Purvi Ladge[5]. Our project is to provide a control on the changes in temperature for certain applications such as baby incubator. Bagus Arthaya and Ceicalia Tesavrita[6]. As a result, electricity blackout appears frequently especially at under developed regions even in Jakarta regions. Arif Widiyanto and M. Raditya Gumelar[7]. In this paper, a remote weight monitoring system for premature baby incubator application is proposed.

### II.PROPOSED SYSTEM:

Overall, the proposed system has been the possibility of hybrid energy is monitoring of air quality and an alarm is given very reliable. The high efficiency system with simple control. No need for skilled workers. In order to test the proposed hybrid controller's performance, temperature and humidity outputs from a baby incubator were compared to predefined.

## BLOCK DIAGRAM



**LCD DISPLAY:** Liquid crystal displays (LCDs) are ubiquitous now, but they didn't emerge overnight. From the invention of the liquid crystal to the proliferation of LCD applications, it took a very long time.

**HEATER AND COOLER:** The majority of us consider heating and cooling standard. We rely on air conditioning to keep us cool during the summer and on our heating systems to keep us warm during the winter.

**MICROCONTROLLER:** An embedded system's microcontroller is a small integrated circuit that controls a single process. On a single chip, a typical microcontroller has a CPU, memory, and input/output (I/O) peripherals.

**ELECTROMAGNETIC RELAY:** Relays that work on the electromagnetic attraction theory are known as electromagnetic relays. It is a particular kind of magnetic switch that generates a magnetic field using a magnet. The switch is then opened and closed as well as the mechanical action is carried out using the magnetic field.

**SOLAR PV:** PV Components and equipment transform solar power into electricity.

**POWER SELECTOR:** A solid state device that makes it possible to construct a continuous, redundant power system for crucial electronic loads.

**POWER SUPPLY:** An electrical device known as a power supply provides electricity to an electrical load.

**AIR QUALITY SENSOR:** Sensors can monitor all the important pollution indicators, such as particle matter.

**DHT 11 SENSORS:** A complex of temperature and humidity sensors with an output of calibrated digital signals.

**ALARM:** A patient monitoring system must have an alarm mechanism to notify medical personnel of crucial changes in the patient's health. The alarm system, which might be visual or audible, should go off when vital indicators rise or fall outside of predetermined ranges.

## III.CONCLUSION:

The goal of this project is to create a temperature, humidity, oxygen concentration, and light controller for a baby incubator using a hybrid power microcontroller and closed loop control system. The model makes use of both solar and industrial power. Hardware is created to accomplish this goal, enabling the monitoring of the aforementioned factors for an infant's normal growth. Using a closed loop control system, this technology can give the infant the best automatic temperature management possible. Additionally, it regulates the water reservoir heater in accordance with the relative humidity in the baby room. Controlling the relative humidity in the chamber is necessary to reduce thermal losses from the infant's body. Additionally, regulating light will ensure that a baby's growth is proper.

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