## 7.1.2(3) Sensor based energy conservation system-report

The manual systems are transforming into smart systems with the incorporation of Embedded Systems. It is a real time project which is used to automate the Lights and Fans in the classrooms without the manual operating by humans. Smart control of electric devices has become inevitable so as to make energy conservation to the possible extent. A fan or a light may be in an ON state and may be functioning without any person or a group of people actually being around the electric device. There is a lot of wastage in electricity due to lack of proper monitoring done on the devices we use. The lights and fans in the classroom environment are not turned OFF after using them so more amount of power is consumed. What if we have a system which automatically switches ON and OFF the electric devices we use in the classroom environment. In order to overcome this problem A Smart Classroom system is developed. The smart system contains an Arduino Uno microcontroller, RFID reader, RFID sensor tags, Relay board, electrical devices such as Lights and Fans. The Arduino Uno microcontroller is the main element in this system which corresponds to initiate necessary actions. The RFID reader emits EM signals, the emitted EM signals are sensed by the RFID tags. The RFID sensor tag sends back tag information to the RFID reader. Two separate RFID sensor tags are used for ON and OFF. The RFID reader upon detecting the RFID sensor tag which corresponds to ON operation, without human intervention the lights and fans in the classroom are turned ON automatically with the aid of microcontroller and relay. The RFID reader upon detecting the RFID sensor tag which corresponds to OFF operation, without human intervention the lights and fans in the classroom are turned OFF automatically with the aid of microcontroller and relay. The switching ON and OFF of the electrical devices are done by the relay. By this project energy conservation is done.

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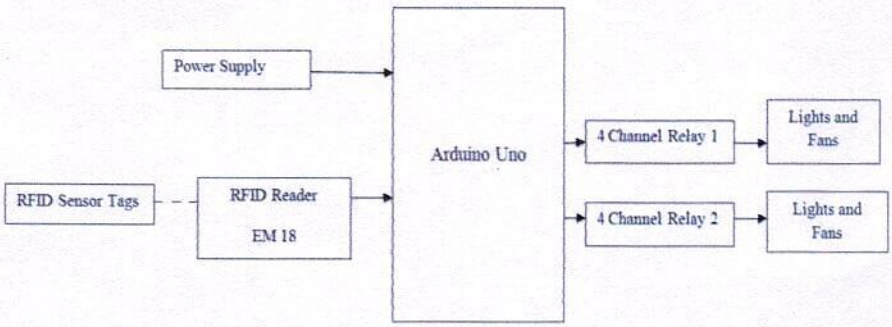
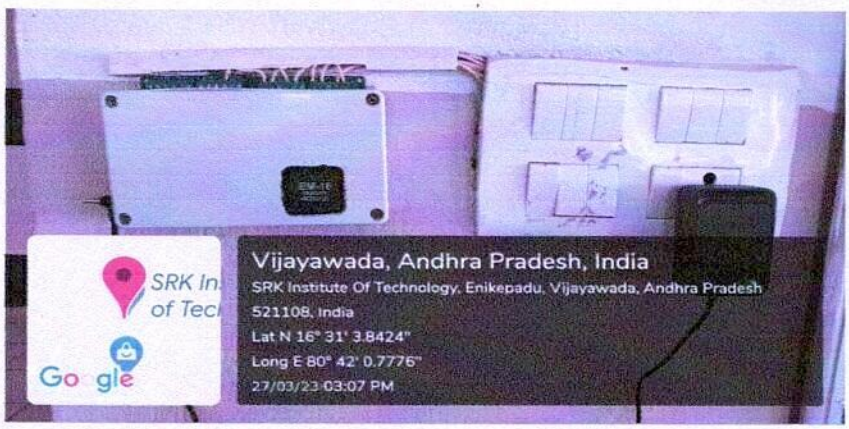
(i) Block diagram of the developed system




(ii) Geo-tagged Photographs

(a) Hardware of the implemented system




(b) RFID sensor Tags for ON/OFF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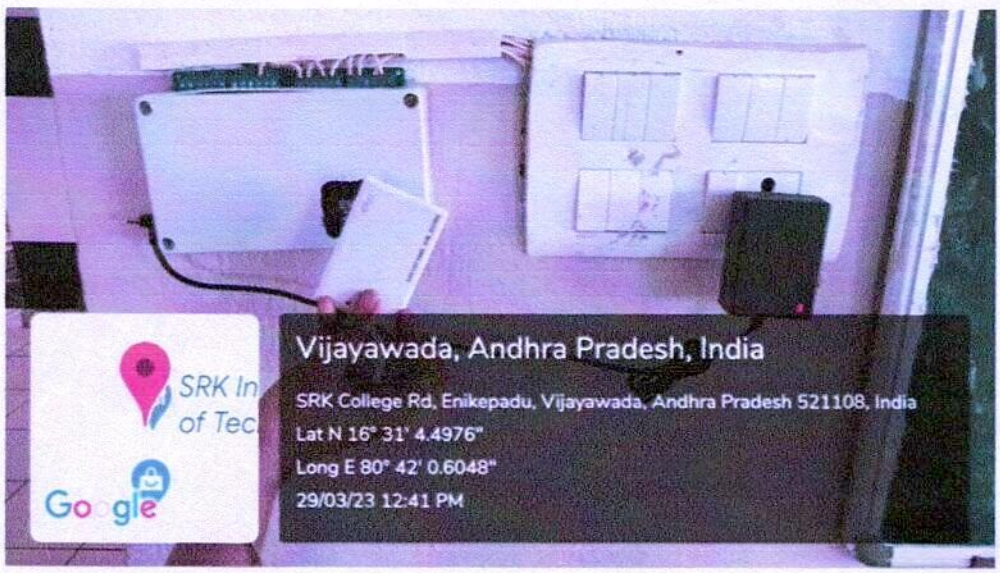
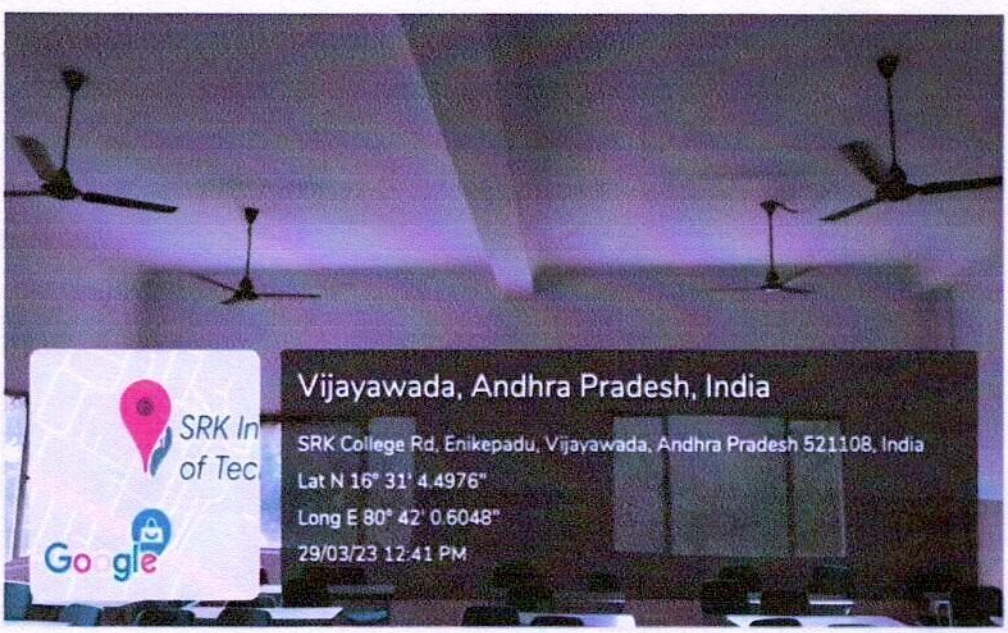
(c) Upon scanning the RFID sensor tag which initiates the ON operation, then electrical devices are turned ON

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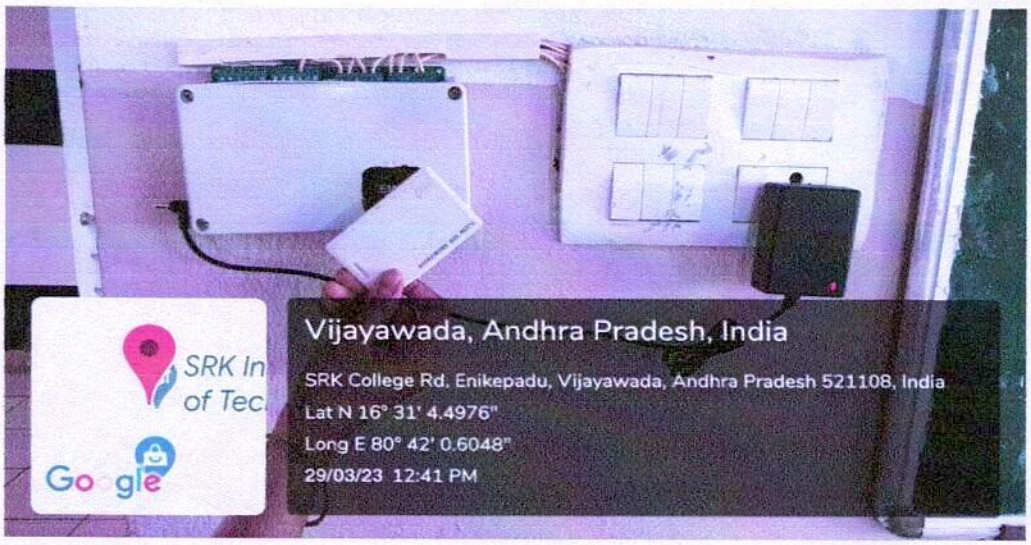
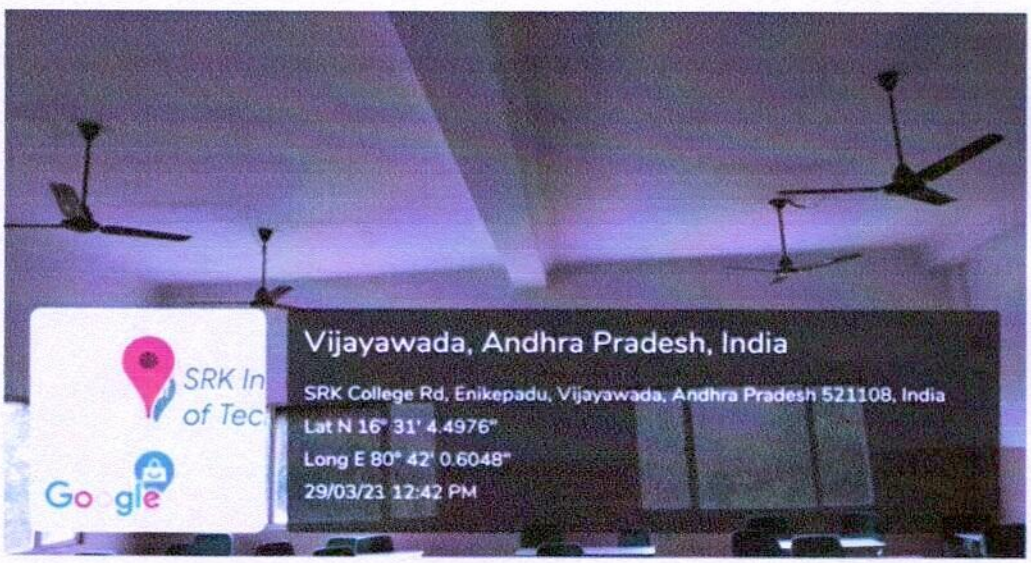
(d) Upon scanning the RFID sensor tag which initiates the OFF operation, then electrical devices are turned OFF

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