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    NEED/IMPORTANCE OF THE STUDY

    STATEMENT OF THE PROBLEM

    OBJECTIVES

    HYPOTHESES

    RESEARCH METHODOLOGY

    RESULTS & DISCUSSION

    FINDINGS

    RECOMMENDATIONS/SUGGESTIONS

    CONCLUSIONS

    SCOPE FOR FURTHER RESEARCH

    ACKNOWLEDGMENTS

    REFERENCES

    APPENDIX/ANNEXURE

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LIFE SAVING FROM FIRE USING RFID TECHNOLOGY

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ABSTRACT

The RFID technology will save the lives of firemen as well as it will help to extinguish and control the fire in a very effective way. This paper requires some temperature sensing active RFID tags, RFID readers and high quality Host stations. The Steps for completing the project successfully are explained bellow:
Step1. – Temperature sensing active RFID tags covered with fire proof cloth will be placed in each floor of the fire affected building. The temperature sensing element will detect the temperature and store this temperature reading in the tag.
Step2. – RFID reader will be attached on the fire fighters ladder. Reader will only receive authenticated tag's data information (temperature reading) and it will transmit the data information to the host station for further processing.
Step3. – The RFID tag's temperature will be recorded from the RFID Reader. The Reader will transmit this data to the monitor or controller. So at a time the monitor is capable of observing different temperature for different location.
Step4. - According to the temperature of the different location of the building, the monitor or host station will take proper decision and it will inform to the firemen working in different location.
Step5. - After getting information or signal from the host station the firemen can work without taking risk of his life and able to control the fire.

KEYWORDS

a> fourth order band pass Bessel's filter> wrap to zero,

INTRODUCTION

The 1980s brought about the first widespread commercial RFID systems. The systems were simple ones. The 1990s were the significant in that RFID began to enter the main stream of business and technology. By the middle of the decade, RFID toll systems could operate at highway speed, meaning drivers could pass through toll points unimpeded by plazas or any barriers. As of 2007, it is obvious that numerous applications for RFID across a number of industries would soon emerge. In the coming years, RFID technology will grow further and further into the mainstream and become another part of every life, just as TV, PC's, and mobile phones already have.

This paper is based on one of the most upcoming technology which promises to shape our lives in the future. RFID is a next generation of wireless communication. RFID provides quick, flexible and reliable way to detect, identify, Track and control a variety of items electronically. Identification is performed in milliseconds without line-of-sight or physical contact. A typical RFID system consists of a tag, RFID reader, transceiver and a host station. It is a most promising technology that is gaining immense important in commercial today. Application of the RFID ranging from automated security system to electronic article surveillance, RFID technology solutions are receiving much attention in the research and development department of large industries or institutes.

FUTURE SCOPE OF WORK

In our project we have designed a system to detect an outbreak of fire using RFID system to achieve an efficient fire evacuation system. We can implement our designed system at over populated areas like hotel, shopping malls, and offices to detect fire at primary level. Using the same tracking people with their individual identification is possible which helps the rescue team to find out the victims stuck in the damaged area.RFID readers will be placed at the rooms, corridors, doors providing the full coverage of the premise. Individual RFID tags embedded with temperature sensor will be allotted to each individual of the organization consisting basic information about him/her serving the purpose of identification. If fire breaks out in any part of the organization, it will be detected instantly by the temperature sensor and comparing the information with the preset levels, matched level will be sent to the reader by the attached tag with the tag id. All readers will be connected in a network and controlled and monitored by a central controller. Up to our current progress evacuation process has to be performed manually by a rescue team and the people trapped in the affected area are not provided with sufficient knowledge of the nearest emergency exit. Hence, the future expansion of our project may be thought as providing the victims the knowledge of their own position and the safest way out. For this, we may have to place a display screen or an announcement system with each reader which will convey the message to the people around. The best will be achieved if the central controller system calculate the shortest path of way out by using a shortest path algorithm for each reader separated by their own reader id. The people under the coverage of these readers will be directed accordingly.

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SIMULATION RESULTS AND EXPLANATION

FIG. 1: TEMPERATURE SENSOR RFID

FIG. 2: RFID TAG

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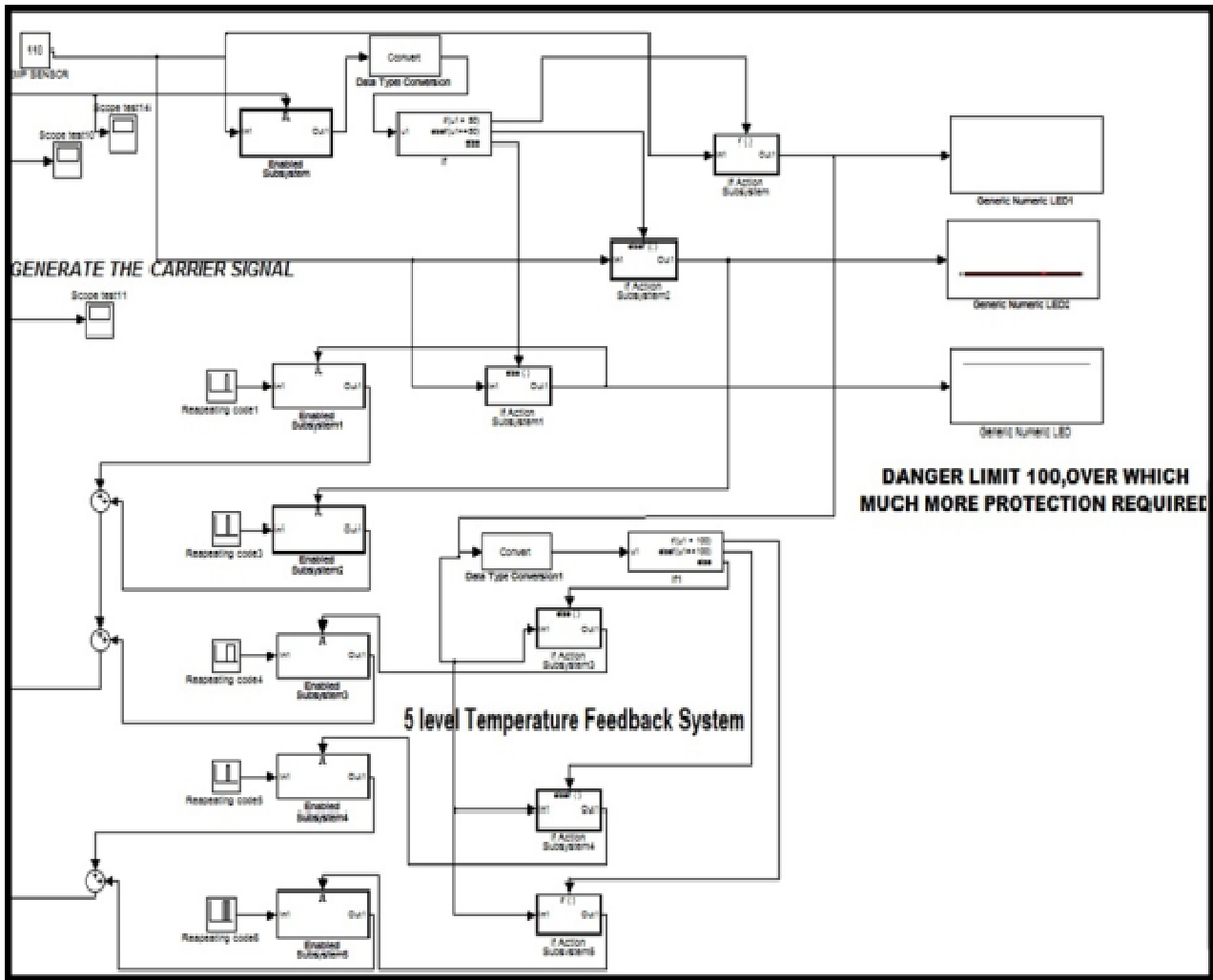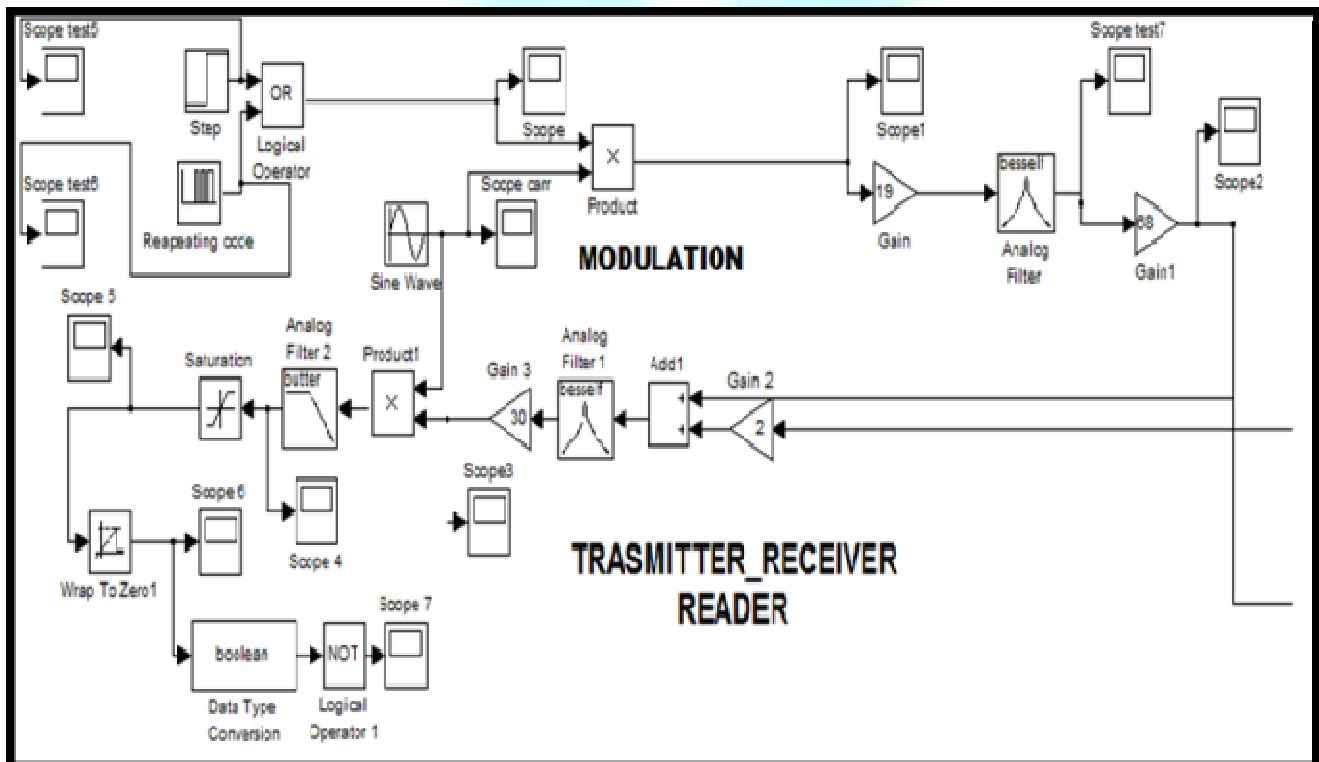
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MODEL OF TRANSMITTE

First we have generated a modulated code along with the continuous carrier. The modulated code to enable the Tag and continuous carrier for backscatter of Tag ID. Here we have used **'Repeating sequence'** and **'Step'** and logical block **'OR'** to get a pattern of Tag enabling code appended with a step function.The pattern is modulated with a carrier signal of 900MHz (which is in RFID usable range).Here the modulation scheme used is DSB AM. By using a **'Sine'** and a **'Product'** block the simulation is done. The amplitude of carrier is taken 1 mV.

1. The modulated signal is amplified and band-limited between 860MHz to 960MHz and transmitted through the antenna. Here **'Fourth order band pass Bessel's Filter'** is used with lower pass band edge frequency 5.4e9 (in rad/sec) and upper pass band edge frequency 6.03e9(in rad /sec) and '**Gain'** blocks are used for amplifiers and antenna gain.

The results for simulation is shown in the following Scopes----Scope, Scope 1, Scope 2

MODEL OF RECEIVER AND READER:-The reader receives the direct signal from the transmitter and the reflected one from the surrounding environment. However strength of the signal reflected from the surrounding environment is weak and consequently can be neglected. It is essential to have a high isolation between the transmitting and receiving antenna of the reader. The receiver circuit should have a large dynamic range to handle the relatively large direct signal and detect the weak backscattered signal from the tag. In our simulation the effect of direct coupling is shown.

1. **Filter:** The backscattered signal from the tag and the direct signal from the transmitters added and passed through a Bessel type band pass filter (lower pass band freq=5.0*10^9 rad/sec & upper pass band freq=6.5*10^9 rad/sec). The receiver has multistage gain to amplify the weak signal. The waveform is shown in **Scope 3**

1. **Demodulation:** The Tag code is obtained by demodulating the received signal with the same wave used in the modulator part(**'Sine wave'**) of reader and a '**Product'** block is required. A low pass filter after demodulation can detect the code. The low pass filter type selected in the receiver is a 5'th order Butterworth filter (pass band freq=55*10^7 rad/sec) The waveform is shown in **Scope 4.**

2. **Reconstruction of Signal:** The resultant signal is reconstructed using a **saturation block** (upper limit=3.0V & lower limit=2.8V), followed by a **wrap to zero block** (threshold voltage=2.9V). (Same method as in the Tag Code reshaping) The tag ID is finally reproduced in **Scope no.7.**

FIRE ALARM BLOCK

1. In fire protection block we use one enable block, which is active when the transmitted id and receiver id is matched, and is deactivate when id is not matched.

2. The output of the enable block is connected with an 'if else' block, if transmitted and receive id is matched the 'if else' block is enable. The input of the block is temperature which is sensed in the room, the output is three display device, the display will on in according danger and inform to the operator who continuously monitoring the temperature.

3. If the temperature is very high, then a alarm will ringing and inform all the person about the danger of the situation.

CONCLUSION

As a conclusion we can say that this research work is very much effective for the fireman, who saves people from the fire, the person can get all the information automatically by using this RFID technology, so the person can inform about the danger to the other people also, save the life of people in more efficient and effective way.

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