

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY
BELGAUM**



A Project report on

**“DESIGN OF EXTENSIVE MINING ENVIRONMENT MONI-
TORING SYSTEM USING WIRELESS SENSOR NETWORKS”
(SPONSORED BY KSCST-37 BANGALORE)**

A dissertation submitted to the Department of the Instrumentation Technology of Visvesvaraya Technological University, in the partial fulfillment for the award of degree of Bachelor of Engineering during the academic year 2013-2014.

PROJECT ASSOCIATES

- | | |
|--------------------------------|-------------------|
| 1. PRIYANKA G KALGHATGI | 3VC10IT016 |
| 2. SHRUTHI B R | 3VC10IT019 |
| 3. SHIVA PRASAD M | 3VC09IT024 |
| 4. KRISHNA GANESH B | 3VC08IT003 |

PRINCIPAL

Dr. KUPPAGAL VEERESH M.E, Ph.d, MIE, FIV

Under the Guidance of
Ms. J.GAYATHRI M.tech

Project Co-ordinator
Mrs.RAKHEE PATIL M.E

Head of the Department
Mrs.RAKHEE PATIL M.E



Department of Instrumentation Technology Engineering
V.V. SANGHA'S
RAO BAHADUR Y. MAHABALESWARAPPA ENGINEERING COLLEGE
BELLARY-583104. KARNATAKA.
2013-2014

CHAPTER-1

INTRODUCTION

The mining industry in India is a major economic activity which contributes significantly to the economy of India. In India lot of opportunities and also daunting challenges exists for the mining industry. There are 560 coal mines and 2000 metal mines employing more than one million people. The growth of mineral industry is proposed to be 7-8% per annum. Mining is a hazardous profession. Hence our endeavor to bring down the hazards by all available means to an acceptable level must continue.

The safe production level of coal mine is still low, especially in recent years, disasters of coal mine occur frequently, which lead to great loss of possession and life, the safety problems of coal mine has gradually become to the focus that the nation and society concern on. The disasters of coal mine happening are due to the complexity of mine environment and the variety of work condition of coal mine, so it is very necessary to monitor mine working environment. The various environmental parameters of mine safety monitoring and controlling system, such as methane, carbon monoxide, temperature, oxygen and so on, are currently using the traditional cable transmission. Thus truly mine methane; carbon monoxide gas accumulation area mechanized mining face, such as the dead gob cable security parameters cannot be monitored, so they cannot predict the alarm.

A variety of products for the current diversity of coal mine safety and underground coal mining process variability space, mine safety wireless network should be compatible with existing mine safety system with data transmission functions, has good flexibility, scalability, self- set of network capabilities. As the mine has its own special applications require a simple sensor network protocols, network easy, self-organization, self healing ability. Zigbee is a wireless communications technology, with a short distance, safe and reliable, you can use Zigbee technology to collect the various parameters of the terminal transmitted to the sensor on the tunnel gateway, and then use a wired data transmission to the gateway on the ground central control computer.