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Hazardous Gas Detection Robot in Coal Mines

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Abstract : This paper presents design and development of underground coal mine monitoring using mbed arm cortex controller and ZigBee communication. Coal mine is a special type of mine which is dangerous in nature. Safety is the most important feature of a coal industry for proper functioning. It's not only for employees and workers but also for environment and nation. Many coal producing countries in the world face phenomenal frequently occurred accidents in coal mines viz, gas explosion, flood, and fire breaking out during coal mines exploitation. Thus, such emissions of various gases from coal mines are necessary to detect with the help of robot. Coal is a combustible, sedimentary, organic rock, which is made up of mainly carbon, hydrogen and oxygen. Coal Mine Detection Robot mainly detects mash gas and carbon monoxide. The mash gas is the kind of the mixed gas which mainly make up of methane in the underground of the coal mine shaft, and sometimes it abbreviate to methane. It is formed from vegetation, which has been fused between other rock layers and altered by the combined effects of heat and pressure over millions of years to form coal beds. Coal has many important uses worldwide. The most significant uses of coal are in electricity generation, steel production, cement manufacturing and as a liquid fuel.

Keywords : Zigbee communication, various sensors, hazardous gases, mbed arm cortex M3 core controller
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