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ELECTRIC HAZARD PREVENTION SYSTEM AND FUSE REPLACEMENT BY WIRELESS INTIMATION

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Abstract

Basically man power is used to replace the fuse, sometimes man power used may be a common man instead of skilled electricians. Because in remote areas the electricians cannot be called frequently, since transportation may not be easy. So in such cases common man will do the Electrician work without the knowledge of power control room. Every day more number of people are killed by power lines. To avoid this kind of death, we should change the replacing method of blown fuse. There should not be any risk factor for replacing fuse such as climbing the pole, direct contact on power lines, etc. To satisfy the above needs a relay mechanism should be placed for fuse to tackle the problem.

I.INTRODUCTION

The project heals two common problems which occur frequently in transmission lines. First part is whenever breakdown of transmission line due to natural effect or man-made circumstances the power should be shut down immediately to restrict the flow of current through power line. This saves the accidental loss of people's life.

The main objective for this project is to eliminate the risk factor in handling the power lines. Using a GSM module and relay setup, we are going to replace the blown fuse. The time required for replacing the fuse is just a fraction of time. So time does not make any abrupt change in fuse. This help the large scale industries since there will not be any power cut in many ways. However even residential surrounding get rid of frequent power failure and common people can do their work without any interruption. Adding to this, if a fuse is blown and didn't get replaced or repaired for long time, the parallel line will get affect by overload since whole current flow through one path resulting in bursting of home appliances.

II. RELATED WORKS

2.1 MINIATURE CIRCUIT BREAKER (AUTOMATIC FUSE) WITH PRESSED BOX

Miniature circuit breaker (automatic fuse) with pressed box is about a miniature circuit breaker with electromagnetic and thermal breaker and that has one moving and one fixed contact, arc forming room and an arc diminishing room to where the arc is directed by an arc horn over the fixed contact unit and an arc director over the moving contact.

The arc formed by a short circuit generates high heat and gives harm in the area where it is formed and in its surrounding. Arc roots and cones move away some metal particles from the surface. Rapid movement in both getting in touch and separating of the contact surfaces and especially maintaining a tight contact between the two contact surfaces during current transmittal affects the perfectness of the contacts and thus the quality in transmitting the current.

The gasses formed by high temperature and the mixture generally consisting of carbon, metal and oxides are dragged towards the gas exhausting hole and they accumulate in remote places especially between the arc forming room and the set up mechanism and in the direction of arc diminishing room. In this sort of instruments, when the contacts are in open position, the electrified area has to be converted into equal state of potential. And this can only be achieved by having the moving and fixed contacts in parallel position and then the improvement in isolation level can be foreseen. The accumulation of residuals is reduced and so the isolation is maintained by means of proper design of contacts and obtaining equal potential level. The gasses formed by high temperature and the mixture

DEMERITS

1. In this project, heat is generated above the melting of the wire to remove the contact. The working mechanism is temperature dependent, so it is not well suited for high temperature areas.
2. This mechanism depends on gas chemical reaction; hence it loses its accuracy.

2.2 AUTOMATIC FUSE REPLACEMENT

Automatic fuse replacement document applies ONLY to the first version (small retrigger able fuse) of the SCP-1 analog

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cartridge, positive polarity (common ground). Some SCP-1 controllers show an erratic behavior from time to time. Symptoms are commonly loss of brake after some usage, and/or the car going by itself. The symptoms go away when the controller is unplugged, but will at some point return. The problem is caused by the retrigger able protection fuse, which is a device that protects the SCP-1against wrong connections (it does not have anything to do with short circuit across the rails. If your controller falls in this category, the original retrigger able fuse must be replaced by one which canwithstand a larger current. All SCP-1s come now with the updated fuse but early devices might need this upgrade. Immediately the shunt circuit, through the magnet receives such proportion, though small, of the full current from the main circuit as their combined resistance.

DEMERITS

In this project, the fuse is useful for only 10,000KW so cannot be used in 500KW. Also size will be large.

III. TRANSMISSION LINES

As large generators spin, they produce electricity with a voltage of about 11,000 volts. The electricity first goes to a transformer at the power plant that boosts the voltage up to 400,000 volts. When electricity travels long distances it is better to have it at higher voltages. Another way of saying this is that electricity can be transferred more efficiently at high voltages.

Fig 1.Transmission line

The long thick cables of transmission lines are made of copper or aluminium because they have a low resistance. We know thatthe higher the resistance of a wire, the warmer it gets. So, some of the electrical energy is lost because it is changed into heat energy. High voltage transmission lines carry electricity long distances to a substation. Electrical power is generated at different generating stations. These generating stations are not necessarily situated at the load centre. During construction, the generating station number of factors to be considered from economical point of view. These all factors may not be easily available at load centre, hence generating station are not normally situated far away from load centre.

Fundamentally there are two systems by which electrical energy can be transmitted. High Voltage DC Electrical Transmission System High voltage AC Electrical Transmission System. There are some advantages in using DC transmission system, in India we are using High voltage AC Electrical Transmission System.

IV. GSM MODULE

4.1 INTRODUCTION

Global system for mobile communication (GSM) is a globally accepted standard for digital cellular communication. GSM is the name of a standardization group established in 1982 to create a common European mobile telephone standard that would formulate specifications for a pan-European mobile cellular radio system operating at 900 MHz. It is estimated that many countries outside of Europe will join the GSM partnership.

GSM (Global System for Mobile) TTL –Modem is SIM900 Quad-band GSM device, works on frequencies 850 MHZ, 900 MHZ, 1800 MHZ and 1900 MHZ. It is very compact in size and easy to use as plug in GSM Modem. The Modem is designed with 3V3 and 5V DC TTL interfacing circuitry, which allows User to directly interface with 5V Microcontrollers (PIC, AVR, Arduino, 8051, etc.) as well as 3V3 Microcontrollers (ARM, ARM Cortex FILTER XX).The baud rate can be configurable from 9600- 115200 bps through AT (Attention) commands. This GSM/GPRS TTL Modem has internal TCP/IP stack to enable User to connect with internet through GPRS feature. It is suitable for SMS as well as DATA transfer application in mobile phone to mobile phone interface. The modem can be interfaced with a Microcontroller using USART (Universal Synchronous Asynchronous Receiver and Transmitter) feature (serial communication).

4.2 THE GSM NETWORK

GSM provides recommendations, not requirements. The GSM specifications define the functions and interface requirements in detail but do not address the hardware. The reason for this is to limit the designers as little as possible but still to make it possible for the operators to buy equipment from different suppliers. The GSM network is divided into three major systems.

1. The switching system (SS)
2. The base station system (BSS)

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3. The operation and support system (OSS).

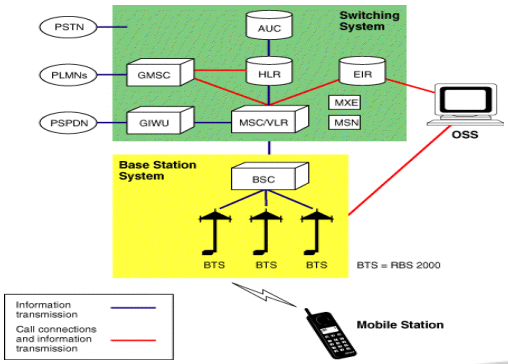

Fig 2.The basic GSM network elements

4.2.1 Additional Functional Elements

Message centre (MXE)—The MXE is a node that provides integrated voice, fax, and data messaging. Specifically, the MXE handles short message service, cell broadcast, voice mail, fax mail, email, and notificationMobile service node (MSN)—The MSN is the node that handles the mobile intelligent network (IN) services. Gateway mobile services switching centre (GMSC)—a gateway is a node used to interconnect two networks. The gateway is often implemented in an MSC. The MSC is then referred to as the GMSC.

GSM interworking unit (GIWU)—The GIWU consists of both hardware and software that provides an interface to various networks for data communications. Through the GIWU, users can alternate between speech and data during the same call. The GIWU hardware equipment is physically located at the MSC/VLR.

4.3 GSM BASICS

GSM is nothing but Global System for Mobile Communication. GSM (Global System for Mobile Communications, originally GroupeSpécial Mobile), is a standard developed by the European Telecommunications Standards Institute (ETSI) to describe protocols for second generation (2G) digital cellular networks used by mobile phones. It is the de facto global standard for mobile communications with over 90% market share, and is available in over 219 countries and territories.

The GSM standard was developed as a replacement for first generation (1G) analog cellular networks, and originally described a digital, circuit-switched network optimized for full duplex voice telephony. This was expanded over time to include data communications, first by circuit-switched transport, then packet data transport via GPRS (General Packet Radio Services) and EDGE (Enhanced Data rates for GSM Evolution or EGPRS). Subsequently, the 3GPP developed third generation (3G) UMTS standards followed by fourth generation (4G) LTE Advanced standards, which are not part of the ETSI GSM standard.

4.3.1 GSM SPECIFICATIONS

Frequency band—the frequency range specified for GSM is 1,850 to 1,990 MHz (mobile station to base station). Duplex distance—the duplex distance is 80 MHz. Duplex distance is the distance between the uplink and downlink frequencies. A channel has two frequencies, 80 MHz apart.
Channel separation — The separation between adjacent carrier frequencies. In GSM, this is 200 kHz. Modulation—Modulation is the process of sending a signal by changing the characteristics of a carrier frequency. This is done in GSM via Gaussian minimum shift keying (GMSK).

Transmission rate—GSM is a digital system with an over-the-air bit rate of 270 kbps. Access method—GSM utilizes the time division multiple access(TDMA) concept. TDMA is a technique in several different calls may share the same carrier. Each call is assigned a particular time slot.

Speech coder—GSM uses linear predictive coding (LPC). The purpose of LPC is to reduce the bit rate. The LPC provides parameters for a filter that mimics the vocal tract. The signal passes through this filter, leaving behind a residual signal. Speech is encoded at 13 kbps.

4.3.2 FEATURES

Quad Band GSM/GPRS : 850 / 900 / 1800 / 1900 MHz Built in RS232 to TTL or viceversa Logic Converter (MAX232) Configurable Baud Rate SMA (SubMiniature version A) connector with GSM L Type Antenna Built in SIM (Subscriber Identity Module) Card holder Built in Network Status LED Inbuilt Powerful TCP / IP (Transfer Control Protocol / Internet Protocol) stack for internet data transfer through GPRS (General Packet Radio Service) Audio Interface Connectors (Audio in and Audio out) Most Status and Controlling pins are available:

- Normal Operation Temperature : -20 °C to +55 °C
- Input Voltage : 5V to 12V DC
- LDB9 connector (Serial Port) provided for easy interfacing.
-

4.3.3 THE GOALS OF GSM

- Improved spectrum efficiency
- International roaming
- Low-cost mobile sets and base stations
- High-quality speech
- Compatibility with ISDN and other telephone company services.
- Support for new services
- QoS

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Fig 3.Port description of serial port

4.4 GSM HARDWARE DESCRIPTION

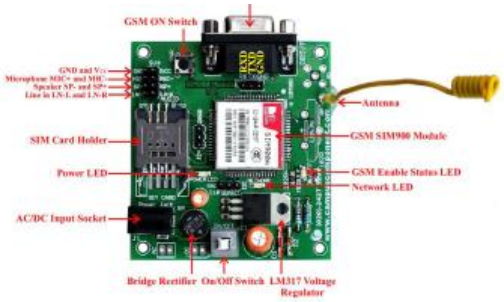

Fig 4.Hardware description of GSM module

4.5 SIMCOM SIM900A GSM MODULE

SIMCOM SIM900A GSM module is actual SIM900 GSM module which is manufactured by SIMCom. Designed for global market, SIM900 is a quad-band GSM/GPRS engine that works on frequencies GSM 850MHz, EGSM 900MHz, DCS 1800MHz and PCS 1900MHz. SIM900 features GPRS multisport class 10/ class 8 (optional) and supports the GPRS coding schemes CS-1, CS-2, CS-3 and CS-4. With a tinyconfiguration of 24mmx 24mm x 3mm, SIM900 can meet almost all the space requirements in User's applications, such as M2M, smart phone, PDA and other mobile devices.

4.6 MAX232 IC

The MAX232 is an integrated circuit that converts signals from an RS-232 serial port to signals suitable for use in TTL compatible digital logic circuits, so that devices works on TTL logic can share the data with devices connected through Serial port (DB9 Connector).

4.7 PORT DESCRIPTION

4.7.1 Serial port / DB9 connector

User just needs to attach RS232 cable here so that it can be connected to devices which has serial port/DB9 Connector.

PIN 4:DTR(Data Terminal Ready) Pin 9: Ring Indicator(RI)
PIN 5:Signal Ground(SG)

4.7.2 D-sub 9 Connector Pinout

Pinout and diagram of DE9 connector (DB9 connector), commonly used for serial ports (RS-232) The DTE (PC) has the male connector (shown below), and the DCE (peripheral) has the female.

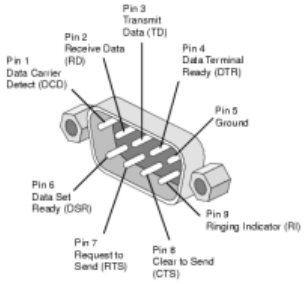

Fig 5.Pin diagram of D-Sub 9 Connector

4.7.3 RS-232 Maximum Cable Length

The maximum cable length for RS-232 is 50ft, but in practise depends on baud rate, cable specific capacitance and ambient noise. The table below contains some rules-of-thumb from experiments done by Texas Instruments years ago.

Table 1.RS-232

Maximum Cable Length Baud rate	Maximum range / cable length
19200	50ft
9600	500ft
4800	1000ft
2400	3000ft
1200	6000ft

4.7.4High-Performance, Enhanced PIC Flash Microcontroller in 40-pin PDIP

The PIC16F877A CMOS FLASH-based 8-bit microcontroller is upward compatible with thePIC16C5x, PIC12Cxxx and PIC16C7x devices. It features 200 ns instruction execution, 256 bytes of EEPROM data memory, self programming, an ICD, 2 Comparators, 8 channels of 10-bit Analog-to-Digital (A/D) converter, 2 capture/compare/PWM functions, a synchronous serial port that can be configured as either 3-wire SPI or 2-wire I2C bus, a USART, and a Parallel Slave Port.

V.SYSTEM ANALYSIS

5.1 EXISTING SYSTEM FOR TRANSMISSION LINE

Transmission lines are common in all the road sides and they all are open power supplies, the only security is height of the post. All the conducting lines placed above 20 feet.
On heavy rain and storm or earth quakes or vehicle accidents on the post may damage it and the power lines damaged and falls on roads and living houses, this happens less in some countries, but some country open transmission lines are often damaged by storms, earth quakes like Japan, America, etc.

5.1.1 THE TRANSMISSION GRID

The electrical transmission system is more complex and dynamic than other utility systems, such as water or natural gas. Electricity flows from power plants, through transformers and transmission lines, to substations, distribution lines, and then finally to the electricity consumer (Fig 6.1). The electric system is highly interconnected. The interconnectedness of the system means that the transmission grid functions as one entity. Power entering the system flows along all available paths, not just from Point A to Point B. The system does not recognize divisions between service

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areas, counties, states, or even countries. The current transmission grid includes not only transmission lines that run from power plants to load centers, but also from transmission line to transmission line, providing a redundant system that helps assure the smooth flow of power. If a transmission line is taken out of service in one part of the power grid, the power normally reroutes itself through other power lines to continue delivering power to the customer. In essence, the electricity from many power plants is "pooled" in thetransmission system and each distribution system draws from this pool. This networked system helps to achieve a high reliability for power delivery since any one power plant only constitutes a fraction of the power being delivered by the power grid to meet the instantaneous demand requirements.

This pooling of power also means that power is provided from a diversity of sources, including coal, nuclear, natural gas, oil, or other renewable energy sources such as hydro power, biomass, wind, or solar power.

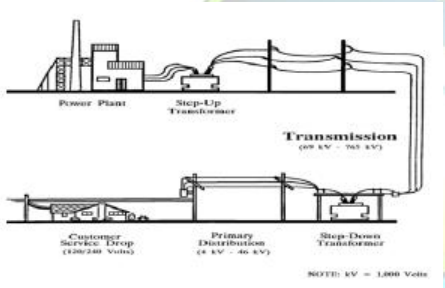

Fig 6.Transmission setup of distribution of electricity

5.1.2 EXISTING FUSE REPLACING METHOD

There are many difficulties in fuse replacement, due to wetness of the transformer post there may be leakage of voltages in post and it quit our life. Whenever transformer shutdowns for long time, an EB man or public checks for fuses by seeing from bottom of the post. For each time when fuse replacement is to be done, an EB man has to come to the particular area, switching the transformer line OFF clearly and he climbs on the post to replace the fuse. The EB man has to check the line wires before climbing up to the transformer post, if any unwanted broken wires in the top may quit the life of that man.

5.2 PROPOSED SYSTEM

5.2.1 INTRODUCTION

In remote areas the electricians cannot be called frequently, since transportation may not be easy. In such cases common man will do the electrical work without the knowledge of power control room. In maximum cases this leads in loss of life. Every year some percentages of lives are killed by power lines intentionally or unintentionally. To avoid this kind of death we should change the replacing method of blown fuse. There should not be any risk factor for replacing fuse such as climbing the pole, direct contact on power lines, etc. To avoid above demerits we have invented a technique which will be useful for public and electricians. In this we introduced a relay setup to replace the fuse which is blown adding to that GSM setup will send a mobile message to the electrician indicating the problem. So the electrician will send a replacing confirmation message to GSMsetup and it will replace the fuse with an acknowledgement.

5.2.2 FUSE REPLACEMENT TECHNIQUE

The relay mechanism will get into action when intimation received from the electrician. The mechanism will remove the blown fuse and dispose it then it will take a fuse from pack and replace it. This is done in 8 seconds which is comparatively very fast than existing system. Also safer than other methods in fuse replacing.

Fig 7.Multiple Fuse Holder

Here we use multiple set of fuse holder. When the first fuse will get burn or any damage, it will transferred into another fuse by using relay mechanism. While we used single fuse, it will makes more number of disadvantages. So only we planned to use multiple number of fuse replacer. It can be working in a safer mode in fuse replacement mechanism. If all the fuse will get burned, message will sent to EB office from transformer, that fuse will be burned. Then we have to change the another fuse replacer. For that condition, one person will check it, and transferred the replacer. That time we also check it, whether any damages will be happened. If any damage will occur, to modified it instantly.

5.2.3 TRANSMISSION LINE CUT IDENTIFIER METHOD

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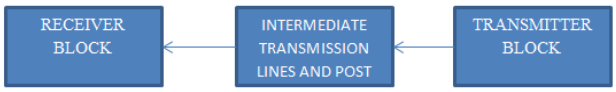

Fig 8.BLOCK DIAGRAM OF CUT IDENTIFIER

The power transmission lines are damaged due to natural disasters, the lines fall down in running streets and man power collision with it leads to life loss.Vehicle collision to power lines leads to blast and cause severe damage to public property. So using GSM module the power cut in one end in the transmission lines make intimation to electricians and switch off the transmitting current by a relay controlled circuit. So serious effect through power lines can be minimized or completely prevented. A wireless transmitter is placed in the end of electric pole and a receiver is placed on the main transformers which supply the current. Normally GSM transmitter will be in off state (i.e.), the current flows to designated pole without any interruption. When the transmission line is cut, the GSM transmitter in the electric pole will be on and it will send a signal to the receiver about the
chisel in power supply. When the signal is arrived the transformer will block the power supply. Even the wires get hold of the conducting materials the current will not pass through it until the reset command from authority arrives.

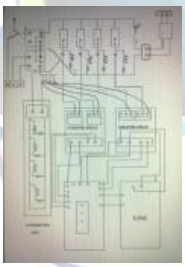

Fig 9.Fuse Replacement Circuit by Relay Mechanism

5.3 FUSE BASICS

Fuses are used on power systems up to 115,000 volts AC. High-voltage fuses are used to protect instrument transformers used for electricity metering, or for small power transformers where the expense of a circuit breaker is not warranted. For example, in distribution systems, a power fuse may be used to protect a transformer serving 1–3 houses. A circuit breaker at 115 kV may cost up to five times as much as a set of power fuses, so the resulting saving can be tens of thousands of dollars. Pole-mounted distribution transformers are nearly always protected by a fusible cut out, which can have the fuse element replaced using live-line maintenance tools. Large power fuses use fusible elements made of silver, copper or tin to provide stable and predictable performance. High voltage expulsion fuses surround the fusible link with gas-evolving substances, such as boric acid. When the fuse blows, heat from the arc causes the boric acid to evolve large volumes of gases. The associated high pressure and cooling gases rapidly quench the resulting arc. The hot gases arethen explosively expelled out of the end of the fuse. Such fuses can only be used outdoors.

The high voltage high power fuses are standalone protective switching devices used to 115 kV. They are used in power supply networks and for distribution uses. The most frequent application is in transformer circuits, with further uses in motor circuits and capacitor banks. These type of fuses may have an impact pin to operate a switch mechanism, so that all three phases are interrupted if any one fuse blows.
High-power fuse means that these fuses can interrupt several kilo amperes. Some manufacturers have tested their fuses for up to 63 kA cut-off current.

5.4 FUSE COMPARED WITH CIRCUIT BEAKERS

Fuses have the advantages of often being less costly and simpler than a circuit breaker for similar ratings. The blown fuse must be replaced with a new device which is less convenient than simply resetting a breaker and therefore likely to discourage people from ignoring faults. On the other hand, replacing a fuse without isolating the circuit first can be dangerous in itself, particularly if the fault is a short circuit.
High rupturing capacity fuses can be rated to safely interrupt up to 300,000 amperes at 600 V AC. Special current-limiting fuses are applied ahead of some moulded-case breakers to protect the breakers in low-voltage power circuits with high short-circuit levels. Current-limiting fuses operate so quickly that they limit the total "let-through" energy that passes into the circuit, helping to protect downstream equipment from damage. These fuses open in less than one cycle of the AC power frequency; circuit breakers cannot match this speed. Some types of circuit breakers must be maintained on a regular basis to ensure their mechanical operation during an interruption. This is not the case with fuses, which rely on melting processes where no mechanical operation is required for the fuse to operate under fault conditions. In a multi-phase power circuit, if only one fuse opens, the remaining phases will have higher than normal currents, and unbalanced voltages, with possible damage to motors.

Fuses only sense overcurrent, or to a degree, over-temperature, and cannot usually be used independently with protective relaying to provide more advanced protective functions, for example, ground fault detection.Some manufacturers of medium-voltage distribution fuses combine the over current protection characteristics of the fusible element with the flexibility of relay protection by adding a pyrotechnicdevice to the fuse operated by external protective relays.PTC fuses reach a high resistance with a low holding

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current under fault conditions and cycle back to a conductive state after the current is removed, acting more like circuit breakers, allowing the circuit to function again without opening the chassis or replacing anything. A PPTC device has a current rating.

When the current flowing through the device exceeds the current limit, the PPTC device warms up above a threshold temperature and the electrical resistance of the PPTC device suddenly increases several orders of magnitude to a "tripped" state where the resistance will typically be hundreds or thousands of ohms. The current subsequently reduces due to the finite voltage of the power source. The rated trip current can be anywhere from 20 mA to 100 A.

A polymeric PTC device comprises a non-conductive crystalline organic polymer matrix that is loaded with carbon black particles to make it conductive. While cool, the polymer is in a crystalline state, with the carbon forced into the regions between crystals, forming many conductive chains. Since it is conductive, it will pass a given current, called the "hold current". If too much current is passed through the device, the "trip current", the device will begin to heat.

As the device heats, the polymer will expand, changing from a crystalline into an amorphous state. The expansion separates the carbon particles and breaks the conductive pathways, causing the resistance of the device to increase. This will cause the device to heat faster and expand more, further raising the resistance. This increase in resistance substantially reduces the current in the circuit. A small current still flows through the device and is sufficient to maintain the temperature at a level which will keep it in the high resistance state. The device can be said to have latching functionality. When power is removed, the heating due to the holding current will stop and the PPTC device will cool. As the device cools, it regains its original 41 crystalline structure and returns to a low resistance state where it can hold the current as specified for the device.

This cooling usually takes a few seconds, though a tripped device will retain a slightly higher resistance for hours, slowly approaching the initial resistance value. The resetting will often not take place even if the fault alone has been removed with the power still flowing as the operating current may be above the holding current of the PPTC.

It should be noted that the device may not return to its original resistance value; it will most likely stabilize at a significantly higher resistance (up to 4 times initial value). It could take hours, days weeks or even years for the device to return to resistance value similar to its original value, if at all. Since a PPTC device hasan inherently higher resistance than a metallic fuse or circuit breaker at ambient temperature, it may be difficult or impossible to use in circuits that cannot tolerate significant reductions in operating voltage, forcing the engineer to choose the latter in a design.

5.5 FUSE CUT-OUT

Cutouts are typically mounted about 20 degrees off vertical so that the centre of gravity of the fuse holder is displaced and the fuse holder will rotate and fall open under its own weight when the fuse blows. Mechanical tension on the fuse link normally holds an ejector spring in a stable position. When the fuse blows, the released spring pulls the stub of the fuse link out of the fuse holder tube to reduce surge duration and damage to the transformer and fuse holder. This quenches any arc in the fuse holder.

Each fuse holder typically has an attached pull ring that can be engaged by a hook at the end of a fiberglass hot stick operated by a line worker standing on the ground or from a bucket truck, to manually open the switch. While often used for switching, the standard cutout shown is not designed to be manually opened under load. If a spark was created the results could be disastrous to the work force, and this was a common occurrence. Miners and mine owners were aware of the dangers of the use of gunpowder in mining, as is evident in their instructions for handling the material.

A mill in England preparing the material wrote in its instructions, "Whosoever is at Labour within or without the powder magazines should execute his commission in such a respectful and revered silence as is seemly in such a place where the least lack of care may not alone cause the loss of life of all present, but may even in a moment transform this place as well as its surroundings into a heap of stone." The other major problem concerned the intentional ignition of the gunpowder charges. To provide some protection from the blast and the fumes, a nominated miner ignited the far end of the fuse which was intended to burn at a known rate. The miners, therefore, knowing the length of the fuse, could estimate the delay between ignition of the fuse and the ignition of the main charges. However, early fuses, known as filled "quills", had a tendency to either burn irregularly, "flash off", or break—either by separation or by "pinching" in the shot hole due to the tamping process. They could also be damaged allowing moisture in, which could cause them to smoulder instead of burn and introduce a long delay. If the main charge failed to ignite, this was known as a misfire or "hang fire", and the miners would need to wait before returning to the work face to set new fuses. Increasingly, miners in Cornwall in the late18th and early 19th centuries were becoming badly injured as a result of suspecting that there had been a misfire and returning to the work face just as a smouldering damp quill ignited the gunpowder charges.

VI. CONCLUSION

The process of replacing fuse is successfully done using relay setup by detecting the blown fuse in multiple fuse

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arrangement. The fuse now replaced when GSM board receive a message from electrician. When GSM board receive message from electrician it induced a signal in PIC development board that makes the relay setup to change the fuse.

Another part of our project is transmission line cut identifier is done using a transmitter and receiver setup controlling the relay arrangement which is parallel to transmission line. When one end of the transmission line doesn't receive the input power from transformer the transmitter sends a signal to receiver which is kept in transformer side. Now the receiver trigger the relay setup and make the power to shut down in transmission line. So when the people contact with broken wires may not cause electric shock and lead to death.

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