

# REDUCING IMPACTS FROM WEATHER-RELATED OUTAGES AND ELECTRIC SYSTEM RESILIENCY BY USING WITH GSM SYSTEM

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**ABSTRACT-** Most force blackouts are brought about by serious climate – high breezes, lightning, freezing precipitation and day off, or flooding. During a tempest power shafts are defenceless against lightning strikes while solid breezes can snap off tree limbs and down electrical cables. Freezing rain or snow can build up on equipment causing damage. During heavy wind or rainy causes the power line failure due to this the voltage or current will be too high rather than normal voltage while power line cable hanging in air or connected with ground. The wind speed and rain level will be measured with help of wind and rain sensor. The voltage and the current are sensed by the potential and current transformer respectively. The power line failure information sends to the EB office and power line will be tripped through GSM.

## I. INTRODUCTION

Force blackouts occur for some reasons and can last from a couple of moments to hours or days Downpour can cause destruction on insurance of high voltage lines by diminishing the assurance properties of porcelain bushings, switches, and the pin covers that join the lines to the posts. Defenders accept a noteworthy activity in keeping the movement of intensity moving and not shorting out on structures. Any split or breakage of an encasing grants water, generally as deluge to cause a failure. This mistake meddles with power by blowing a wire, much equivalent to the ones found in our breaker board in our homes. These greater breezes have the

## II. LITERATURE SURVEY

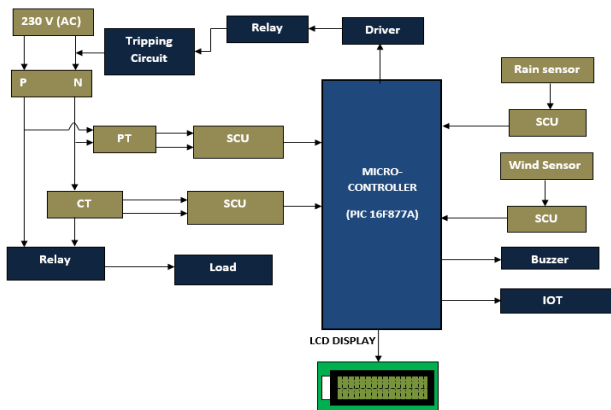
1) Mao et al discussed an adaptable vitality estimation framework model consisting of a DSP, sensor and correspondence unit. This paradigm is used by advanced power dispersion devices, demonstrated by multiple providers in a deregulated showcase, inferable bi-directional vitality streams from the circulated generation, and an enlarged interest in the essence of power transmission. Various highlights of the system were analyzed, identifying with signal planning, communication, and trustworthiness. In addition, their work incorporates instances of the use of such gadgets. Daponte et al spoke about Transientmeter 's plan and use, a checking framework for discovering, characterizing and estimating aggravations in the

capacity of breaking trees and tree members making them fall over the lines. They can in like manner cause a conductor deficiency. In this model, the customer may see the lights go out and return inside seconds as our breaker protection rapidly clears the blemish and recloses. In case the inadequacy is gone the power remains on. This kind of transient obstruction may in like manner happen when a tree extremity falls onto the line and a while later tumbles off. High breezes additionally have the capability of making salt shower conditions in our beach front zones that can make a portion of our gear come up short. Power assumes significant job in everyday life. Vitality industry consistently anticipate improve the exhibition of the force framework. The customary force framework contains age, transmission and dispersion which is unidirectional in nature. This force framework is required to be checked and controlled progressively. Savvy Grid is an idea which coordinates the whole force framework directly from age to end client in one framework. By utilizing present day innovation, Smart Grid can be expand on the current force framework. In this idea, things being observed for the better execution of the substation and framework. This paper presents a thought on constant checking of the conveyance transformer so as to make the framework progressively dependable. Diverse parameter of the circulation transformer are checked and shown through Internet of Things stage. Framework information has been checked and broke down.

framework of electrical force. CORBA engineering uses the Transient meter as a correspondence interface, wavelet-based strategies for programmed signal grouping and portrayal and a brilliant trigger circuit for aggravation discovery. An estimation estimate had been provided for the programmed order and estimation of alarming factors, generated by using the wavelet change what is more, wavelet systems.

2) Zanzad et al discussed detecting transient disturbances in a noisy environment, and proposed a quick method. The correct variable morphological structure, correct erosion mixture, and morphological dilation operators will boost MM 's capability through this process. Additionally the soft-threshold denoising technique based on the Wavelet Transform (WT) was used for comparison purposes.

### III. BLOCK DIAGRAM

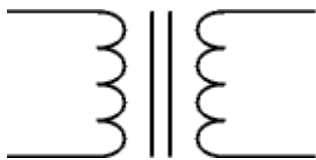


### IV. COMPONENTS DESCRIPTION

#### 4.1 POWER SUPPLY

Power flexibly is a reference to an electric force source. A gadget or framework that provisions a yield charge or gathering of burdens with electrical or different types of vitality is known as a force flexibly unit or PSU. The term is most ordinarily utilized for the flexibly of electrical vitality, less much of the time for mechanical supplies and seldom for other people.

#### 4.2 TRANSFORMER



With no power loss, transformers convert AC electricity from one voltage to another. Transformers operate only with AC, and that is one of the reasons why AC is power from the mains.

#### 4.3 RAIN SENSOR

A rain sensor is a switching device activated by rainfall. The device is connected to automatic irrigation system that causes the system to shut down in the event of rainfall. This device is also to protect the interior rainfall of an automobile from rain and to support the automatic mode of windscreen wipers.



#### 4.4 WIND SENSOR

The wind sensor is a measuring device is that involves with a heating an element to a constant temperature and measuring an electrical power that is required to maintain the heated element at temperature as wind changes. The wind velocity is proportional the heat applied to the sensor is suitable for electric experiments.



#### 4.5 CURRENT TRANSFORMER

Current Transformer Theory can be clarified along these lines: The estimation of current is integral to all AC power transducers. This is accomplished by methods for a present transformer (CT), a "doughnut"-formed gadget through which the wire whose current is to be estimated is strung. A present transformer is a sort of "instrument transformer" that is intended to give a current in its optional which is precisely relative to the present streaming in its essential.

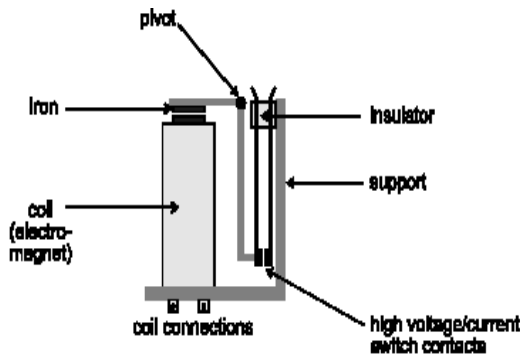
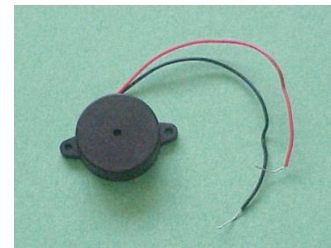
#### 4.6 PIC 16877A MICROCONTROLLER

Diverse microcontrollers have different sorts of recollections. EEPROM, EPROM, FLASH and so on are the absolute most as of late shaped recollections of which FLASH is one. Programming utilized in PIC 16877 is streak programming, so that in any event, when the force is killed the information is safeguarded. Different highlights of PIC 16F877 remember ease for programming and deleting. PIC16F877A microcontroller is utilized in the venture. Coming up next are a portion of the significant highlights of the controller.



#### 4.7 RELAY DRIVER

A transfer is an electro-attractive gadget that is valuable to kill on and a light (or something different) associated with the 220v mains flexibly on the off chance that you decide to utilize a low voltage circuit. The accompanying graph shows a regular transfer (with contacts which are "ordinarily open").



#### 4.8 GSM

GSM, which represents Global Mobile Communications Network, rules as the most normally utilized innovation for phones on the planet. Cell phones utilize the GSM system of a cell phone specialist organization via scanning for mobile phone towers in the encompassing territory.



#### 4.9 BUZZER

A bell or beeper is a flagging framework, by and large electronic, generally utilized in vehicles, household machines, for example, a microwave, or game shows. The expression "signal" gets from the scratching clamor bells made when they were electromechanical gadgets, working at 50 or 60 cycles from ventured down AC line voltage. A ring or a signal are two sounds that are usually used to demonstrate a catch has been squeezed.

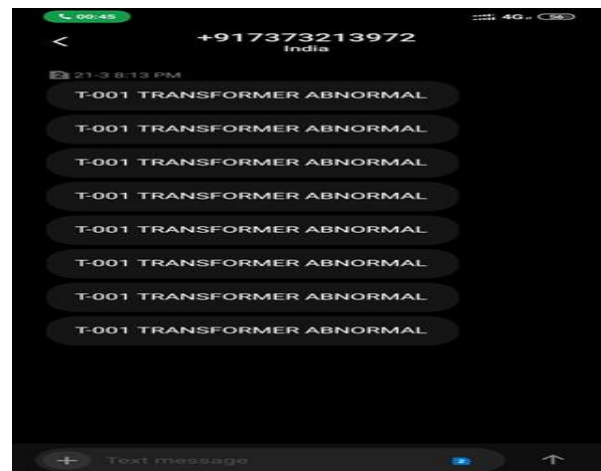
#### 4.10 LCD DISPLAY

Showcases of fluid precious stone cells (LCDs) are utilized in comparative applications where LEDs are utilized. These applications show numerical and alphanumeric characters showed in speck network and segmental showcases.



### V. RESULT AND CONCLUSION

In this paper we presented an Effective use of PIC Microcontroller power outages related to weather conditions. Freezing rain or snow nowadays can build up on damaging equipment. So it causes power line loss during heavy wind or rain because of the voltage or current that is going to be too high instead of usual voltage where the power line cable is hanging in air or attached to the ground. With the aid of wind and rain sensor the wind speed and rain level were calculated. The voltage and the current are respectively sensed by the transformer potentials and current. The details about the power line failure was sent to the EB office and the power line was tripped by GSM.



## VI. REFERENCES

[1] Hongyan Mao, "Research of Wireless Monitoring System in Power Distribution Transformer Station Based on GPRS", Volume 5, C 2010 IEEE, 978-1-4244-5586-7/10/\$26.00

[2] Ravishankar Tularam Zanzad, Prof. Nikita Umare, and Prof Gajanan Patle "ZIGBEE Wireless Transformer Monitoring, Protection and Control System", International Journal of Innovative Research in Computer and Communication Engineering (An ISO 3297: 2007 Certified Organization), Vol. 4, Issue 2, February 2016

[3] Buyung Sofiarto Munir, and Johan J. Smit, "Evaluation of Various Transformations to Extract Characteristic Parameters from Vibration Signal Monitoring of Power Transformer", 2011 Electrical Insulation Conference, Annapolis, Maryland, 978-1-4577-02769-12/11/\$26.00 ©2011 IEEE

[4] Drasko Furundzic, Zeljko Djurovic, Vladimir Celebic, and Iva Salom, "Neural Network Ensemble for Power Transformers Fault Detection", 11th symposium on Neural Network Applications in electrical Engineering NEUREL-2012

[5] D S Suresh, Prathibha T, and Kouser Taj " Oil Based Transformer Health Monitoring System", International Journal of Science and Research (IJSR) ISSN (Online): 2319-7064 Impact Factor (2012): 3.358 Volume.

[6] E Kolyanga, ES Kajuba and R Okou, "Design and implementation of a low cost distribution transformer monitoring system for remote electric power grids", 978-1-4244-5586-7/10/\$26.00

[7] Avinash Nelson A, Gajanan C Jaiswal, Makarand S Ballal, and D. R Tutakne, " Remote Condition Monitoring System for Distribution Transformer", 978-1-4799-5141-3/14/\$31.00 ©2014 IEEE.

[8] SH.Mohamadi, and A.Akbari, "A new Method for Monitoring of Distribution Transformers", 978-1-4577-1829-8/12/\$26.00 ©2012 IEEE

[9] N Maheswara Rao, Narayanan R, B R Vasudevamurthy, and Swaraj Kumar Das, "Performance Requirements of Present-Day Distribution Transformers for Smart Grid", IEEE ISGT Asia 2013 1569815481

[10] Mohamed Ahmed Eltayeb Ahmed Elmustafa Hayati, and Sherief F. Babiker, "Design and Implementation of Low-Cost SMS Based Monitoring System of Distribution Transformers", 2016 Conference of Basic Sciences and Engineering Studies (SGCAC).

[11] Monika Agarwal, and Akshaypandya, "GSM Based Condition Monitoring of Transformer", IJSRD - International Journal for Scientific Research & Development| Vol. 1, Issue 12, 2014 | ISSN (online): 2321-0613

[12] Satya Kumar Behera, Ravi Masand, and Dr. S. P. Shukla, "A Review of Transformer Protection by Using PLC System", International Journal of Digital Application & Contemporary research, (Volume 3, Issue 2, September 2014).