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A Novel Approach for Programmable Interface Based Load Shedding for Voltage Stability Improvement

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ABSTRACT

This Load Shedding is a technique by which the authority of electricity manages and handles the inconveniences of the electrical power consumed by the consumers. Blackouts of electricity are the basic problem which needs to be resolved in power systems. It is impossible to thoroughly prohibit blackouts. Unexpected and large changes in formation volume such as Interruption of a generator can cause a huge variance between formation and load pressure. If voltage and frequency are beyond the acceptable range the system turns in ambiguous position and in this position the system regulator is attempt and operated to retrieve the voltage and frequency in the acceptable range. In case the interpretation is huge the regulator can't retrieve the voltage and prevalence in the acceptable range. In this condition the solution to bypass the electricity breakdown is only load shedding strategy.

KEYWORDS: *GSM, LCD, ELS, PCB*

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I. INRODUCTION

Load shedding is a blueprint which is applied when there is insufficient electricity present to accommodate the high demand of user, and power supply or service community halt the energy accumulation to some areas. It is ultimate possibility to stabilize electricity supply and application. Load-shedding is a technique through which the electricity division manages the inadequacy of the electricity consumed by the society. Shedding process has been done to reduce the load of electricity usage in a society through different substations that are linked to the main power station. During the low frequency of voltage, the generator deteriorates to fabricate the recommended voltage. Under the circumstances authorization lacks to provide the expected quantity of electricity which impels the authorization to execute a shedding. To symmetry the availability and the demand of electricity the concerned authorization has to implement the load shedding process. The load-shedding process is more vulnerable to human errors as a machinist has physically switched the load ON/OFF. We can represent a well-organized and inexpensive solution to execute this technique significantly from one centralized place; We will be able to modify the physical system with a highly sophisticated consolidate computerized system. "An accession to automated city load shedding mainframe using embedded technology" accomplishes the implementation of the embedded system automation which has capped almost all regions of the world. This helps in lowering the application cost and also makes it easy to establish a fully automated system both at the controller and transformer.

MOTIVATION

Energy is the elemental obligation for the economic advancement of a nation. Many operation essentials to present-day living grind to pause when the supply of energy halts. It is actually difficult to evaluate the actual significance of the role that energy has played in building up present-day civilization. In this modern world, the dependency on electricity is so much that it has grown into a PART & PARCEL of our life. So we need to save more & more electrical power. The work is a programmable interface based operation arrangement that supervise load operation, multiple numbers of times according to programmed guidance. The system will eliminate the hand operated ON/OFF switching of load. This system is enforced for load shedding time management which is used when the electricity requirement outpaces the supply and there comes a need for manually switching ON/OFF operation.

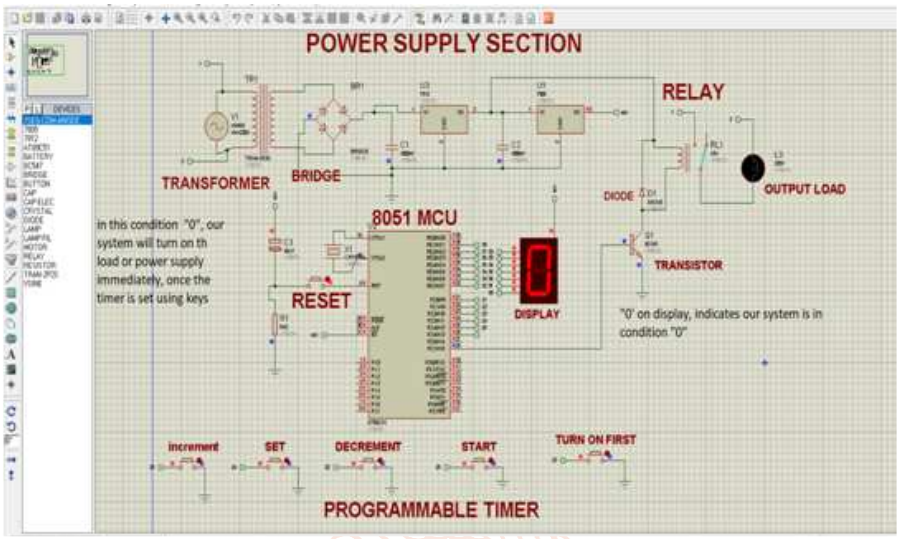
II. METHODOLOGY

The methodology covers the analysis phase and the steps taken to develop a cost effective, dynamic and modern load shedding system with the technological implications used.

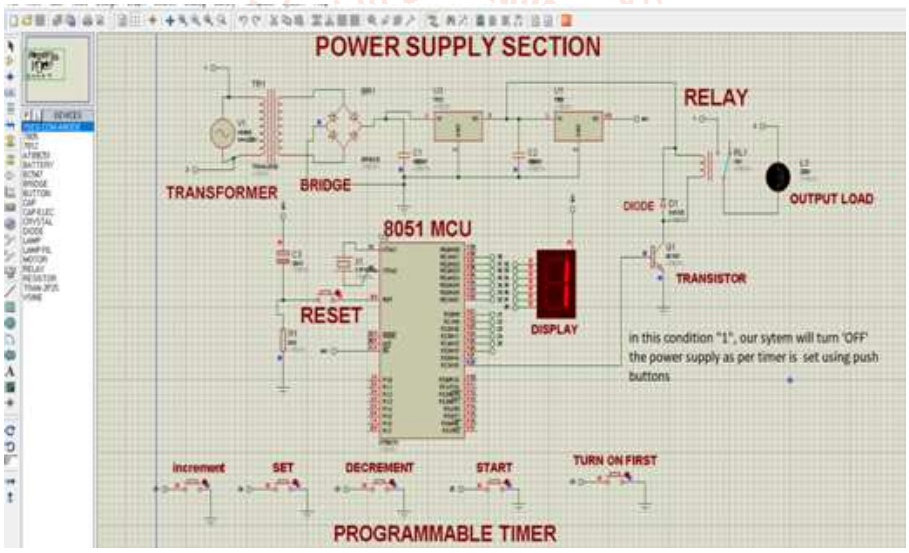
The concept is developed using Proteus tool with Kiel. The Proteus is very popular tool used for design automation to create schematic and electronic points. Kiel offers debuggers, IDE, compilers, RTOS, library managers for wide range of micro-controllers.

III. RESULTS

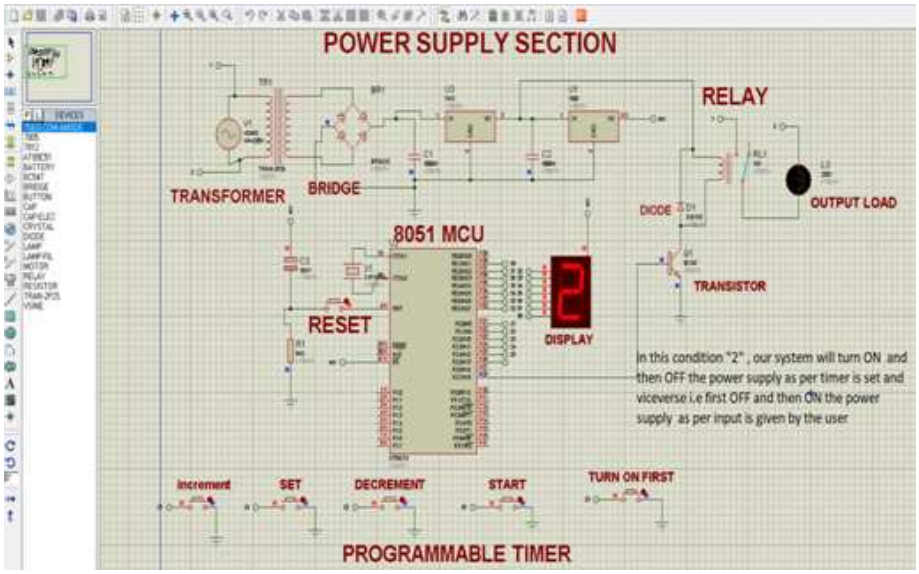
The results obtained during simulation phase are described below:



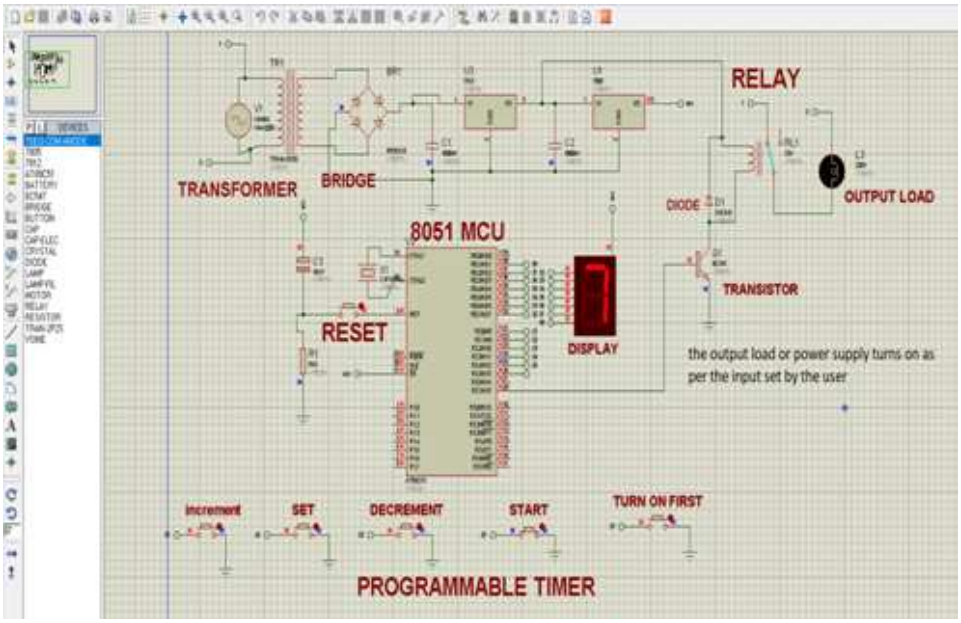
In this condition “0”, our system will turn on the load or power supply immediately, once the timer is set using keys



In this condition “1”, our system will turn “OFF” the power supply as per timer is set using push buttons.



In this condition “2”, our system will turn ON and OFF the power supply as per timer is set and vice versa i.e., first OFF and then ON the power supply as per input is given by the user.



The output load or power supply turns ON as per the input set by the user

IV. PARAMETERS USED

Set Condition	Setting Up Values	Current Time	Condition of load(Output power supply)
Condition 0	00:05:32 (HH:MM:SS)	09:40:10 (HH:MM:SS)	The output power supply will trigger at time interval of 5 min and 32 seconds, starting from 09:40:10
Condition 1	00:02:15(HH:MM:SS)	09:48:07 (HH:MM:SS)	The output power supply will turn ON after the time period of 2 min and 15 seconds, counting from 09:48:07
Condition 2	Sub Condition 1: TIMER 1:- 01:05:23 (HH:MM:SS) TIMER 2:- 02:09:15(HH:MM:SS) Sub Condition 2:- TIMER 1:- 03:23:12(HH:MM:SS) TIMER 2:-01:17:03(HH:MM:SS)	09:52:15(HH:MM:SS) 12:35:06(HH:MM:SS)	The output power will turn OFF for a period of 1 hr, 5 min and 23 seconds and turn ON for a period of 2 hr, 9 min and 15 seconds, starting from 09:52:15 The output power will turn ON for a period of 3hr,23min and 12 seconds and is turned OFF for a period of 1hr, 17 mins and 03 seconds, starting from 12:35:06

V. CONCLUSION

The programmable based load shedding system helps in improving the standard and stability of power grid. The paper presents the design of programmable interface based Load Shedding System for improving voltage stability with motivation and research methodology implemented.

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