Load Shedding of Plant Equipments From Thermal Power Plant

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Abstract- *Energy is the basic necessity for the economic development of a country. Energy production is more costly which is impossible for distribute the energy as maximum number of users right. Nowadays load shedding is a common buzzword in our country for this reason the industry does not continue the production. The aim of our project work is to continue power flow in industry and load shed the user as a balance condition. Hence the load shedding control system done work by manually. In now-a-days load shedding is controlled by a computer based developed system. This paper focuses on developing a microcontroller based procedure for controlling the load shedding system where manual work will be minimized by selecting the feeder and substation and duration of shedding time by the user easy to detect fault using microcontroller. To continue the industrial power for effective manufacturing, over load cut for thermal power plant safety.*

I. INTRODUCTION

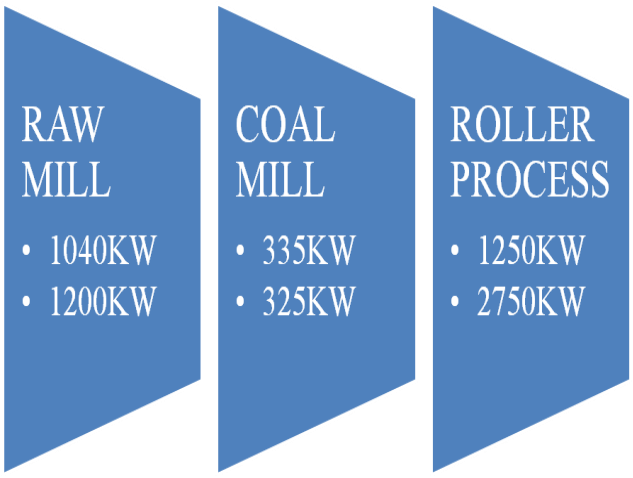
Electrical generation and transmission systems may not always meet peak demand requirements the greatest amount of electricity required by all utility customers within a given region. In these situations, overall demand must be lowered, either by turning off service to some devices or cutting back the supply voltage in order to prevent uncontrolled service disruptions such as power outages (widespread blackouts) or equipment damage. Utilities may impose load shedding on service areas via rolling black-outs or by agreements with specific high-use industrial consumers to turn off equipment at times of system-wide peak demand. In Industries that generate heat in their day to day operations have the option of coordinating their process control systems to also generate power.The generated power could be useful for the industry's own requirements as well as for exporting power to the utility grid during contracted hours. The boiler house, transformers and switchgear are necessary, even though it detracts from an organization main stream activity; whether that be refining sugar, making cars, paper or chemicals.

Industrial customers are also providing demand response. Compared with commercial and residential loads, industrial loads have the following advantages the magnitude of power consumption by an industrial manufacturing plant and the change in power it can provide are generally very large; besides, the industrial plants usually already have the infrastructures for control, communication and market participation, which enables the provision of demand response.

As the demand for electricity grew, the high cost of moving coal, the dominant fuel for generation, made it economically attractive to build large power stations on, or close to coalfields. In response, the Grid grew to allow bulk transfers of electricity from the power stations to the demand centers-often referred to as coal by wire.

II. PROBLEM STATEMENT

In Ramcocement industry power can be mainly taken from their own Thermal power plant. Thermal power plant(TPP) totally generates 75MW.There is any problem will occur in the thermal power plant then temperature or pressure in the power plant will be suddenly rises. Due to that temperature rises cement industry process equipment to get failed. In order to prevent these damages we must decreases the temperature for that we reduces the load.



2.1 MAIN DRIVES OF RAMCO INDUSTRY

If any source fail in the plant we can use automatically sense in the temperature sensor shed on the relays operate to shut down the cement drives.

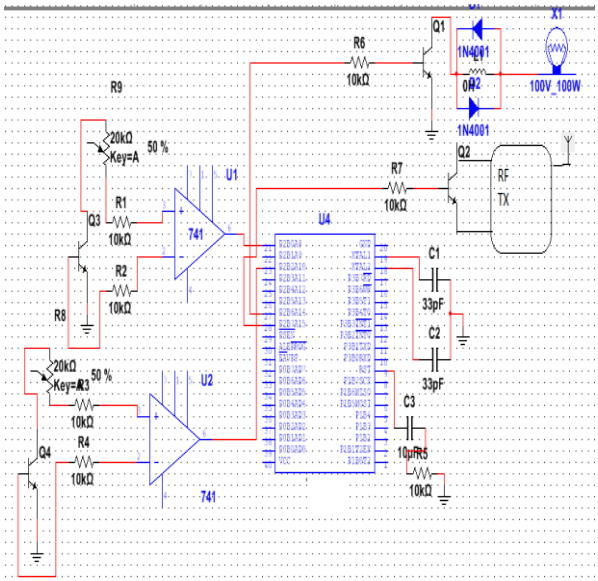
OBJECTIVE:

- To improve the input power factor.
- Reduce the power loss of the cement industry.
- To improve the energy efficiency.

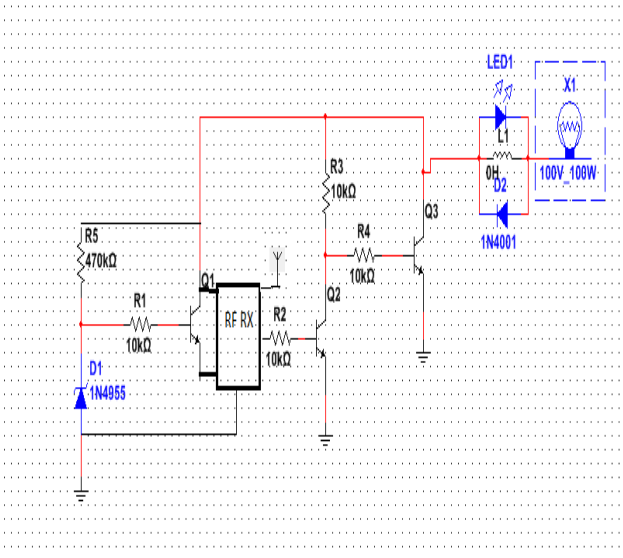
III. PROPOSED WORK

3.1CIRCUIT DIAGRAM:

3.1(a) TRANSMITTER ONLY



3.2(b)CIRCUIT DIAGRAM (RECEIVER ONLY)



3.3 COMPONENTS

- LM35 TRANSISTOR
- LM358 IC (8PIN)
- REGISTER 1K,10K.
- PRESET 1K.
- LED
- TRANSFORMER 12V -0 – 12V (1 AMPS)
- RELAY 12V
- 89S51 IC (40 PIN)
- RF TRANSMITTER.
- LCD DISPLAY.
- DIODE IN4007
- CAPACITOR 1MICRO FD

3.4 IC 89S51:

The AT89S51 is a low-power, high-performance CMOS 8-bit microcontroller with 4K bytes of In-System Programmable Flash memory. The device is manufactured using Atmel's high-densitynonvolatile memory technology and is compatible with the industry-standard 80C51 instruction set and pinout. The on-chip Flash allows the program memory to be reprogrammed in-system or by a conventional nonvolatile memory programmer. By combining a versatile 8-bit CPU with In-System Programmable Flash on a monolithic chip, the Atmel AT89S51 is a powerful microcontroller which provides a highly-flexible and cost-effective solution to many embedded control applications.

The AT89S51 provides the following standard features: 4K bytes of Flash, 128 bytes of RAM, 32 I/O lines, Watchdog timer, two data pointers, two 16-bit timer/counters, a five-vector two-level interrupt architecture, a full duplex serial port, on-chip oscillator, and clock circuitry. In addition, the AT89S51 is designed with static logic for operation down to zero frequency and supports two software selectable power saving modes. The Idle Mode stops the CPU while allowing the RAM, timer/counters, serial port, and interrupt system to continue functioning. Capacitors are widely used in electronic circuits for blocking direct current while allowing alternating current to pass.

3.5 WORKING:

- Intwo comparator setup in that we can know about the temperature levels of the Thermal power plant. That temperature level will be shown in the display.
- Here we can use 89S51 IC (40 pin) to set up the program for the temperature indication.
- If the temperature will be suddenly increased it will be shown by display itself then automatically particular load will be getting off after some time if temperature will be minimum then load will be getting started.In two set of loads. First one can set this with in wiring connection.Second one, we can set

with radio frequency concept we can try to control the load with the use of transmitter and receiver.

IV. RESULT

Loadshedding is aimed at removing load from the power system when there is an imbalance between the electricity generation capacity available and the demand for electricity. If we did not shed load, then the whole national power system would switch off and no one would have electricity. Loadshedding is therefore done to protect the national power system from collapsing.

- Saving electricity (by using energy-efficient appliances, switching off equipment when not in use, using alternative sources of energy such as solar geysers) has benefits such as reduced cost, less pollution, the better use of natural resources (coal, water and fuel) and less wear and tear on the power stations, transmission and distribution systems – and it saves customers money.Can be effectively utilized for cost reduction and manual work reduction in industries.This can be used in most of the industrial purpose.The company profit to be increase.

V. CONCLUSION

In this paper the importance of a timely applied load-shedding action has been reconfirmed. If the specific action is not performed in time, a more painful load-shedding action must be performed in order to avoid avoltage collapse. Based on the discrete dynamics which drive voltage instability when they lose voltageregulation capability, a method for the calculation of the critical load-shedding time has been presented. Finally we can say that, by using microcontroller the control of load shedding can be made more easily. It is shown at emphasizing on shedding load of a more critical bus yields more desirable results, as expected.