

# Microcontroller Based GSM Control System

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**Abstract**— The aim of this project is to provide Automation Solution to controlling the different parameters & sensors of the control system in Industrial environment using GSM & Microcontroller. We were particularly interested to improve productivity and quality of industrial machinery outcome. The product quality was evaluated in terms of environmental specification was investigated. We provided suitable solution by keeping safety features in mind. Due to of two discrete modes, it will be possible to operate machinery in both Auto as well as Manual mode. Sometimes it is hazardous to interfering into the machine control system by different operators or users. So we used GSM to monitoring and controlling from anywhere.

**Keywords:** Automation, GSM module, sensors, control valves, heater, microcontroller

## I. INTRODUCTION

Automation is the use of various control systems for operating equipment such as machinery, processes in factories & other applications with minimal or reduced human intervention. The main goal of our project is to replace the human operating control system by an autonomous control system. In this automation system there are four main steps: sense, compare, GSM transmit-receive,

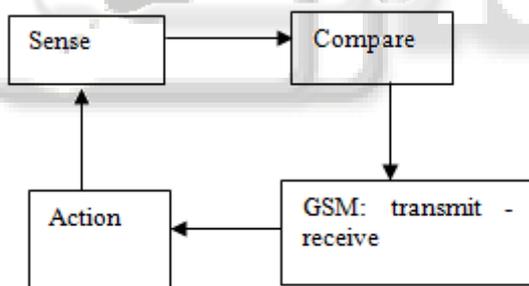


Fig. 1: behavior of the process

action From the above figure in the first step information acquisition observes the behavior of the process by sensing or measuring process parameters of interest. The information analysis and decision making step analyses the behavior of the process by comparing the acquired information with the desired result. Then a decision is made about the new directives or commands that would be required to effect any corrections. Then GSM modem transmit the signal to the remote element & receives command from the operator. After that control execution step actually controls the behavior of process to effect the corrections. This directives are called command output.

## II. EXPERIMENTAL SETUP

The structure of this control system is given below in diagram. In the initial state all parameters and components are in the holding state.

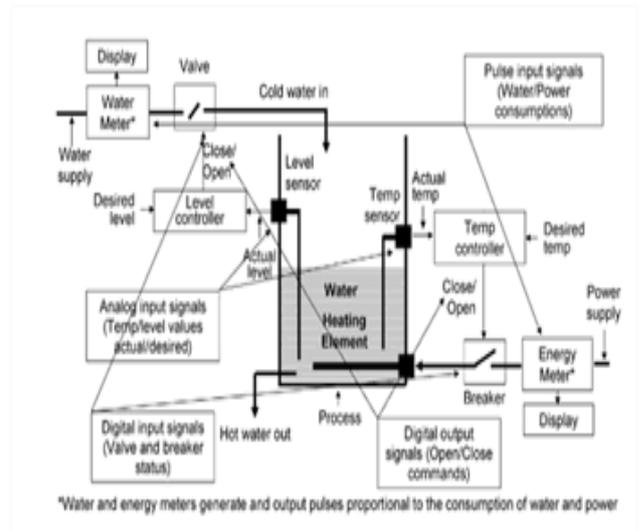


Fig. 2: water heating & level controlling system

From the above figure when we apply the pulses to the system through the controller the solenoid valve changes its state from close to open. Because of that the flow of water can be passes through it to the tank. When water level reaches at full level of the tank the level sensor sensing it give the data to the controller. Controller controlling it and stops the water flow to closing the solenoid valve through the relay. After that GSM send message to inform the state of process to the operator. The operator then give the command through sending message to controller to on the breaker of the heating element. Because of it heater goes on through relay when the temperature of heater reaches its set point or higher heater goes off automatically and again the status of process parameters sending to the operator through GSM. After that receiving command from remote station controller open outlet valve through the relay and hot water goes out until the tank is empty or low level indication cannot be done. Once the low level sensor sensing, again the main water flow valve open water fill in the tank. Thus this all process loop running continuously without any human interruption. If u want to stop all system then cut the power supply of the system manually.

## III. RESULT

- PT100 gives a output 100 Ω at 0 °c
- Two level sensor detect high & low level as we set
- Once tank temperature reached at set point controller cut off the breaker and heater goes off. Then will tank automatically empty by opening outlet valve at bottom till the low level comes.
- GSM modem can be used for remote controlling purpose.
- In this system 1 ° c change in temperature, 20mV change in output.

Table. 1: Temperature: I/p Vs. O/p

<b>Temperature (° c )</b>	<b>O/p voltage ( mV )</b>	<b>Decimal ( bit )</b>
30	300	144
40	320	145
50	340	146
60	360	147
70	380	148

#### IV. CONCLUSION

After completing this project we have concluded that the automatic system can work itself when we set a set point value as per our requirements. So, we do not require more man power and system will work continuously itself without any interfering. Because of that we can get desire result & save manpower And time with quality of process.

#### V. FUTURE EXPANSION

In this project we use two sensors, now we will use more sensors like humidity, pressure, flow etc... And we create a more featured automation system and controlling of that system more accurately using more powerful controller & GPRS to monitoring & controlling system from any remote location.

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#### REFERENCES

- [1] The 8051 microcontroller and embedded systems by Muhammad ali mazzidi, Janice Gillespie mazzidi, Rollin d. McKinley.
- [2] Overview of industrial process automation by K.L.S. Sharma, senior professor IIT, Bangalore, India.
- [3] "Level control in horizontal tank" by tunyasirirut, s. dept. of instrumentation eng. Pathumwan inst. Of

techno. Bangkok. IEEE papers SICE ICASE, 2006 Int. joint conference.

- [4] "SIEMENS AT Command set" <http://www.siemenswavecom.com/XZZX/mc35i.zip>, 2010.6.14 .
- [5] J.G.Ziegler and N.B.Nicholas, "optimum setting for automatic controller" ASME trans. Vol. 64, pp. 759-768, 1942.
- [6] Sahajanand laser technology ltd., Gandhinagar, India. [www.Sahajanandlaser.com](http://www.Sahajanandlaser.com)