

Desing of an Control Unit for an Annunciator System

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Abstract— The control unit that is to be designed can be used to control the annunciators systems in many organizations. Annunciator is a Centralized Warning Panel [CWP], it can be used to disclose the layout and announce the status and measurement parameters of industrial processes, manufacturing facilities and other operations. The system performs monitoring, logging and storing of events i.e., faults and normalization of faults. System also provides accept and reset facilities for rectification of the faults. The overall flow of data in the system is through communication across the system via serial port connected to various ports using RS 232 along with method, utilities in the software which can be used to store and maintain data. Many Organizations have their machineries placed at distant places spread over acres of land. In order to increase the efficiency in controlling these machines and to achieve the status of these machines from the static place can be done using this control unit for an annunciator panel.

Keywords: *Annunciator, rectification*

Introduction:

This paper is based on the design of a digital control unit for an annunciator system along with its implementation details and its advantages. Many organizations are spread over acres of land and contain different machineries that make up the organizations. Thus different machineries are placed at distant places in the organization.

Most of the times it is not quite efficient to go to particular machine in order to see whether it is working as required or not. Besides it is time consuming. Thus through this control unit the administrator can control and supervise all the machineries by sitting at a static place.

The system performs monitoring, logging and storing of events i.e., faults and normalization of the faults. Also accept and reset functions are also provided so as to help in

monitoring of the events taking place in various machines. If suppose the fault occurs in one of the machine (say X), then it will start blinking on the control unit so as to notify the user that the fault has occurred in machine X and it needs to be worked on. Accept function is used for this purpose. Once the fault is seen by the administrator he clicks on the accept button so that it will denote that the fault has been seen and appropriate action is being taken. Once the fault is cleared the reset button is used so as to check whether the system works as required or not.

In order to make control unit more user friendly, three LEDs are used so as to notify about the fault, its rectification and current condition. The main purpose behind designing this control unit is to make the system platform independent. Thus the system is an open source system.

Implementation:

This project is based on designing of the control unit which can be used for number of systems. Different systems such as one at the fuel dispenser station, some automobile organizations, etc. can be handled using these control unit.

The control unit contains the various features which would prove beneficial as it would help the administrator to control and supervise the whole system at one go. Thus in order to achieve this we have to connect the annunciator panel to the control unit. Annunciator is nothing but the Centralized Warning Panel [CWP], which is used to reveal the layout and annunciate the status and measurement parameters of industrial processes, manufacturing facilities and other operations. Various machineries can be connected to the annunciator so that administrator can be able to know the status of the particular system. The annunciator and the control unit are connected to each other via RS 232 cable. Serial communication is used between the annunciator and unit.

We are designing the control unit which can be used in the Thermal Power plant in order to control the different machines. The architecture (fig.1) below will give the clear idea about what the project is all about.



The above diagram shows the detailed representation of the controller window. The system shown in the panel consists of total 75 windows. Each window represents the type of error occurring in the system. Various colors are used in the panel, so as to help the administrator in detecting the errors and thereby helping to monitor the system effectively.

In order to help the administrator, when the error occurs in the system, the window where the error has occurred will start blinking so as to notify the administrator that the error has occurred in that particular window. The panel consists of the two buttons viz., *ACCEPT* and *RESET* that would help him to rectify the error and take the appropriate action. Once the *ACCEPT* button will be placed it will be notification that the administrator has learned about the error in the system and the necessary action should be taken. *RESET* button will be used once the error in the system has been corrected. This button is just like the refresh button which would help to understand whether the error has been corrected properly or not. Once the error has been corrected the shade of the window changes to the normal, say green indicating that there is no error in the system and it is working properly. The choice of shades to be chosen for the notification can be different depending upon the requirements.

The other typical features of the system are rectification, report generation, etc. As the errors occur in the system the log report is generated so that what action was taken at what time is all known. The report can be in the form of a SQL database. The window number, annunciator number, time and date, rectification, and so on can be some of the entities of our database. Here, the annunciator number denotes the number of systems that are connected to the annunciator. For example, if there are two systems that are connected to the annunciator then the annunciator number could be say, A1 and A2 respectively. Also the number of windows in a particular system can differ depending on the requirements.

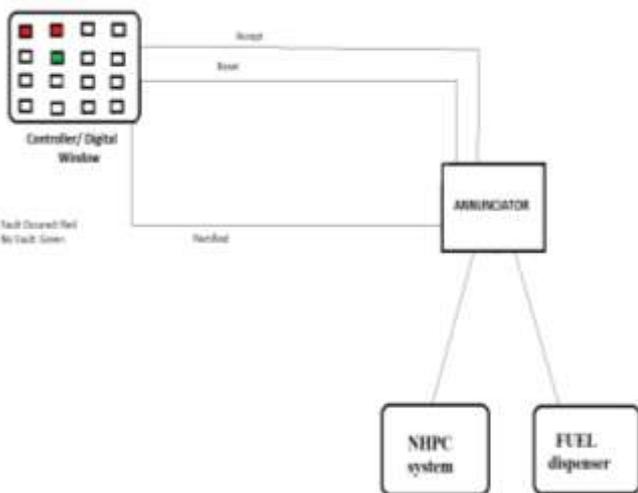


Fig. 1 System Architecture

The controller or digital window which is shown above in the diagram is nothing but the unit which we are designing i.e., the control unit for controlling the machine. The unit consists of number of windows which indicate the type of errors that occur in that particular window. The more detailed diagram for the controller window can be as shown below:

Advantages:

1. The annunciator panel can be controlled by a single click.
2. The machines located at distant places can be handled through the computer.
3. Platform Independent.
4. Ease in monitoring the events occurring in the system.
5. Helps in reducing the time required for completing the particular job.

Future Scope:

In this project we are using RS-232 serial port communication. So in near future we can make use of wireless technology so as to make the system more portable and ease in handling. We can also make use of Bluetooth in order to establish the communication between the control unit and the

annunciator panel. Though the cost of project will increase by some margin but at the same time it will save the time and the cost required for the maintenance of wired communication.

Conclusion:

The wide range of features of the control unit along with some good advantages, the control unit becomes the reliable one as it helps to decrease the time required for the monitoring the events occurring in the system.

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