PROCESS MONITORING AND DATA ACQUISITION SYSTEM

A PROJECT REPORT PRESENTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF DIPLOMA IN ELECTRICAL ENGINEERING (INSTRUMENTATION) OF MARA INSTITUTE OF TECHNOLOGY.

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SYNOPSIS

Computers are widely used in process monitoring and data acquisition system. There are advantages in using computers because the software packages can be designed according to requirements of any industrial equipment.

The functionalities usually include the following:

1) Graphic display of the process
2) Alarm and event management
3) Real time and historical trending
4) Report generation
5) I/O interface driver and communication facilities

In this project, a process monitoring and data acquisition software package is developed for IBM PC-AT compatible computers. The software package is written in Turbo Basic.

The software is capable of displaying :

1) The process plant
2) Real time and historical trending
3) The face-plate

The software package is also used to monitor water level of a three tank process plant.

The process variable is obtained from the controller (1 to 5 volt DC) and is converted to digital values using DM P011B, a 12 bits A/D card.

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1.0 INTRODUCTION

Recent advances in microcomputer technology enable microcomputer systems to acquire and analyze process data quickly and efficiently. One of the most significant applications of this technology is in process monitoring that is, the recording and evaluation of variables characterizing a manufacturing process.

The purpose of process monitoring is to determine whether some prespecified criteria for a process are being met and if possible to act so that they are met.

Microcomputer systems differ greatly in their process monitoring capability. A process via accessories such as analog to digital converters and multiplexers. With some simple software, in Turbo Basic for example to collect data - typically several hundred readings per second. With higher performance acessories and compiled or assembly language software, such a set up could take thousands of readings per second, though it might fill up the RAM memory very quickly at such a rate.

There are a lot of the advantages of a real time microcomputer system in process monitoring. A real time system can collect data at variable sampling rates and achieve very high rates.

The real time system can, by definition do data acquisition, recording, analysis and presentation simultaneously without interruption.

The software package is programmed to receive and