A PLC CONTROLLED MODEL OF A DRINKING WATER PACKAGER ASSEMBLY LINE

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ABSTRACT

A model of a packaging assembly line is constructed and is to be controlled by a Programmable Logic Controller (PLC). The assembly line mainly consists of a conveyor system with four stations to execute specific tasks. These stations are equipped with sensors, actuators, and indicators to help students visualize the role of PLC in the production industry. It is hoped that students will understand better the operations and applications of ladder programming and the PLC.

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CHAPTER 1

1.0 INTRODUCTION

1.1 Background

In most forms of large industry, the route towards increased productivity is through increased automation of process and machines. Whether to directly increase output quantities or to improve product quality and precision, automation, in any form, involves replacing some or all human input and effort required to carry out and control certain operations.

Automation in factories is always associated with an assembly line. This assembly line is a manufacturing process in which interchangeable parts are added to a product in a sequential manner to create a finished product. It usually consists of each worker in control of one specific job and their work related movements are reduced to a minimum. Therefore, it is this control of one specific job that is replaced by a machine in a process of automation. To achieve process automation, the operator must be replaced by some sort of an automatic system that is capable of controlling the process with little of no human intervention.

In an assembly line, a product is required to move from the origin of the line towards the end where it is supposed to come out as a finished good. Usually, to move the product without the intervention of human effort, it is conveyed using a conveyor. Be it a gravity roller conveyor, belt conveyor, or chain conveyor, there are all actually defined as a machine that transfers a load or objects between two points by a moving surface. The direction of movement can be horizontal or inclined and either in straight lines or around bends. Among other areas of conveyor applications are in the mining industry, solid waste compacting systems and in the ordinary supermarket counters.