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RESEARCH ON COMPUTER NUMERICAL CONTROL MACHINE

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INTRODUCTION

CNC is a widely accepted and commonly used term in the machine tool industry. CNC operates machine tool automatically. The step how CNC works: -

a. Numerical data may be fed into the system by punched floppy disk or magnetic tape or directly from computer.
b. A translating unit read the data and charges it in loan electrical from that the electrical machine tool can understand.
c. A memory system stores the data until is needed.
d. Servo units on the machine tool convent the data into actual machine movement.
e. A gauging device measure the machine movement to determine it the servo units has given the correct commands.
f. A feedback unit feed information back from the gauging device for comparison so that the machine moves to correct location.

In this report, we are trying to introduce to all readers about Computer Numerical Machine and explain how it works. This report will also give a general guidance to those who wish to take up such similar project in the future.

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THE HISTORY OF NUMERICAL CONTROL

In 1947, John Parsons of the Parsons Corporation, began experimenting with the idea of using three-axis curvature data to control machine tool motion for the production of aircraft components. In 1949, Parsons was awarded a U.S Air Force contract to build what was to become the first numerical control machine. In 1951, the project was assumed by the Massachusetts Institute of Technology. In 1952, numerical control arrived when MIT demonstrated that simultaneous three-axis movements were possible using a laboratory-built controller and a Cincinnati l Hydrotel vertical spindle. By 1955, after further refinements, numerical control became available to industry.

Early NC machines ran off punched cards and tape, with tape becoming the more common medium. Due to the time and effort required to change or edit tape, computers were later introduced as aids in programming. Computer involvement came in two forms: computer aided programming languages and direct numerical control (DNC).

Computer aided programming languages allowed a part programmer to develop a NC program using a set of universal "pidgin English" commands, which the computer then translated into machine codes and punched into the tape. *Direct numerical control* involved using a computer as a partial or complete controller of one or more numerical control machines (see Figure 1-1). Although some companies have been reasonably successful at implementing DNC, the expense of computer capability and software and problems associated with coordinating a DNC system renders such systems economically unfeasable for all but the largest companies