****Cairo University

Faculty of Engineering

Electronics and Electrical Communications Engineering Dept.

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| Three Axis CNC Machine |
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| Prof. Dr. Ahmed Abo El Saoud |

Aali711964@yahoo.com

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| --- | --- |
| Student Names | Student E-mail Addresses |
| Islam Ahmed Zakaria Ahmed Nasr | eslamz\_99@hotmail.com |
| Ingy Ismail Ibrahim Mohamed | ingy\_ii@hotmail.com |
| Housam Mahmoud Mohamed Kamal El | h\_el.doc@hotmail.com |
| Ola Amr Nazir Hassan Saadawi | Olasaadawi@hotmail.com |

Three Axis CNC Machine

Prof. Dr. Ahmed Abo El Saoud

**Abstract:**

The main purpose of this project is to design and construct a 3 axes computer controlled milling machine which is capable of producing 3D wood or metal solid objects. The design and implementation of the project go through many phases.

First Data acquisition card K8055 which is used to provide a microcontroller with the required data and receives feedbacks.

Second a microcontroller pic16f877A used to connect all the drivers together and to control all of them acting as an intermediate stage between the Data acquisition card and the driving circuits.

Third three driving circuits consisting of logic gates, multiplexers and D flip-flops to control XYZ axes motion using 3 DC motors.

The element that is used for the process of feedback is a shaft encoder that counts the number of rotations and pulses corresponding to the required distance.

The K8055 card will be controlled by the PC, a written software code on C++ will be used to connect the card to the PC and to process data and to interface the card with the microcontroller.

**CONCLUSION:**

Everyone involved in the manufacturing environment should be well aware of what is possible with these sophisticated machine tools. The design engineer, for example, must possess enough knowledge of CNC to perfect dimensioning and tolerance techniques for work pieces to be machined on CNC machines. The tool engineer must understand CNC in order to design fixtures and cutting tools for use with CNC machines. Quality control people should understand the CNC machine tools used within their company in order to plan quality control and statistical process control accordingly. Production control personnel should be abreast of their company's CNC technology in order to make realistic production schedules. Managers, foremen, and team leaders should understand CNC well enough to communicate intelligently with fellow workers. And, it goes without saying that CNC programmers, setup people, operators, and others working directly with the CNC equipment must have an extremely good understanding of CNC.