HIGHER TECHNICAL INSTITUTE

MECHANICAL ENGINEERING COURSE

DIPLOMA PROJECT

PART PROGRAMMING ON A CNC VERTICAL MILLING MACHINE AND DESIGN OF A MILLING FIXTURE

M / 1034

NICOLAOU KYRIACOS

JUNE 2007

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PART PROGRAMMING ON A CNC VERTICAL MILLING MACHINE

By

NICOLAOU KYRIACOS

PROJECT REPORT SUBMITTED TO THE
DEPARTMENT OF MECHANICAL ENGINEERING
OF
THE HIGHER TECHNICAL INSTITUTE

NICOSIA-CYPRUS

IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR
THE DIPLOMA OF TECHNICAL ENGINEERING
IN MECHANICAL ENGINEERING

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Also I would like to thank my parents because they are always in my side day by day.

<div align="right">

Nicolaou Kyriacos
3rd year student in
Mechanical Engineering
H.T.I

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ABSTRACT

The specific project was carried out to manufacturing components on the CNC vertical milling machine BRIDGEPORT IMKII and also to design and manufacturing of a milling fixture to clamping the component to be manufactured.

The main objective is the part programming for manufacturing three components and I have to use linear interpolation, circular interpolation, canned cycles and subroutines.

HIGHER TECHNICAL INSTITUTE
NICOSIA – CYPRUS
MECHANICAL ENGINEERING DEPARTMENT

DIPLOMA PROJECT 2006/2007

Project Number: M/1034

Title: "CNC part programming and machining on the vertical milling machine Bridgeport interact 1MKII."

Objectives:

1. Study the programming and machining characteristics of the Bridgeport 1MKII (with TNC 155 Heidenhein control) CNC vertical milling machine.

2. Produce detail drawings of the components to be manufactured.

3. Design a milling fixture to ensure location, support and clamping of the component to be manufactured. Detailed drawings of the proposed fixture must be prepared.

4. List the procedure to be followed for machining each of the two components.

5. Write a part program for the manufacture of each component.

6. Make use of Linear Interpolation, circular interpolation and canned cycles.

7. Test of the above programme on the Heidenhein Control simulation facility.

8. Construction of designed milling fixture and manufacturing of components selected on the CNC milling machine.

Terms and Conditions:

1. All recommendations should be according to ISO.

2. Selection of components for the milling fixture should be according to standard components.

Student   :   Nicolaou Kyriakos N. (3ME)
Supervisor   :   Dr Vassilios Messaritis

Chapter 1:

Chapter 2:

Chapter 3:

Chapter 4:

Chapter 5:

Chapter 6:

Chapter 7:

7. Milling

Chapter 8:

Chapter 9: