Dedication

To my parents, teachers and my family

Acknowledgements

I wish to express my deepest gratitude to my supervisor, Dr. El khawad Ali Elfaki , for his support, advice and guidance throughout the course of my research.

Numerous interactions with my colleges Hamed, Abuzar, Ibneouf and Hassan Abdallah have as well inspired me throughout my graduate study. In particular, I would like to express my thanks to Eng. Babekir , Eng. Walid Badreldin and all the engineers in workshop staff in Elshagara Industrial company whom shared with me their experience and optimism in setup of CNC testing system.

Thanks are extended to my teachers. Dr. Abd Alfattah Bilal Abdelsalam and Dr. Madlul Awad Saeed the head of production section, for providing necessary facilities and assistance throughout this process. And he did not spare his effort and passion hard to Taking Masters he may all thanks and appreciation and respect. Finally, I am expressing my sincerest gratitude to my parents, my sister and my Brothers for their love and support during my studies.

Abstract

Optimization of NC technology rests in selection of one optimal variant from several possible. Variant theoretically solved in CAD/CAM systems with aid of NC module of CAD/CAM system and module for simulation and verification of NC data minimizes costs of their creation and verification and brings qualitative basis for optimizing and decision process. This all then goes towards serious decreasing of costs and work expenditure not only in technology, but to costs decreasing of NC data debugging too.

In this research two products, namely, a plunger fixture and clamp fixture, were produced using CAD\CAM techniques with an optimization module.

The machining time for the plunger fixture is conventional milling machining with a copy attachment was calculated , theoretical and found to be equal to 10.687 hour . This time is must longer than the time taken to machine the clamp fixture using optimized CAD\CAM techniques IT took about 1.5 hour. to product the part using CAD\CAM .

الخلاصة

الاستفادة المثلى من تكنلوجيا التحكم الرقمى NC تقع في اختيار واحده من البدائل المثلى من عدد ممكن من البدائل التى يمكن حلها نظريا في أنظمة ال CAD / CAM مع المساعدة من التحكم الرقمى NC ووحدة ال CAD / CAM. نظام وحدة المحاكاة والتحقق من التحكم الرقمى NC نجد ان البيانات تقلل من التكاليف الإنشائية . كل هذا يقود الى تناقص ملحوظ لتكاليف العمل ليس فقط في التكنولوجيا، ولكن إلى تقلص تكاليف البيانات للتحكم الرقمى NC .

في هذا البحث نجد ان هنالك اثنين من المنتجات، عباره عن كباس وفك قابض ، هذه المنتجات قد أنتجت باستخدام تقنيات ال CAD \ CAM مع التحسين.

الزمن المتحصل عليه بالنسبة للفك فى ماكينة التفريز التقليدية للنسخه المرفقة حسب نظرياً ووجد انه يساوى 10.687 ساعة . هذه المدة يجب ان تكون أطول من الوقت المستغرق بالنسبة للفك عند استخدام التقنية المحسنة بواسطة التصميم و التصنيع باستخدام الحاسوب حيث وجدت تعادل 1.5 ساعة لانتاج هذا الجزءعند استخدام التصميم و التصنيع باستخدام الحاسوب .

List of symbol

APT…….Automatically program tools

NC…….. Numerical control

CIE ……. Computer Integrated Engineering

CIM……. ……Computer Integrated Manufacturing

CNC…… Computer numerically control

CAD…… Computer added design

CAM……. ……..Computer added Manufacturing

GPSS…….. ……General Purpose Simulation System

CMR…… .. Command Multiply Ratio

DMR…….. ….. ..Detect multiple ratio

MPG…… .. Manual pulse generator

AC…….. . … lternating Current

DC ……. … . Direct Current

2D…… … ..Tow dimension

3D……. … .Three dimension

EDM……. … electrical discharge machining

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