

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

الآية

قال تعالى: ﴿اللَّهُ لَا إِلَهَ إِلَّا هُوَ الْحَيُّ الْقَيُّومُ لَا تَأْخُذُهُ
سِنَةٌ وَلَا نَوْمٌ لَهُ مَا فِي السَّمَاوَاتِ وَمَا فِي الْأَرْضِ مَنْ
ذَا الَّذِي يَشْفَعُ عِنْدَهُ إِلَّا بِإِذْنِهِ يَعْلَمُ مَا بَيْنَ أَيْدِيهِمْ وَمَا
خَلْفَهُمْ وَلَا يُحِيطُونَ بِشَيْءٍ مِّنْ عِلْمِهِ إِلَّا بِمَا شَاءَ
وَسِعَ كُرْسِيُّهُ السَّمَاوَاتِ وَالْأَرْضَ وَلَا يَئُودُهُ حِفْظُهُمَا
وَهُوَ الْعَلِيُّ الْعَظِيمُ﴾

﴿٢٥٥﴾ سورة البقرة

Dedication

To the great prophet Mohammed

“Peace and prayers be upon him”

*To whom we love my mother for her
unconditional support, also to my father and my
family.*

*I would like to dedicate this study to everyone at
ZETA Automation company and specially
Engineer . Alla Eldain Hamad for their
encouragement and support.*

Acknowledgment

First of all, I would like to express my thanks to God for his great help in completing this thesis. After that there are numerous of people I would like to thank for their help though-out the completion of this thesis.

I would like to express my deep thanks to my supervisor, Dr. Aamir Hashim Obeid Ahmed for his support, continuous help, encouragement, and advice.

I would also like to thank the staff members of the school of electrical and nuclear engineering for their help, kindness, and friendship.

Last but not the least; I would like specially thank my teacher Mohamed Sayed Haj.

Abstract

This research is about designing a miniature model for production of nitrocellulose acid by mixing three acids (nitric, sulfuric, and oleum) using automatic control methods rather than the traditional ones. This is because it is safe and accurate compared to the traditional method, which is considered more dangerous to humans when dealing directly with these acids.

The main components used to design miniature model are Programmable Logic Controller (PLC), G-box, pumps, input/output modules, and sensors. Furthermore, the Simatic Ladder Diagram produced by the Siemens company was used for programming and simulation.

Practical results obtained proved that this method is more accurate and safer to produce nitrocellulose acid.

المستخلص

الهدف من هذه الدراسة تصميم نموذج مصغر لإنتاج حامض النيتروسيليلوز بخلط ثلاثة أحماض (النيتريك، الكبريتيك، والاوليوم) بطريقة آليه بدلا من الطريقة التقليدية وذلك لانها طريقة أمنة ودقيقة مقارنة مع الطريقة التقليدية (اليدوية) التي تعتبر اكثر خطورة علي الانسان عند التعامل المباشر مع هذه الاحماض.

المكونات الصلبة الاساسية الاساسية التي تم استخدامها لبناء النموذج المصغر هي المتحكم المنطقى القابل للبرمجة، جهاز G-box، مضخات، وحدات الادخال والاخراج، والمحسسات. اضافة لذلك تم استخدام برنامج مكتوب بلغة السلم منتج من شركة سمينس للبرمجة والمحاكاة.

النتائج العملية المتحصل عليها برهنت ان هذه الطريقة اكثر دقة وسلامة لانتاج حامض النيتروزسيليلوز.

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