"A web based expert system for SMT diagnostics in PCB assembly manufacturing"

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ABSTRACT

In today's manufacturing environment, Real-time monitoring, diagnosis, control and process optimization is needed to be competitive. Manufacturers need to capture knowledge about their processes and apply it in a way that can effectively drive real-time operational decisions. They also need to apply knowledge that detects and diagnoses process problems early and then helps operators recover quickly so that production can be kept going. This study involves the development of a prototype web based expert system for aiding manufacturing floor operators in solving their daily routine problems. The main aspect of the program is to help operators in areas such as CAD, PROCESS and TEST in their daily hassles. The engineering knowledge is stored in the knowledge base in the form of production rules (IF / THEN), while the facts of the problem are stored in the form of knowledge base. The reasoning processes are located in the inference engine. The backbone of the system was implemented using two web based programming language html and Java. The image and animation has been developed using Flash 8.0 and Adobe Photoshop 9.0, while the database is developed primarily in rule based text file (*.kb).

ABSTRAK

Kertas kerja ini menerangkan suatu strategi untuk memenuhi keperluan industri kerja logam di abad ke 21 yang serba moden and canggih, terutamanya dengan keperluan pengawasan 'real-time', dinogsis, kawalan dan pengoptimasian proses.

Pakar / ahli industri perlu memahami proses secara mendalam untuk membantu dan implimentasikan pengawasan 'real-time' dalam operasi keputusan 'real-time' dengan efektif. Mereka juga perlu mengaplikasikan ilmu yand berkebolehan mengecam dan dignos proses permasalahan diperingkat awal. Ini secara langsung akan membolehkan para operator untuk membuat pengubahsuaian atau membetulan yang sewajarnya secepat yang mungkin untuk meneruskan kegiatan produktiviti.

Kaedah ini merangkumi isu utama yang berkaitan dengan pembangunan sistem pakar adalah perolehan ilmu dan pembangunan prototaip dalam bidang perindustrian bagi memberikan kebaikan , kesenangan untuk memanipulasikan kerja harian dalam kilang yang dapat meningkatkan produktiviti. Peranan utama program ini adalah untuk menyelesaikan proses membantu para operator dalam operandi seharian mereka terutama dalam sektor modul rekabentuk terbantu komputer (CAD), proses (PROCESS) dan pengujian (TEST).

Ilmu kejuruteraan distorkan ke dalam sistem berasaskan ilmu produksi yang merangkumi peraturan (IF / THEN), sementara kunci masalah distorkan dalam bentuk format sistem berasaskan ilmu. Proses – proses analisasi telah ditempatkan di enjin penjana. Tulang belakang system ini dibina menggunakan dua pengaturan web html dan Java manakala animasi telah dirakamkan melalui perisian Flash 8.0 and Adobe Photoshop 9.0 sementara pengkalan data dibina dari fail teks (*.kb).

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

This chapter discuss about the research and project contexts. This will cover the overview of the study, the problem statement, objective, scope and the significance of the study

1.1 Overview

"Our customers forced us to become agile. They demand more timely deliveries and better quality at a lower cost. Short notice reaction is required with very little information. The information system must be readily adaptable to meet these demands. Overall Shipping quality products on time, is the ultimate goal (SQPOT)" - ***Mohana Krishnan (2006),*** *Vice President of Worldwide Operations, Smart Modular Technologies.*

In today's manufacturing environment, Real-time monitoring, diagnosis, control and process optimization is needed to be competitive, more than ever, successful competitors must continuously improve manufacturing performance by running their operations with higher levels of availability, more consistent levels of product quality, and greater overall efficiency.

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