

**ERGONOMICALLY DESIGNED COMPUTER BASED OPERATOR
TRAINING SIMULATOR SYSTEM**

THESIS

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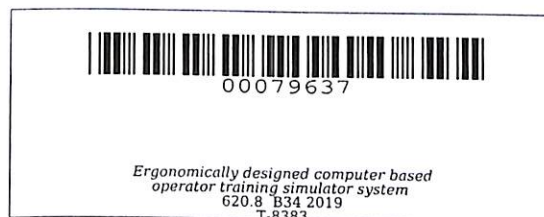
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ABSTRACT

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Operator training simulator are typically also used for operator training before initial start-up, major plant upgrades, training of procedures, and for regular refresher courses on emergency events. Operators who don't have legitimate proper training, gear and deficient information in the field of activity causes mischances, increment deformity rates, machine interest in advising an operator training simulator in selected electronic manufacturing firm and propose an ergonomically designed computer-based operator training simulator system to fit the job the workers. Development research was utilized in developing a system based on the needs reflected by the problems identified. Six sigma, Define-Measure-Analyze-Design-Verify (DMADV) approach was used to determine the problems and needs of the respondents and verify its solution. DMADV was used to analyze the problems that the respondents experienced using the existing training and used for possible system improvement.

A design methodology for the configuration and procedural training with an Operator Training Simulator (OTS) in Power Box. The objective of the study was to show how the methodology provides a powerful way for finding the best configuration and training structure of the OTS before its implementation. The OTS principle, i.e., to use a computer-based virtual presentation of the real process plant intended for efficient training of process operators. The training included general standard operating

procedures for running of the company under normal operation conditions with different starting materials, handling of typical frequent disturbances as well as acting in situations not described in the standard operating procedures and applying trouble-shooting.

As the result of the study, the operators were confident in executing tasks, leading to product quality and skills improvement. One might see a reduction in human errors due to the competency-based approach. By integrating the training evaluation models with the OTS, the instructor can easily measure every session not dependent on questionnaires. This study optimized the trainings delivered and improved future sessions. Lastly, the system was evaluated by the participants with an overall rating of excellent.

TABLE OF CONTENTS

	Page
APPROVAL SHEET	ii
BIOGRAPHICAL DATA	iii
ACKNOWLEDGEMENT	vi
ABSTRACT	viii
LIST OF TABLES	xii
LIST OF FIGURES	xiii
LIST OF APPENDICES	xvi
INTRODUCTION	1
Statements of the Problem	3
Objectives of the Study	4
Significance of the Study	4
Scope and Limitation of the Study	4
Time and Place of the Study	5
Definition of Terms	5
Conceptual Framework	6
REVIEW OF RELATED LITERATURE	7
METHODOLOGY	18
Research Design	18
Research Methods	18

Sources of Data..... 19

Participants of the Study 20

Research Instrument..... 20

Sampling Technique 21

Data Gathering Procedure 22

Statistical Treatment 22

RESULTS AND DISCUSSION..... 24

 Define Phase 24

 Measure Phase 28

 Analyze Phase..... 36

 Design Phase..... 39

 Verify Phase 56

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS..... 61

 Summary 61

 Conclusion 63

 Recommendations..... 64

REFERENCES 65

APPENDICES 69

LIST OF TABLES

Table	Page
1 Demographic profile of the participants in terms of age.....	25
2 Demographic profile of the participants in terms of gender	25
3 Frequency of poor comprehensibility due to manual training.....	29
4 Frequency of increased errors due to manual training	29
5 Frequency of training's result alteration due to manual training.....	30
6 Frequency of increased machine errors and output defects due to Manual training.....	31
7 Frequency of neglecting the training process for newly hired operators	31
8 Frequency of machine and human error due to manual training	32
9 Frequency of manual training cater less employee within a given time	33
10 Frequency of deploying in inexperienced and incompletely Trained operators.....	34
11 Frequency of training miscommunication due to inadequate time on manual.....	35
12 Frequency of OTS efficiency than manual training.....	35
13 Matrix data analysis	38
14 Descriptive level of mean.....	57
15 Summary of evaluation	59

LIST OF FIGURES

Figure	Page
1 Conceptual framework of the study	6
2 Steady state process simulators	16
3 Human machine interfaces	17
4 Present process flowcharts of manual training at total powerbox solution	26
5 Frequency of the present training efficiency	27
6 Affinity diagram.....	28
7 Pareto chart of the factors needed in improving the present training system....	36
8 Interrelationship diagram.....	37
9 Tree diagram.....	39
10 Logo of the company.....	39
11 Main menu of the operator training simulator	40
12 Company profile	40
13 Company mission statement	41
14 Company vision statement.....	41
15 Operator training simulation page	42
16 Introduction to CNC TruPunch 2020R punching machine	42
17 Opening page of training simulation	43

18	Selecting the safety criteria in main menu page	43
19	Opening page of safety procedure	44
20	Do's of CNC TruPunch 2020R punching machine	44
21	Don'ts of CNC TruPunch 2020R punching machine	45
22	Selecting the machine parts criteria in main menu page	45
23	Opening page of machine parts section.....	46
24	Machine parts of CNC TruPunch 2020R punching machine	46
25	Selecting the flowchart criteria in main menu page	47
26	Introduction page of standard operating procedure	47
27	Selecting the pre- operating option in equipment operating procedure	48
28	Equipment operating procedure of the machine	48
29	Selecting the product output criteria in main menu page	49
30	Introduction of outputs	49
31	Selection of different outputs.....	50
32	Menu of product outputs	50
33	Product output of the machine	51
34	Front cover and with dimension	51
35	Side cover with dimension	51
36	Brackets/divider with dimension	52
37	Front cover rejects.....	52

38	Side cover reject (out of specification).....	52
39	Side cover reject (double punch)	53
40	Selecting the simulation page	53
41	Actual process simulation.....	54
42	Pre – operating simulation of the machine	54
43	Operating simulation of the machine	54
44	Post – operation of the machine	55
45	End simulation system of the system	55
46	Equipment operating procedure of the CNC TruPunch 2020R punching machine	56
47	Flowchart process of operator training simulator	60

LIST OF APPENDICES

Appendix	Page
1 Survey Questionnaire	70
2 Evaluation Form	76
3 Request Letter	80
4 Total Manpower Count of Powerbox Solution Inc.	82

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INTRODUCTION

The Operator Training Simulation (OTS) is an Informative Technology system used to transfer the knowledge from the expert operator to the new generation of operators within production plants. There is a lot of ambiguity about OTS and its components. (Ambibi, 2015).

A practical approach to train operators needs to be developed that provides reliable hands-on experience without any associated risks of compromising productivity and safety. This can be achieved using real time on-line dynamic simulators specifically designated as operator training simulators (OTS). OTS allows operators to control and drive the virtual plant using implemented control systems and HMI graphic screens without stresses associated with controlling the actual plant. OTS promotes a learning by doing approach, illustrating cause-effects and action-reactions interconnections within the dynamic environment of the virtual plant (Kaushik & Schaffer 2014).