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STATISTICAL PROCESS CONTROL FOR RUBBER FLOORING

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THE DISSERTATION WAS SUBMITTED TO DEPARTMENT OF CHEMICAL AND PROCESS ENGINEERING OF UNIVERSITY OF MORATUWA IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF CHEMICAL AND PROCESS TECHNOLOGY.

University of Moratuwa



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**DEPARTMENT OF CHEMICAL AND PROCESS ENGINEERING
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Abstract

There is no doubt that quality has become a major feature in the survival plan of many companies today. Each company employee must be committed to the use of effective methods to achieve optimum efficiency, productivity, and quality to produce competitive goods. Statistical Process Control (SPC), in its broad sense, is a collection of production methods and management concepts and practices that can be used throughout the company. SPC involves the use of statistical signals to identify sources of variation, to improve performance, and to maintain control production at higher quality levels.

This work investigates the implementation phase of SPC in a company, which produce rubber flooring. SPC techniques were used to identify the variations of finished tiles and quantify these variations. Stepwise approach was initiated to control the processes and uplift the quality of the finished tiles. Selected processes were monitored, analyzed and improved through multi-disciplinary process actions teams. By using awareness and pilot project phases SPC was successfully implemented in calendering line.

Root causes for variations in the calendering line were studied through detailed cause and effect relations. Improvements were initiated by treating to the root causes. Using control charts out of control situations were identified and out of control action plan was prepared for to take prompt actions. Accuracy of the testing methods and calibration of measuring equipments were got more attention at each process step. Using planned control charts PATs managed to obtain well-described measurements, knowledge on process control and detection of process disturbances, product assurance, knowledge on the level of control of the process and control limits for process inherent variation.

Improvements in rubber flooring quality and consistency were achieved through the use of SPC. This step was not easily or quickly achieved. It required extensive training at all levels, considerable planning, and most importantly, the consistent support from top management in committing the manpower and funding to make it happen.

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Contents

Abstract	i.
Acknowledgement	ii.
Contents	iii.
List of Tables	vi.
List of Figures	viii.
1. Chapter 1	
1.1. Introduction	1
1.2. Rubber Tile Manufacturing Process	2
1.3. Calendering Process	3
1.4. Quality Testing and reliability	4
1.5. Objective and Justification	4
1.6. Outline of the thesis	5
2. Chapter 2. Literature Review	
2.1. Introduction	6
2.2. Rubber Flooring	6
2.3. Quality	7
2.4. Successful Users of SPC and the Benefits Derived	13
2.5. SPC a Success Story	14
3. Chapter 3. Rubber Flooring manufacturing Process	
3.1. Introduction	16
3.2. Chemistry of rubber flooring Rubber	20
3.3. Calendering Process in detail	36
4. Chapter 4. Flooring Characteristics and Quality Assurance	
4.1. The Kinetics flooring range and their characteristics	40
4.2. Quality assurance of Rubber Flooring	46

5. Chapter 5. Application of Statistical Process Control (SPC)	
5.1 The need for SPC	62
5.2 Prevention versus detection	62
5.3 SPC goals	64
5.4 SPC techniques	65
5.5 Obtainable improvements and results from SPC	67
5.6 Phases of SPC implementation	68
5.7 Classification of parameters and their variation	71
5.8 Control charts	73
5.9 Histogram	78
5.10 Process Capability and Performance	79
6. Chapter 6. Methodology of Study	
6.1 Introduction	87
6.2 Implementation Plan	89
7. Chapter 7. Implementation of Statistical process Control	
7.1 Introduction	94
7.2 Awareness Program	94
7.3 Product selection for SPC implementation	95
7.4 The Pareto analysis	96
7.5 The Brainstorming Session	97
7.6 The Cause and Effect Analysis	97
7.7 Process Action Team (PAT)	100
7.8 Customer requirement and expectations	101
7.9 Defining Measurements	101
7.10 Repeatability and Reproducibility study (R and R study)	102
7.11 Sampling and Testing	102
7.12 SPC Training	103
7.13 Case study	104
7.14 Practical difficulties faced during the pilot study	124
7.15 Summary of the Case Study	126

7.16 The Defects and Remedies in Calendering process	128
8. Chapter 8. Conclusions and Future work	131
8.1 Conclusions	133
8.2 Future Work	
References	135
Appendix1 Methods for Total Quality Management (by category)	138
Appendix2 The \bar{X} (Average) and R (Range) chart procedure	150
Appendix3 The Histogram Procedure	157
Appendix 4 Process Capability and Performance tables	160
Appendix 5 Process Specifications	164
Appendix 6 Technical Characteristics	165
Appendix 7 Gantt Chart for the SPC Pilot Study	168



University of Moratuwa, Sri Lanka.
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List of Tables

Chapter 2

Table 2.1. Definitions of Quality

Chapter 4

Table 4.1. Quality assurance testing of incoming raw materials

Table 4.2. Quality assurance testing of semi-finished tiles

Table 4.3. Rheometer test specification

Table 4.4. Specifications for color measurements

Chapter 7

Table 7.1. Total tile rejects in January 2005

Table 7.2. Analysis of Rejects and 2nd grades of R4 Solid Grey

Table 7.3. Data Sheet of Pareto analysis

Table 7.4. Log note on 20th January 2005

Table 7.5. Sheet Thickness

Table 7.6. Average and Range values

Table 7.7. Corrective action plan

Table 7.8. Refined Measurements for Average and Range

Table 7.9. The new measurements (thickness) of sheets

Table 7.10. Refined measurements of thickness

Table 7.11. The thickness of the calendered sheets (after eliminating out of control points)

Table 7.12. Frequency chart of thickness for the calendered sheets

Table 7.13. Short-term solutions to minimize the thickness variation

Table 7.14. Long-term solutions to minimize the thickness variation

Appendix 2

Table A.2.1. Shewhart constants for X bar and R chart

Table A.2.2. Sample calculation for first 5 samples of figure 7.3.

Appendix 3

Table A.3.1. The thickness of the calendered sheets (after eliminating out of control points)

Table A.3.2. Frequency chart of thickness for the calendered sheets

Appendix 4

Table A.4.1 Calendering Specifications

Table A.4.2 Pressing Specifications

Table A.4.3 Buffing Specifications

Table A.4.4 Cutting Specifications

Appendix 5

Table A.5.1. Trouble Shooting Guide

Appendix 6

Table A.6.1. Technical Characteristics

Appendix 7

Table A.7.1. Gantt Chart



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List of Figures

Chapter 1

Figure 1.1. General process of Rubber tile manufacturing process

Figure 1.2. Calendering Process

Chapter 2

Figure 2.1. Kano's two-dimensional recognition of quality

Figure 2.2. Quality Paradigm

Chapter 3

Figure 3.1. Process Flow Chart

Figure 3.2. Mixing Process

Figure 3.3. Buffing Machine

Figure 3.4. Cutting (Guillotine) Machine

Figure 3.5. Structure of Natural Rubber Molecule

Figure 3.6. Structure of SBR co-polymer

Figure 3.7. Structure of Poly-Butadiene Polymer

Figure 3.8. Structure of Acrylonitrile Butadiene Co-Polymer

Figure 3.9. The Sulphur ring opening reaction and the cross-link formation

Figure 3.10. Calendering Machine

Figure 3.11. Calendering Process

Chapter 4

Figure 4.2. Rheometer test report for R4 Grey

Figure 4.3. Hardness Tester

Figure 4.4. DIN Type Abrasion Tester

Figure 4.5. The form and dimensions of crescent test-piece

Figure 4.6. Spectrophotometer

Figure 4.7. Color Cabinet

Chapter 5

- Figure 5.1. Natural variation of a process, estimated as $6 \hat{\sigma}$.
- Figure 5.2. Comparison of the width of a normal curve to engineering tolerance
- Figure 5.3. Interpreting the Cp index
- Figure 5.4. Illustration of Cpk formula
- Figure 5.5 Cp and Cpk relationships

Chapter 6

- Figure 6.1. Organizational Structure of Kinetics

Chapter 7

- Figure 7.1. Pareto diagram
- Figure 7.2. Cause and Effect analysis for analyzing thickness variation
- Figure 7.3. The \bar{X} and R chart
- Figure 7.4. The \bar{X} and R chart with center lines and control limits calculated with the Shewhart formulas
- Figure 7.5. The control charts with Recalculated averages and control limits
- Figure 7.6. Continuation control charts with previous averages and control limits
- Figure 7.7. The Continuation control charts with new averages and control limits
- Figure 7.8. The Continuation control charts with Recalculated averages and control limits
- Figure 7.9. Calendered sheet thickness histogram with overlaid distribution curve
- Figure 7.10. Normal curve labeled with the and ± 3 standard deviation limits
- Figure 7.11. Estimation of the normal curve for the thickness of the calendering sheet with engineering tolerances
- Figure 7.12 Product improvement of R4 Product by implementing SPC