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**TECHNOECONOMIC ANALYSIS OF LED LIGHTING
AS A SOLUTION FOR OUTDOOR STADIUM
LIGHTING IN SRI LANKA**

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Panapitiyakankanamalage Madhavi Perera

128778X

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CD-ROM

University of Moratuwa Sri Lanka

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Abstract

This study explores the possibility of adopting LED lighting for professional sports lighting projects over the conventional technology. LED lighting has the advantage of lower power consumption and longer lifetime, however being a new technology LED luminaires are very expensive than conventional luminaires. Therefore in some cases it is debatable whether LED lighting is a feasible solution. Sports lighting is an area in lighting where there are very particular requirement in illumination level, uniformity, glare and colour rendering. Therefore LED luminaires specialized for sports lighting are very limited in the market. In this study, LED and conventional lighting designs are done for various sports applications and the two systems are compared. Economic analysis is done in terms of simple payback and IRR to check whether LED lighting is feasible for sports lighting in current scenario. Also various factors affecting to the feasibility of LED lighting for sports lighting is identified and sensitivity analysis is done to identify under which conditions LED lighting become advantageous over conventional lighting technology for sports lighting. In addition qualitative analysis is also done of sports luminaires of both LED and metal halide technology.

Keywords: LED lighting, stadium lighting, simple payback, IRR, sensitivity analysis

TABLE OF CONTENTS

Declaration of the Candidate & Supervisor	i
Acknowledgements	ii
Abstract	iii
Table of Content	iv
List of Figures	vi
List of Tables	vii
List of abbreviations	viii
List of Appendices	ix
1. INTRODUCTION	1
1.1 Background	1
1.2 Motivation	2
1.3 Literature Review of Present Work	3
2 PROBLEM IDENTIFICATION AND PRELIMINARY WORK	8
2.1 Identification of the Problem	8
2.2 Preliminary Work	9
3 ESTIMATION OF COST OF CONVENTIONAL & LED FLOOD LIGHTING SYSTEM	10
3.1 Cost Estimations for the Test Case 1 for Conventional (Metal Halide) Lighting system	11
3.2 Cost Estimations for the Test Case 1 for LED Lighting system	13
3.3 Comparison of two lighting technology for Test Case 1	15
3.4 Estimation of Energy Consumption of the Test Case 2 for Conventional (Metal Halide) Lighting system	15
3.5 Estimation of Energy Consumption of the Test Case 2 for LED Lighting System	17
3.6 Comparison of Two Lighting Technology for Test Case 2	18
3.7 Estimation of Energy Consumption of the Test Case 3 for Conventional (Metal Halide) Lighting System	18
3.8 Estimation of Energy Consumption of the Test Case	19

2 for LED Lighting System	
3.9 Comparison of Two Lighting Technology for Test Case 3	20
3.10 Summarization of the Results	21
4. ECONOMIC ANALYSIS	22
4.1 Economic Analysis Methods Used	22
4.2 Simple Pay Back Calculation	23
4.3 IRR Analysis	24
5. SENSITIVITY ANALYSIS	25
5.1 Scenarios Considered for Sensitivity Analysis	25
5.2 Simple Payback Calculation Sensitivity Analysis Scenario 1	26
5.3 Simple Payback Calculation Sensitivity Analysis Scenario 2	27
5.4 Simple Payback Calculation Sensitivity Analysis Scenario 3	28
5.5 IRR Calculation Sensitivity Analysis Scenario 1	29
5.6 IRR Calculation Sensitivity Analysis Scenario 2	30
5.7 IRR Calculation Sensitivity Analysis Scenario 3	31
5.8 Important Observations of Sensitivity analysis	32
6. QUALITATIVE ANALYSIS	33
6.1 Ability to Start Instantly	33
6.2 Reduction of Starting Current	33
6.3 Reduction of Flicker	34
6.4 Uniformity and Glare Control	35
7. CONCLUSION	36
Reference List	37
Appendices	38

LIST OF FIGURES

	Page
3.1 Results achieved in lighting design for test case 1 (Metal Halide)	12
3.2 Results achieved in lighting design for test case 1 (LED)	14
3.3 Results achieved in lighting design for test case 2 (Metal Halide)	16
3.4 Results achieved in lighting design for test case 1 (LED)	17
3.5 Results achieved in lighting design for test case 3 (Metal Halide)	19
3.6 Results achieved in lighting design for test case 3 (LED)	20
5.1 Graph of price per klm vs payback period at different luminous efficacies	27
5.2 Graph of energy cost per kwh vs payback period at different luminous efficacies	28
5.3 Graph of operating hours vs payback period at different luminous efficacies	29
5.4 Graph of energy cost per kwh vs IRR at different luminous efficacies	30
5.5 Graph of energy cost per kwh vs IRR at different luminous efficacies	31
5.6 Graph of operation hours Vs IRR at different luminous efficacies	32
A.1 Importing site plan to software	38
A.2 Creating obstacles	39
A.3 Defining application fields	39
A.4 Defining calculation grids	40
A.5 Defining observers	40
A.6 Defining calculation grids	41
A.7 Importing photometry files of the luminaires	41
A.8 Defining mast position	42
A.9: Adding luminaires to the mast	43
A.10 Aiming luminaires manually	43
A.11 Summary of results	44

LIST OF TABLES

	Page
1.1 Comparison of results of LED and metal halide systems	3
2.1 Summary of the sports lighting luminaires in the market	9
3.1 Summary of the test cases	10
3.2 Results achieved in lighting design for test case 1 (Metal Halide)	11
3.3 Results achieved in cost estimation of test case 1 (Metal Halide)	13
3.4 Results achieved in lighting design for test case 1 (LED)	13
3.5 results achieved in cost estimation of test case 1 (LED)	15
3.6 Comparison of results for the test case1 in LED and metal halide lighting systems	15
3.7 Results achieved in lighting design for test case 1 (Metal Halide)	16
3.8 Results achieved in lighting design for test case 2 (LED)	17
3.9 Comparison of energy consumption for the test case 2 in LED and metal halide lighting systems	18
3.10 Results achieved in lighting design for test case 3 (Metal Halide)	18
3.11 Results achieved in lighting design for test case 3 (LED)	19
3.12 Comparison of energy consumption for the test case 3 in LED and metal halide lighting systems	20
3.13 Comparison of energy consumption in LED and Metal halide lighting systems	21
5.1 Simple payback period at different pricing levels and luminous efficacy levels	26
5.2 Simple payback period at different energy cost levels and luminous efficacy levels	27
5.3 Simple payback period at different annual operating hours and luminous efficacy levels	28
5.4 IRR at different pricing levels and luminous efficacy levels	29
5.5 IRR at different energy cost levels and luminous efficacy levels	30
5.6 IRR at different annual operating hours and luminous efficacy levels	31

LIST OF ABBREVIATIONS

Abbreviation	Description
AC	Alternative Current
CRI	Colour Rendering Index
DC	Direct Current
FIFA	Federation Internationale De Football Association
fps	Frames per second
IRR	Internal Rate of Return
LED	Light Emitting Diode
LKR	Sri Lankan Rupee
MH	Metal Halide
USM	Ultra Slow Motion

LIST OF APPENDICES

Appendix	Description	Page
Appendix A	Methodology Followed in Sports Lighting Design using Calculux Area Software	38
Appendix B	Software Generated Report for Lighting Design Test Case 1-Conventional	45
Appendix C	Single Line Diagram of one mast- Test case 1 Metal Halide	51
Appendix D	Cost Estimation of Power Distribution System- Test Case 1 Metal Halide	53
Appendix E	Software Generated Report for Lighting Design Test Case 1 - LED	55
Appendix F	Single Line Diagram of Power Distribution System for One mast	61
Appendix G	Cost Estimation of Power Distribution System- Test Case 1 LED	63
Appendix H	Software Generated Report for Lighting Design- Test Case 2- Conventional	65
Appendix I	Software Generated Report of Lighting Design -Test Case 2 LED	71
Appendix J	Software Generated Report of Lighting Design - Test Case 3 Conventional	78
Appendix K	Software Generated Report for Lighting Design- Test Case 3 LED	85
Appendix L	Calculation of Simple Payback- Test Case 1	92
Appendix M	Calculation of IRR- Test Case 1	93