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INVESTIGATION OF PROBLEMATIC ISSUES OF MOULD DESIGN AND MANUFACTURE FOR PLASTIC-BASED INDUSTRY IN SRI LANKA

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This Dissertation was submitted to the Department of Mechanical Engineering of the University of Moratuwa in Partial Fulfillment of the Requirements for the Degree of Master of Science in Engineering

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DECLARATION

This Dissertation report contains no material which has been accepted for the award of any other degree or diploma in any University or equivalent institution in Sri Lanka or abroad, and that to the best of my knowledge and belief, contains no material previously published or written by any other person, except where due reference is made in the text of this Dissertation.

I carried out the work described in this Dissertation under the supervision of Dr. U.P.Kahangamage and Dr. W. K Wimalsiri

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Abstract.

At present the demand for high precision, high quality dies and moulds in Sri Lanka is around Rs.1500 million. However, local supply is around Rs.300 millions. The gap of supply and demand is also increasing day by day. The problematic issues associated with die & mould industry is the core reason for this situation. The primary objective of this research study was to find out the key problematic issues of mould designing and manufacturing for plastic based industry in Sri Lanka and to develop a mechanism to address identified issues.

A questionnaire based survey method was used for the research study. The questionnaire was structured in order to investigate and rank critical problematic issues faced by die and mould manufactures for plastic based industry in Sri Lanka. Further, there were several rounds of semi-structured interviews with managers, plant engineers and technicians involved in mould design and manufacture for gathering relevant information. The collected information was used to identify critical issues of Sri Lankan die & mould industry.



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According to the survey results, high cost of moulds and unavailability of trained workforce were identified as most critical issues. A thorough investigation has been carried out to find the causes for each identified issue. A probable mechanism to address the identified issues has been developed by taking strength and weaknesses of the industry into consideration. This mechanism consists of a short term status improvement plan and a long term development plan. Since SME sector is the main contributor of the local die & mould supply, more attention has been paid to introduce development plan to Sri Lankan SME sector.



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TABLE OF CONTENT

1	INTRODUCTION	1
1.1	Background of the Problem	1
1.2	The Scope of the Study and Definition of the Problem	2
1.3	Research Objectives.	3
1.4	Research Method.	3
1.5	Review of Previous Research.	3
1.6	Dissemination of Project Output	4
2	LITERATURE REVIEW.....	5
2	5
2.1	Introduction.....	5
2.2	The Historical Development of the Die & Mould Industry.....	5
2.3	Present Status of Die and Mould Industry.....	7
2.3.1	Market for Dies and Moulds	8
2.3.2	Definition and Parts and Components.....	11
2.3.3	Main Parts and Components of a Mould.....	11
2.3.4	Types of Dies & Moulds	12
2.4	Key Problematic Issues Identified By Previous Researchers.	14
2.5	Current Technologies Associated with Die and Mould Industry.....	15
2.5.1	Advanced Technologies in Die & Mould Design	15
2.5.2	Advanced Manufacturing Technologies	20
2.6	Process of Die & Mould Manufacture in Japan & Portugal.....	25
2.6.1	Die & Mould Industry in Japan.....	25
2.6.2	Die & Mould Industry in Portugal	27
2.7	Hypothesis for Analyzing Sri Lankan Die & Mould Industry.....	28
3	RESEARCH METHODOLOGY AND OUTCOMES.....	29
3.1	Introduction.....	29
3.2	Research Methodology.....	29
3.3	Survey of Die & Mould Manufacturers and Users.....	30

3.4	Questionnaire Based Survey	31
3.4.1	Objectives of the Questionnaires	32
3.4.2	Sample Selection.....	34
3.4.3	Data Collection.....	34
3.4.4	Data Analysis.....	35
3.5	Main outcome of Research Project.....	35
4	INVESTIGATIONS OF PROBLEMATIC ISSUES.....	36
4.1	Introduction.....	36
4.2	SWOT Analysis	36
4.2.1	Strengths.....	36
4.2.2	Weaknesses	38
4.2.3	Opportunities.....	42
4.2.4	Threats	42
4.3	SWOT Comparison with Japan and India	45
4.4	Technological Analysis.....	48
4.4.1	Initial Communication Cycle between Mould Maker & User	48
4.4.2	Die & Mould Design Process.....	50
4.4.3	Die & Mould Production Process.....	52
4.4.4	The skill Level of Work Force.....	54
4.5	Operational Management Practices in Local Die & Mould Industry.....	56
4.5.1	Production & Capacity Planning Techniques	56
4.5.2	Method of Cost Estimation	57
4.5.3	Availability of Local Market Information	58
4.5.4	Supply Chain Management.....	59
4.6	Analysis of Mould Users' Information.....	60
4.7	Major Issues of Local Die & Mould Industry.....	61
4.7.1	High Cost.....	61
4.7.2	Poor Quality	62
4.7.3	Low Productivity	63
4.7.4	Production & Operational Management Issues.....	63
4.7.5	Less Accuracy & Higher Lead Time in Die & Mould Design.....	64
4.7.6	Accuracy and Higher Lead time in Die & Mould Manufacture.	65
4.7.7	Adoption of Changing Technology.....	66
4.7.8	Lack of Skilled Work Force in both Design & Manufacture.	67
4.7.9	Lack of Technology Support for Error Correction	68
4.8	Key problematic Issues Faced by Large Scale Mould Manufactures.....	69
4.8.1	Lack of Skilled Work Force in both Design & Manufacture	69
4.8.2	Lack of Technology Support for Error Correction	69
4.8.3	Scarcity and High Cost of Raw Materials	69

5 PLAN FOR IMPROVING PRESENT STATUS OF SRI LANKAN MOULD INDUSTRY	70
5.1 Introduction.....	70
5.2 Plans for Improving Present Status of Die & Mould Industry	72
5.2.1 Institutional Development.....	72
5.2.2 Implementation of Entrepreneurship Skill Development Program	73
5.2.3 Introduction of Operational Management Techniques.....	74
5.2.4 Conduct Training Programs	74
5.2.5 Introduction of the Concept of Collaborative Business Model to Local Industry	75
5.2.6 Development of Better Material Supply Chain for Mould Industry.....	75
6 DEVELOPMENT PLAN FOR SRI LANKAN DIE & MOULD INDUSTRY.....	77
6.1 Introduction.....	77
6.2 Development Plan for Initial Communication Cycle.....	79
6.3 Development Plan for Mould Design Process	82
6.2.1 The Process of Mould Design Practiced by Sri Lankan Industry	82
6.2.2 Strategies for Improving Die & Mould Design Process	83
6.2.3 Improvement of Design Process.....	85
6.3 Improvement of Mould Manufacturing Process.....	98
6.4 Final Testing & Delivery	99
7 CONCLUSIONS	100
7.1 Overview	100
7.2 Key Problematic Issues of Mould Design and Manufacture.....	100
7.3 Development Plan for Sri Lankan Die & Mould industrial Sector.....	104
REFERENCES	106
ANNEX'	109

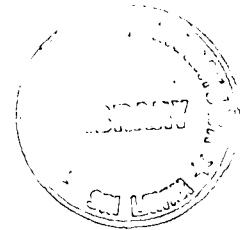
LIST OF FIGURES

Figure 2-1: Demand for Dies and Moulds- Sector Wise	8
Figure 2-2: Domestic Supply of Dies and Moulds	9
Figure 2-3: Dies and Moulds Supply for Each Industrial Sector.....	10
Figure 2-4: Injection Mould (8)	11
Figure 2-5: Production Vs Exports in Portugal	27
Figure 4-1: Average Experiences of Workers in Die & Mould Production	37
Figure 4-2: Demand vs. Capacity of Local Die & Mould Industry	39
Figure 4-3 : Reasons for Less Local Industrial Capacity.....	39
Figure 4-4: Employee Training Methods.....	40
Figure 4-5: Influence of Mould User In Design Process.....	41
Figure 4-6: Major Foreign Competitors to Sri Lankan Die & Mould Industry	43
Figure 4-7: Highest Demanding Factors of Sri Lankan Customers.....	44
Figure 4-8: Strength comparison with Japan and India	45
Figure 4-9: Weaknesses comparison with Japan and India [16/19]	46
Figure 4-10: Potential Comparisons with Japan and India [12/19]	47
Figure 4-11: Main Threat Comparisons with Japan and India [14/19]	48
Figure 4-12: Data Communication Methods with Customers	49
Figure 4-13: Die & Mould Design Tools in Local Industry	51
Figure 4-14: Methods of Material Selection.....	51
Figure 4-15: Manufacturing Systems in local Industry	53
Figure 4-16: Core Manufacturing Facilities in SL Die & Mould Industry.....	54
Figure 4-17: Most Needed Experts to Local Industry	55
Figure 4-18: Most Needed Operators in Machining Process.....	56
Figure 4-19: Criteria for Determining the Delivery Date	57
Figure 4-20: Tools of Die & Mould Cost Calculation.....	58
Figure 4-21: The Way of Finding Information about Die & Mould Makers	59
Figure 4-22: Mould Users Negative Feed-Back about Local Industry.....	60
Figure 4-23: Main Barriers to Adopt Advanced Technology.....	67
Figure 5-1: Plan for Improving Present Status of Sri Lankan Mould Industry	71

Figure 6-1: Four Stages of Die & Mould Production Process	77
Figure 6-2: Cluster of Mould Production	79
Figure 6-3: The Initial Communication Cycle.....	80
Figure 6-4: The Process of Mould Design Practiced by Sri Lankan Industry	82
Figure 6-5: Proposed Design Structure.....	86
Figure 6-6: Application of Computer Aided Engineering in Mould Design.....	88
Figure 6-7: Web Base Resource Support to Learn Mould Design	92
Figure 6-8: Web Mould Design Environments in Sri Lanka.....	95
Figure 6-9: Knowledge-Base.....	97
Figure 7-1: Comparison of Problematic issues linked with SME and Large scale industrial sector	103



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LIST OF TABLES

Table 2-1 Present Status of Sri Lankan Die & Mould Industry.....	8
Table 2-2 Units in Operation	10
Table 2-3 Types of Dies & Moulds by User Industry	12
Table 2-4: Catering User Industries.....	12
Table 3-1 Basic Information of die & mould users	30
Table 3-2: Product & Customer Information of Die & Mould Users.....	30
Table 3-3: Basic Information of Die & Mould Makers	31
Table 3-4: Selection of Sample Type	31
Table 3-5: Selection of Samples	34
Table 4-1: Total Installed Capacity of Local Industry as of (2006)	36
Table 4-2: Comparison of Initial Communication Cycle	49
Table 4-3: Comparison of Technology in use	50
Table 4-4: Table Method of Material selection	52
Table 4-5: Core Manufacturing Facility in Local Industry.....	53
Table 6-1: Strategies to Improve Initial Communication Cycle.....	81
Table 6-2 Strategies for Improving Die & Mould Design Process.....	84
Table 6-3: Present Government Support Programs [20]	90
Table 6-4: Activities of Proposed centre	91

LIST OF ABBREVIATIONS

CAD - Computer Aided Design

CPPD- Collaborative Product and Process Development

CAM- Computer Aided Manufacture

EDM- Electronic Data Management

FEA-Finite Element Analysis

GDP- Gross Domestic Productivity

HSM - High Speed Machining

IDB- Industrial Development Board

NERD Centre.-National Engineering Research and Development Centre.

PB-Plastic base

PDM- Product Data Management

SME-Small and Medium entrepreneurs

SL-Sri Lanka.

SMED – Small and Medium Entrepreneur Development



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