CONVERSION OF DYE SLUDGE TO RDF

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March 2012

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Thesis/Dissertation submitted in partial fulfilment of the requirements for the degree

Master of Science



Department of Chemical & Process Engineering

University of Moratuwa

Sri Lanka

March 2012

DECLARATION OF THE CANDIDATE AND THE SUPERVISOR

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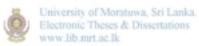
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ABSTRACT

In Sri Lanka the Dye sludge production from textile industry is large. The large amount of produced dye sludge needs to be properly managed otherwise it will cause lot of environmental problems. Currently textile industries in Sri Lanka use the landfilling method to dispose dye sludge. Because of the landfilling method lot of environmental problems are surfaced, such as emission of toxic gases, ground water pollution and bad odour in environment.

This study investigates the feasibility of using the waste dye sludge as fuel called Refused Derived Fuel (RDF). The method is used to produce RDF from dye sludge is mix dye sludge with other wastes available in textile industry. Other waste types which are supposed to use mix with dye sludge are fabrics, paper waste and saw dust. The mixing of waste dye sludge with other wastes in different compositions are investigated. Also different quality parameters of waste sludge and mixtures (after mixing with other wastes) are analysed. Calorifc values of waste sludge with different moisture content and mixtures with different waste fractions ,ash content, sulfer content, chlorine content, heavy metal content are main characterization parameters. Results analysed and it revealed that by mixing dye sludge with other wastes calorific value can be increased from 6 MJ/Kg to 22 MJ/Kg. By considering availability of the waste types during the last year most commonly used mixture composition is selected.

We propose that waste dye sludge mixed with other waste types in textile industry is a suitable and effective alternative energy source in Sri Lanka



DEDICATION

Dedicated with gratitude to my loving parents for being the greatest pliers of my life....



ACKNOWLEDGEMENT

Completion of this thesis has been one of the most significant academic challenges I have ever had to face. Without the support, patience and guidance of the following people, this study would not have been completed. It is to them that I owe my deepest gratitude.

In the first place I would like to record my gratitude and honour to my main supervisors, Prof.Suren Wijekoon for their inspiring and motivating guidance throughout this research with supervision of work in a framework of friendship, freedom, and openness.

I gratefully acknowledge my life mentor & co-supervisor, Prof. Ajith De Alwis, for his advice, supervision, and crucial contribution and offering me the opportunity to do a M.Sc. study. His involvement along with his originality has triggered and nourished my intellectual maturity that I will benefit from, for a long time to come.

I would like to acknowledge my research co-ordinator Dr.Manisha for encouraging and giving the clear guidance to complete this research successfully.

Also I would like to thank Dr.Rathnasiri for encouraging me to complete research successfully.

I am indebted to Dr. Shantha Amarasinghe, Head of the Department of Chemical and Process Engineering, University of Moratuwa, for giving me the opportunity to do the M.Sc. in the department.

I gratefully acknowledge the top management of MAS Active (pvt) Ltd for giving me the great support and guidance to complete this study successfully.

Especially I would like to thank Mr.Renuka perera (Finance and planning head) and Mr.Priyanthe Kulasena (assistant maintenance manager) who gave me great support from starting point to end of my research.

It is my pleasure to remind the Mr.shantha (Maintenance Manager), Luxman Dayasiri (Finance Manager) and Dharshana (Dye house Manager) for giving me the helping hand to continue my research.

I gratefully acknowledge Mr.Upul and Mr.Heshan of the Lindel Lab for giving me the great support to continue my research from starting point to end point. I would like to express my thanks to my dear friends Iresha, sumudu, chamil, and amila.

My special thanks goes to Daham Gunawardena, Norway for the helping hand you lent me any time I request a help from you. I would like to thank all team members of the maintenance department of Linea Intimo.

Most importantly, none of these would not have been possible without the love and patience of my family. I am deeply indebted to my parents, my husband who always supported, encouraged and believed in me, in my entire endeavour.

To everybody that has been a part of my life but I failed to mention, thank you very much. I believe that my research will make a small contribution to the vast ocean of research done in the field of sustainable energy.



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LIST OF ABBREVIATIONS

AAS Atomic Adsorption Spectrometer

ASR Automotive Shredder Residues

ASTM American Society for Testing and Materials

APHA American Public Health Association

CV Calorific Value

EURITS European Use for Responsible Incineration and

Treatment of Special Waste

MPW Mixed Paper Waste

MSW Municipal Solid Waste

MSWM Municipal Solid Waste Management

PDF Packaging Derived Fuel

PPF Paper and Plastic Fraction

PEF Process Engineered Fuel

RDF Refused Derived Fuel

UNFCC United Nations Framework Conversion on Climate

Change

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