ENERGY UTILISATION IN ATEXTILE MILL: A CASE STUDY OF SOUTHERN RANGE NYANZA LIMITED (NYTIL)

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DECLARATION:

I do hereby declare that this research report is original and has never been submitted for any other degree to any other University.

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DEDICATION

I dedicate this research report to my parents for their love for education through their hard work to make everyone have a better education in the family. Thanks for being my role models in this life.

Once more I dedicate this report to my relatives, brothers, sisters and well wishers for your support morally, materially and academically. God bless you all.

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LIST OF ACRYNOMS AND ABBREVIATIONS

B/C ratio	Benefit Cost Ratio
CFL	Compact Fluorescent Lights
CMMS	Computerized Maintenance Management System
CRES	Centre for Renewable Energy Sources
ECCJ	Energy Conservation Centre Japan
ECMs	Energy Conservation Measures
ECOs	Energy Conservation Opportunities
EHV	Effective Heating Value
EMO's	Energy Management Opportunities
EMT	Energy Medical Technician
EUAC	Equivalent Uniform Annual Cost
FHWA	Federal Highway Administration
GHG	Green House Gases
HHV	High Heating Value
IRR	Internal Rate of Return
LCC	Life cycle cost
LED	Light Emitting Diode
NPW	Net Present Worth method
NRDC	Natural Resources Defense Council
NYTIL	Nyanza Textile Industries Limited
ROI	Return on Investment
SAE	Society for Automotive Engineers
SMEs	Small Medium Enterprises

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ABSTRACT

Energy efficiency is simply using less energy to achieve the same purpose. With energy investment being one of the main cost factors in a textile industry, this research was aimed at identifying energy efficient and saving technologies that could optimize energy consumption in NYTIL, the case study.

This involved determination of current energy consumption trends of the factory in hydro power, coffee husks, kerosene, petrol and diesel by carrying out an energy audit. This was done with the use of preliminary energy audit. The trends show a decrease in energy consumption especially in hydro power, and coffee husks, an indicator of energy efficiency. Tables and graphs were used to show different energy consumptions and trends in chapter four of results and discussions.

Also different energy management and conservation measures suitable for NYTIL were identified such as use of LED energy savers in all lighting systems, improvement on power factor, re-insulation of all steam lines etc.

Furthermore, economic analysis on the energy efficient strategies was carried out for some of the technologies to prove their feasibility and the results show better performance if implemented.

Finally the research indicates conclusions and different recommendations derived from the chapter four of results and discussions. Basically they emphasize what the company should do to achieve energy efficiency, so as to maintain the energy consumption trends on a decrease.

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1.0 INTRODUCTION

1.1 Background of the project

With the current competitive global business environment, investors are looking for ways of reducing total production costs without affecting the volume of production and product quality so as to meet their customer expectations. With various energy efficiency opportunities existing in every textile plant, many of them are not implemented in textile plants often because of un reliable information on how to implement energy-efficiency measures, owing the fact that a majority of textile plants are categorized as small medium enterprises small scale enterprises (SMEs) (Ali Hasanbeigi, 2010).

Energy optimization is very vital element as regards to the company's economy and environmental protection since end of pipe remedies can be expensive and inefficient. Therefore energy efficiency can be a profitable venture within manufacturing environment (Worrell and Galitsky, 2004). About 34% of energy is consumed in spinning, 23% in weaving, 38% in chemical processing and another 5% for miscellaneous purposes. Electrical power dominates consumption pattern in spinning/weaving, while thermal energy is major for chemical processing (Aravin Prince, 2012).

Thermal energy in textile mill is mostly used in two operations, that is, in heating of water and drying off water during steaming. Steam is generated by employing boilers using different energy sources like fuel such as coal, firewood, coffee/rice husks, furnace oil and lately low sulphur heavy stock oil available from the refineries as fuel having average calorific values of 4200, 6200, 10280 and 10700 Kcal respectively etc (Aravin Prince, 2012). Energy conservation is influenced through machine modification, use of proper chemical recipes and new technologies. The possibilities of utilizing new energy resources like solar energy, wind power, tidal power, nuclear energy, etc. are to be explored. (Aravin Prince, 2012).

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