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TECHNOLOGICAL IMPROVEMENTS IN GARMENT DYEING & FINISHING FOR SUSTAINABLE DEVELOPMENT

UNIVERSITY OF MORATUWA

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The work presented in the thesis in part or whole, has not been submitted for any other academic qualification at any institute.

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Abstract

Burdens to the environment with industrialization have extended to a greater extent than the assimilating capacity of it. The textile wet processing is a heavy consumer of water and energy. It also discharges environmentally hazardous substances.

But the apparel sector with their affiliated garment washing and dyeing plants is one of the main income generators in Sri Lanka. Hence the discovery of any mean to mitigate those impacts while sustaining the industry would be immensely useful.

This study has focused on two main approaches to accomplish the sustainable development in the garment dyeing facility. The approaches are maximizing Right First Time dyeing and Implementation of the Cleaner production options.

Majority of the textile dyeing plants in Sri Lanka does not maintain any statistics on Right First Time dyeing. The percentage is acutely low in Garment dyeing.

The root causes for the dyeing defects and shade variations in the dyed garments are analyzed in detail in this study. Cause and effect diagram, which is considered to be a powerful tool among seven quality tools, was used here as the tool for the analysis. Preventive measures are suggested for each root cause, subsequently.

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Application of Cleaner Production options to the industry is another approach for the sustainable development. The novel technologies, which are affordable, such as Ultra low liquor ratio machines, improved efficient washing systems, were deeply reviewed in this study. Switching on to such technology changes is utmost important for industries in order to, not only for the environmental compliance but also for sustainability in competitive global market.

Modification of processes and formulas by critically analyzing them and making trials on them was another proven mean for the sustainability. Possibilities of implementing 3R-Reduce, Reuse and Recycle on water and other resources were looked into in the project. Good house keeping procedures are highlighted options in Cleaner production and some of the quantified studies have been covered in this project.

Plenty of new options in material substitutions, Process controls, new by-products etc. are also suggested for the industries to implement in order to demonstrate world-class ecologically sound performance.

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