Design and Development of Wood Furniture Pattern Making Machine

Student's Name	M. Muthu Karthic	PD (FT-2012)
Academic Supervisor(s)	Srinivasa and Chiranjith Barui	
Industrial Supervisor(s)		

M. Muthu Karthic

muthukarthicm@gmail.com
Ph. 0 77088 88812

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Abstract:

Petroleum Liquid Furniture can be defined as the decorative and comfortable lifestyle part of human life. Creating decorative patterns is an artistic and skilled work and this can be only achieved by experienced and skilled carpenters or machine operators. Generating a complicated pattern is a time consuming process and one simple mistake can eliminate a whole bunch of work carried out. Here a need is felt for the development of an efficient machine that could ensure the complex pattern creation and also save time and resources.

This study investigates an easy method for pattern making on furniture components. The research methods involved literature survey, user study and market study through questionnaires, images, video observations and ethnography to understand the various issues. The results of the study indicate that pattern producing is the work of a skilled person and also times consuming requiring abilities to avoid accident, damage of work piece or injury.

The design started with analysis of the data collected and the basic needs to be incorporated in the machine were identified. Quality Function Deployment (QFD) and Product Design Specification (PDS) were developed by conducting user study and based on their outputs, five concepts were generated. Among these five concepts, one was selected as the feasible solution to the identified problem through weighted ranking method. Further digital modelling of the system design was developed using software like CATIA V5, Alias and rendered using Key-shot software. A 1:1 scale mockup model of the final concept was prepared to validate the design. Design validation was carried out with the user group and feedback obtained was positive and satisfactory.
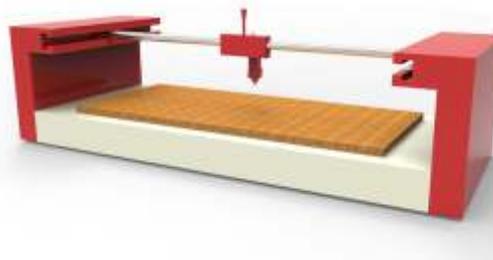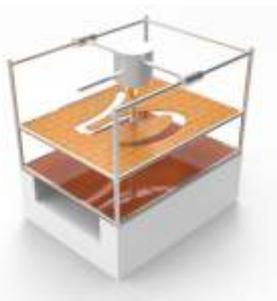
Concept generation

Final concept　　　　　**Final mock model of pattern making machine**