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APPLICATION OF DIFFERENT METHODOLOGIES FOR OPTIMUM UTILIZATION
OF FIBRE BOARD IN CORRUGATION PROCESS (CORRUGATED FIBERBOARD
BOXES)

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ABSTRACT

This study was carried out at B.K Print & Pack, Haridwar to determine the various methods for optimum utilization of fibre board in corrugation process (corrugated fiberboard boxes). The aim of this study is to execute the various processes for optimum utilization of fibre board in corrugation process. The main objective of this research is study of corrugation process for optimum utilization of board in “B.K Print & Pack” Haridwar. Therefore, if optimum utilization of corrugated board is done for corrugation process then overall cost will be reduced and quality will also be improved. The present study objective is thus, focused on the optimization of corrugation process for optimum utilization of board. Printing is a Servicing Industry. It is an art, craft, science, & technology of reproduction of ‘n’ number of replicas with the help of a suitable Printing Process on the desired substrate and surface. It has an impact on everyone’s life. Printing is the second largest industry of India. We are basically providing services to the society; being overlapped by various branches of Education like Computers, Electronics, Manufacturing, Chemical, Electrical, Optical and, what not? It is impossible to imagine survival of human beings without Printing. Sir Johannes Gutenberg, Father of Printing, was declared as ‘Man of Millennium’ by Time magazine. And, Printing is declared as the ‘Greatest Invention of Millennium’ again, by Time magazine. Present era is meant for the ‘Survival of the Fittest’. And, this is where Printing has touched one and all. It is said that Printing had started with humanization. On a parallel track, it has an association with human lives till time.

I. INTRODUCTION

The aim of this study is to execute the various processes for optimum utilization of fibre board in corrugation process.

II. RESEARCH OBJECTIVE

The main objective of this research is study of corrugation process for optimum utilization of board in “B.K Print & Pack” Haridwar. Therefore, if optimum utilization of corrugated board is done for corrugation process then overall cost will be reduced and quality will also be improved. The present study objective is thus, focused on the optimization of corrugation process for optimum utilization of board in “B.K Print & Pack” Haridwar.

III. RESEARCH METHODOLOGY

The whole study focuses on study of corrugation process for optimum utilization of fibreboard by using different techniques. The following methodology was adopted during the study:

1. Study of corrugation process in a printing press. Record readings like print reading, total wastage in terms of money and power and paper wastage.
2. Some jobs of the “B.K Print & Pack” Haridwar. During project work were selected in which Paper & Board wastage was more & the readings were recorded on each selected job.

3. Generate checklist during project work and then reading were recorded so as to optimize the utilization of board.
4. Data Related to optimum utilization of corrugated board was Collected during the study.

IV. DATA COLLECTION

Data collection done in the month of JANUARY is shown below:

B.K Print & Pack, Haridwar

Name of Machine	:	NEELKAMAL MACHINE
Flute Size	:	36 inches
Change over time of job on machine	:	30 Min.
Per day minimum production approx.	:	2.5 TON
Copies wastage during production (per job)	:	8 to 10 % Approx.
Types of Board :		E FLUTE
E - Flute Roller	:	2
Pressure Roller	:	1
Total no of Roller	:	3
M/C Run	:	8 Hr

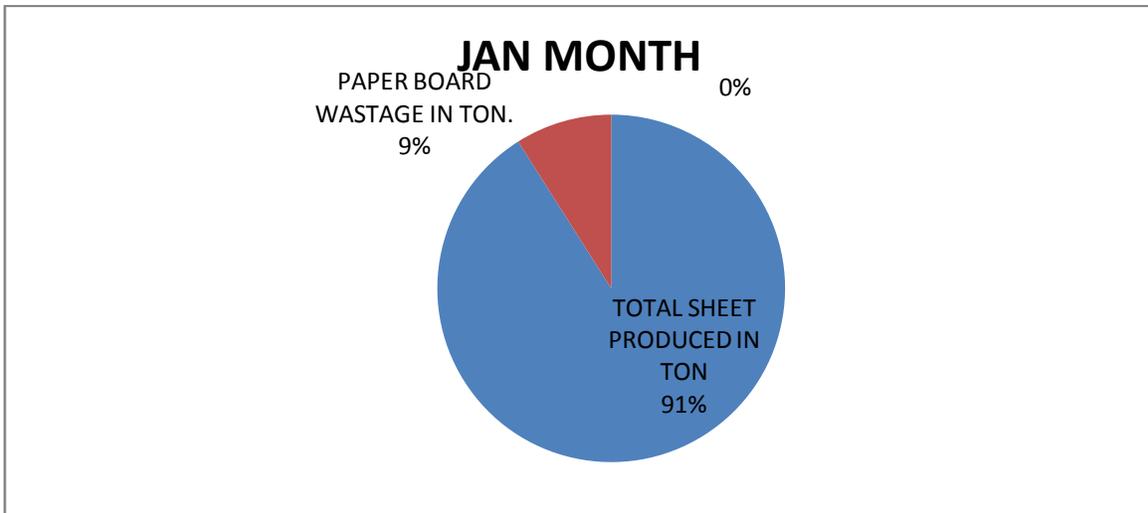


FIGURE - DATA OF CORRUGATION PRINTING ON NEELKAMAL MACHINE AT B.K PRINT & PACK” HARIDWAR FOR THE MONTH OF JANUARY, 2018

Data collection done in the month of FEBRUARY is shown below:

B.K Print & Pack, Haridwar

Name of Machine	:	NEELKAMAL MACHINE
Flute Size	:	42 inches
Change over time of job on machine	:	30 Min.
Per day minimum production approx.	:	3 TON
Copies wastage during production (per job)	:	4 to 5 % Approx.
Types of Board	:	B FLUTE
B - Flute Roller	:	2
Pressure Roller	:	1
Total no of Roller	:	3
M/C Run	:	8 Hr

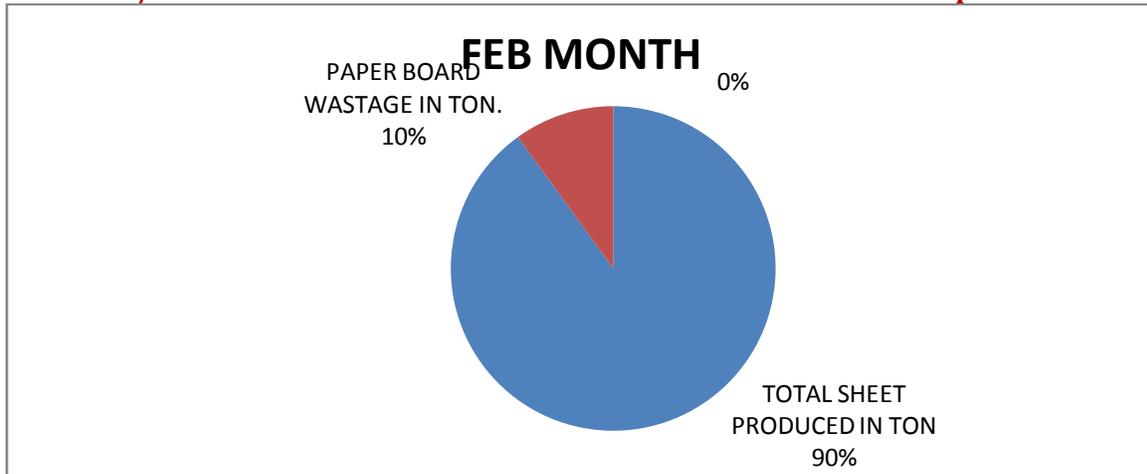


FIGURE - DATA OF CORRUGATION PRINTING ON NEELKAMAL MACHINE AT B.K PRINT & PACK" HARIDWAR FOR THE MONTH OF FEBRUARY, 2018

V. SUGGESTIONS

Following are the list of suggestion in corrugation printing section on corrugation printing machine after consultation with various press authorities. These points will vary according to machine and press setup along with type of job.

- 1) Inspection Of incoming Reels.
- 2) Reduction in Cutting Length.
- 3) Maintaining Steam Pressure.
- 4) Reduction in Breakdown time.
- 5) Identification of Various defects during production.
- 6) Maintaining Crease Pressure.
- 7) Maintaining Moisture & temperature.
- 8) Maintaining Steam Pressure.
- 9) Organising Training Programme for various operators & workers.
- 10) Reuse the wastage by using various techniques & methods.
- 11) Proper inspection carried out by Quality Inspector.
- 12) Implementation of Reel Core Cap, Corner guide & Single joint indicator.
- 13) Maintain the Ink Balance & shade during printing.
- 14) Maintain the Slotting & feeding section during printing.
- 15) Maintaining pressure during printing.

To implement it properly we generate a check list in form of table to check the different factors before all jobs to be handled on corrugation plant & also on printing machine. This will help us to reduce wastage & to increase productivity with better quality and for generation of system for operating the machine with less wastage and achieving the desired quality level.

Name of Press

Date: - Name of supervision:-

TABLE NO. 3 - Check list for SCREEN PRINTING machine

Please Tick (✓/x) For Each Job

Sr. No	Check Point	Job 1 (√/x)	Job 2 (√/x)	Job 3 (√/x)	Wastage of Sheets (approx.)
1.	Inspection Of incoming Reels.				
2.	Reduction in Cutting Length.				
3.	Maintaining Steam Pressure.				
4.	Reduction in Breakdown time.				
5.	Preparation of job for Machine.				
6.	Identification of Various defects during production.				
7.	Maintaining Crease Pressure.				
8.	Maintaining Steam Pressure.				
9.	Organising Training Programme for various operators & workers.				
10.	Machine speed setting according to job and substrate.				
11.	Reuse the wastage by using various techniques & methods.				
12.	Proper inspection carried out by Quality Inspector.				
13.	Implementation of Reel Core Cap, Corner guide & Single joint indicator.				
14.	Maintain the Ink Balance & shade during printing.				

15.	Maintain the Slotting & feeding section during printing.				
16.	Maintaining pressure during printing.				

VI. RESULT & DISCUSSION

Data collection done in the month of MARCH is shown below:

TABLE - DATA OF CORRUGATION PRINTING ON NEELKAMAL MACHINE AT B.K PRINT & PACK” HARIDWARFOR THE MONTH OF MARCH, 2018

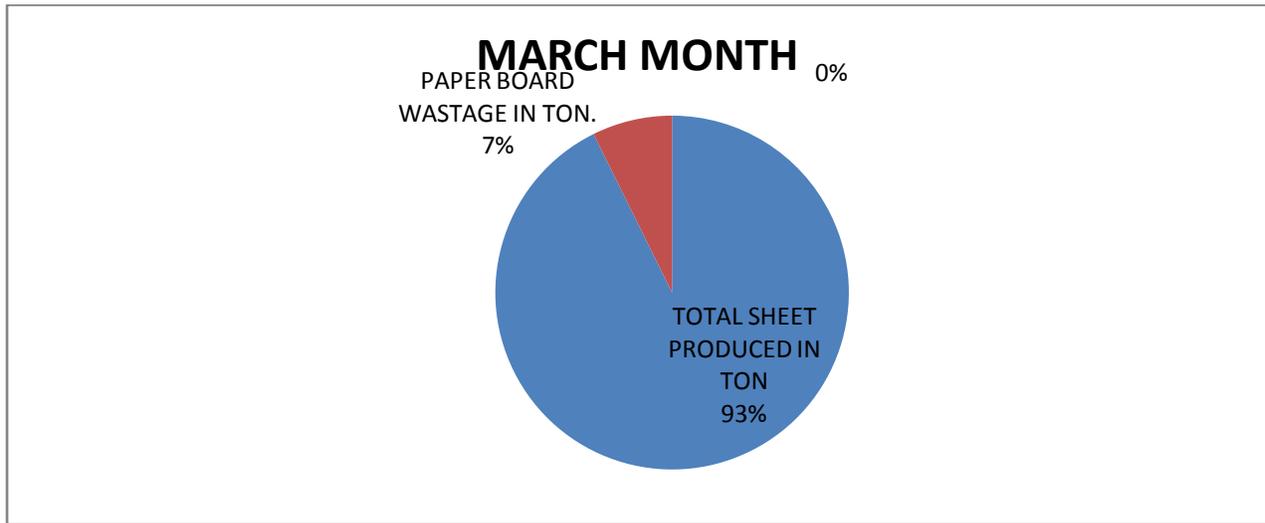


FIGURE - DATA OF CORRUGATION PRINTING ON NEELKAMAL MACHINE AT B.K PRINT & PACK” HARIDWAR FOR THE MONTH OF MARCH, 2018

Data collection done in the month of APRIL is shown below:

TABLE - DATA OF CORRUGATION PRINTING ON NEELKAMAL MACHINE AT B.K PRINT & PACK” HARIDWARFOR THE MONTH OF APRIL, 2018

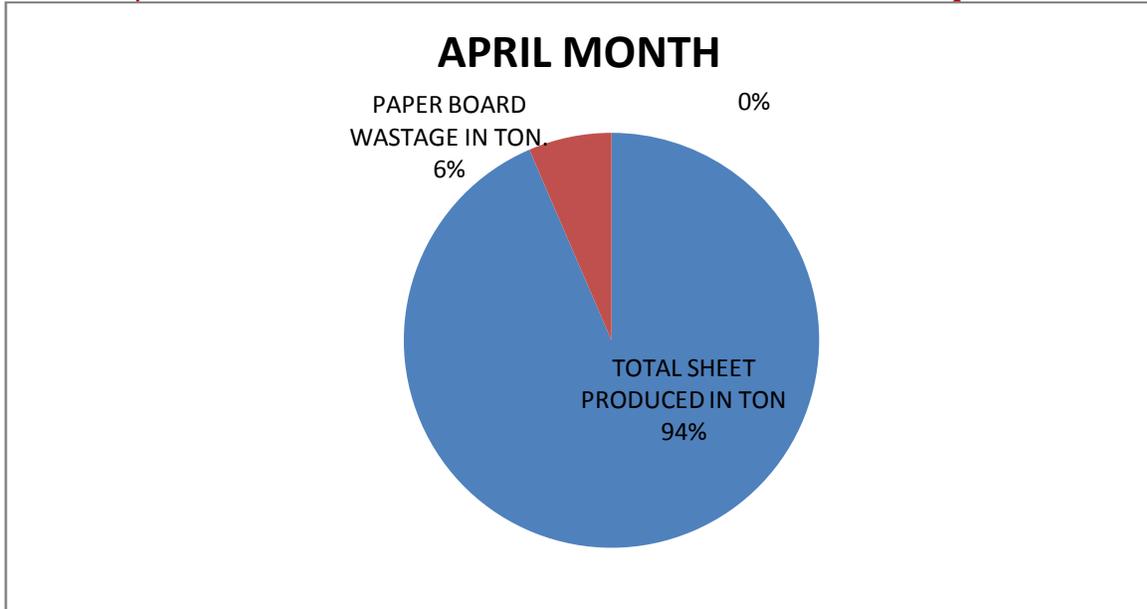


FIGURE - DATA OF CORRUGATION PRINTING ON NEELKAMAL MACHINE AT B.K PRINT & PACK” HARIDWAR FOR THE MONTH OF APRIL, 2018

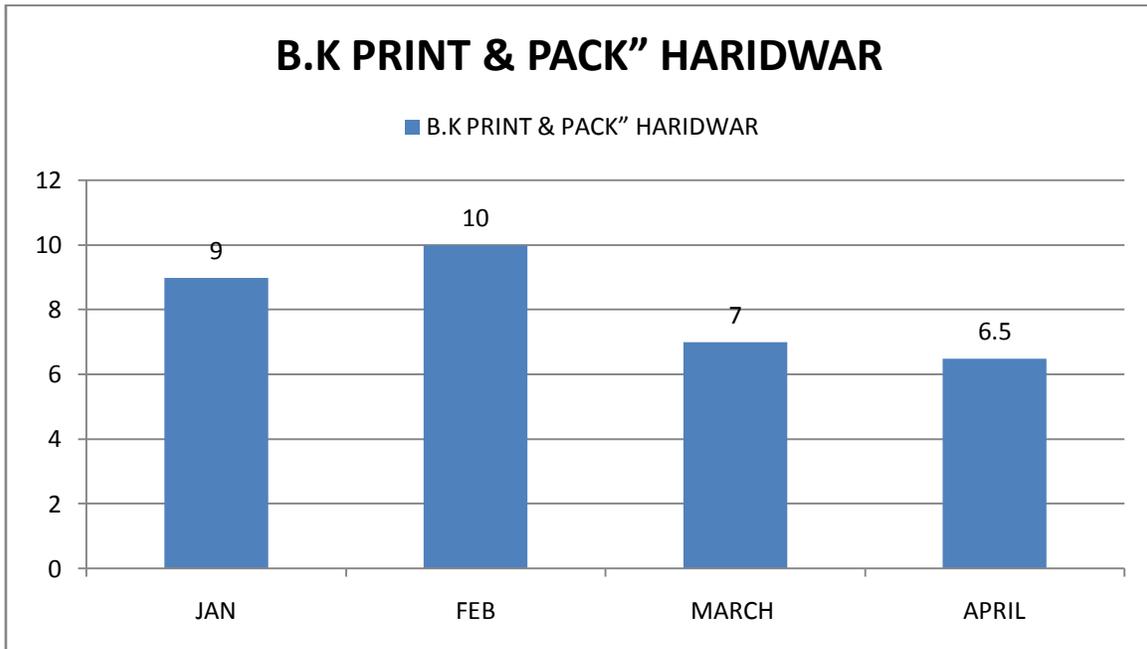


FIGURE - WASTAGE OF BOARD IN ALL FOUR MONTHS

VII. CONCLUSION & FUTURE SCOPE

This research focuses on optimum utilization of board & waste reduction in corrugation printing in “B.K Print & Pack” Haridwar. The suggestions made during the study will be incorporated in a checklist which will be in the form of table to check the different factors related to optimum utilization of board & waste reduction before all jobs to be handled on particular machine on daily printing. Various points in this check List will help to reduce the wastage of

paper & board and hence will improve the quality of corrugation process. The study may be concluded in a manner that, if all suggestion were implemented for optimum utilization of board & waste reduction then a positive result will achieved and quality of corrugation process will be improved. The present study will be focused on the optimization of Corrugation Process for Optimum Utilization of Board.

REFERENCES

1. Sun Cheng etc. *Paper Packaging Structure Design*. Beijing: Light Industry Press; 2006.
2. GaoMeifen, Wang Ninghong, Wu Guorong. *History, Status and Development of corrugated box industry*. Mechanical and electrical information, 2004; (05): 31-34.
3. Wang Zhixing, Chen Xirong. *Status and Development of China corrugated box industry*. Printing Technology, 2008; (24): 36-39.
4. Wang Zhixing. *The development process of China's packaging industry*. Shanghai Packaging, 2009; (01): 62- 64.
5. Ju Xiang. *Lightweight base paper enjoyed home appliance packing*. Consumption Daily, 2005.
6. Chen Xirong. *Wood Packaging favorite High-strength plastic core compound board*. China Packaging Report, 2008.
7. "In the Tile the Tile" debuts the packing market. *China Packaging Industry*, 2008; (03): 18-18.
8. *Technical analysis that corrugated board of Sandwich makes paper packaging*. China Paper Net.
9. Zhao Rongli. *Four Layer Compound Corrugated board Summary*. Print China, 2006 ;(04): 69-70.
10. Fan Xiaoping, Zhang Qinfa, LuoGuanqun. *Influence of Molding Process after the Manufacture of Corrugated Board onQuality of Corrugated Case*. Packaging Engineering, 2007; 28 (12) :98-103.
11. GuoShudi. *The Research on the Relationship between Dimension Scale and Compression Strength for Corrugated Box*. LogisticsSci-Tech, 2009 ;(06): 97-98.
12. Liao Min, Dai Yuehong. *Structural Design of Corrugated Box and Its Optimization Methods*. Packaging Engineering, 2006; 27(4): 153-156.
13. Wang Rui. *Four ways to achieve reduction of corrugated packaging*. Printing Technology, 2009; (10): 43-44.
14. H.Fei, N.Meskens, "Discovering Patient Care Process Models From Event Logs," 8th International Conference of Modeling and Simulation, MOSIM'10, May 10-12, 2010.
15. R.S. Mans, M.H. Schonenberg, M.Song, W.M.P. van der Aalst, P.J.M. Bakker, "Process Mining In Healthcare – A Case Study," *Proceedings of the First International Conference on Health Informatics, Volume 1*. (pp.118- 125), 2008.
16. Liao Min, Dai Yuehong. *Structural Design of Corrugated Box and Its Optimization Methods*. Packaging Engineering, 2006; 27(4): 153-156.
17. Pearson Keith (2013), "Market Statistics and Future Trends in Global Packaging", World Packaging Organization, New York.
18. Das R P and NathVikas (2006). *Green Packaging Practices of Selected Indian Industries- An Empirical Study*, Amity Management Analyst, Vol. 1, No. 1, pp. 97- 108.
19. Indian Brand Equity Foundation (2013), *A Report on "Flexible Packaging: Changing Dynamics of Packaging Market"* (available on http://www.ibef.org/download/Flexible_Packaging060112.pdf).