

ABSTRACT

Objective of this research paper is to put emphasis on various eco-friendly techniques existing today in sheet fed offset printing organizations and their futuristic aspects. Reducing pollution, decreasing carbon footprints and lowering volatile organic compounds have become essential today for various offset printing organizations for sustainable developments. To get aware of eco-friendly techniques coming forth, a survey of 15 printing organizations was conducted in Delhi NCR and BADDI (Himachal Pradesh) region. The data was collected with the help of questionnaire consisting of 8 questions. The result indicated that alcohol free dampening, IPA (Isopropyl alcohol) free printing, ETP (Effective and technically proven) and STP (Sewage water treatment) systems and Heidelberg carbon neutral machine are futuristic eco-friendly techniques, which can play significant role in coming time..

KEYWORDS: Eco-Friendly Techniques, Eco-Friendly Inks, Green Presses, Alcohol Free Printing, Carbon Neutral Footprint.

I. INTRODUCTION

Eco friendly printing also known as green printing is described as the movement in the printing industry wherein recycling, reusing, and reducing is done to lower the number of resources used for printing and advertising. The ecofriendly ink Soy ink is the most recognized name. About 90% of the daily newspapers use and make a good newspaper ink. Today's more petroleum product to help them dry so sheet fed soy inks set and dry well, causing the overall VOCs to be a bit higher. This method involves the use of less quantity Volatile Organic Chemical inks, recycled paper, energy-efficient computers and equipment, remanufactured laser tonercartridges and ink cartridges for printers, paperless information dissemination, attempts to educate the public on green printing.[1]

Green printing has offer for the eco-friendly printing and cost saving as well. The expensive reduces 70%, when fully established in office or even at home. Green printing can help in conservation, preservation and safety concern, when it comes to environment concern. On the other hand use of recycled paper, the paper manufacturing industry has been quite active in look for the ways of producing their products without having to process pulps that are acquired from trees. This means that the thousand pounds of solid waste left when producing non-recycled paper could be reduced and these allowing trees to live longer for another set of years and become stronger. The remanufactured cartridges are recyclable cutting up to 97%, the number of waste dumped each day.

There are a lot of misconceptions about green printing that create low quality prints. Companies hesitate in trying to use recycled papers and remanufactured printer cartridges. But the manufacturers of such products have informed the public that applying recyclable paper or materials for printing can give the same high quality output that they get from the usual supplies. The only difference is the cost of recycled products is cheaper, contempt being more environmentally responsible than more traditionally produced products.[2]

More petroleum products used in traditional ink and more vegetable oils used in eco inks for the carrier. The main difference between conventional ink and eco ink is carrier vehicle. VOCs are from petroleum products, so greater value of volatile organic compound has higher value petroleum in the ink formula. More petroleum

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ICTM Value: 3.00

products used in traditional ink and more vegetable oils used in eco inks for the carrier. Agro ink an ink that will set and dry better with less VOC can use less soy oil (20%) along with other vegetable oils such as linseed, corn, canola, etc. to create. The most recognized name in eco ink is soy ink. About 90% of daily newspaper use soy ink so it is good type of newspaper ink. Today's sheet fed soy inks used more petroleum products to help them set and dry well.[3]

The printing press itself should be known as green press which should use eco- friendly inks and products. It should include all the latest environment benefits and way. The main features include such as recyclable wash up solutions, low waste ink feed solutions, pumps which eliminate 95% of ink wastage. The green presses use the perfect format and this may result to huge energy saving and a significant waste saving.[4]

Alcohol free or low-alcohol printing includes such a technique which helps reduce both the iso-propyl alcohol in the dampening system and emission of volatile organic compounds. Green printer focus on to reduce iso-propyl alcohol from their font solution in press because it is main pollutant in press. This not only help to reduce volatile organic compound but also eliminate health problem mostly faced by press worker as a result of exposure to these compound.

It difficult that a business will be establish carbon negative but we can take step to neutralize carbon foot-print. For this the steps include such as trees planting, power from a source of green power provider, reducing energy consumption by switching off PCs and lights at night or where it required. To reduce causes and symptoms printing companies need to understand that carbon neutral schemes that simply offset carbon emissions by planting trees. Therefore, printing companies should try to understand carbon neutral scheme or environmental schemes that focus on both reducing emissions and offsetting the carbon footprints as well.[5]

II. RESEARCH OBJECTIVES

New eco-friendly techniques are coming forth in the field of sheet fed offset about which small scale printers are not much aware of. Apart from this printing need to be eco-friendly in coming future for sustainable development.

The objective of this research is:-

- To find out eco-friendly techniques being used in sheet fed offset printing presses.

III. RESEARCH METHODOLOGY

A questionnaire was prepared to know answer of some question having relationship with research (Appendix-1). For filling the questionnaire fifteen printing industries were visited of different region.. Questionnaire was given to collect data. The source of data have share include feedback from various printing presses. The entire data was analysed using suitable statistical tools and techniques like bar graphs and charts. The result and discussion will help in what kind of eco-friendly techniques available in market and adopted by printing presses.

IV. DATA COLLECTION AND ANALYSIS

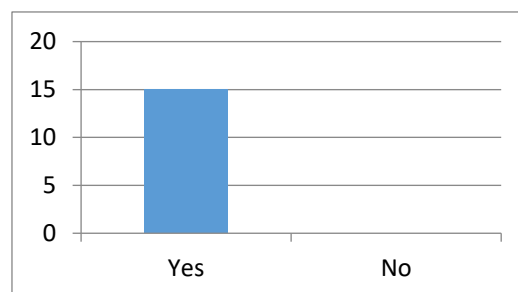


Fig.1.Organizations concentrate more on eco-friendly concern

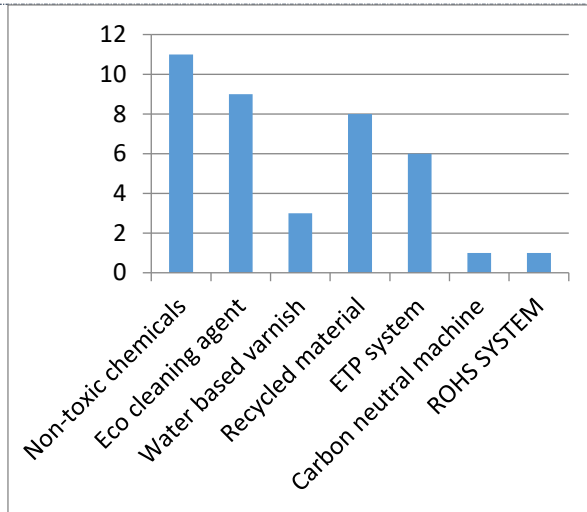


Fig.2.Eco- Friendly techniques using in printing press

The result obtained from data collected among fifteen printing organizations are help in finding that the industries are more concentrate over the environment concern as shown in Fig 1.

Today printing presses are using more eco-friendly techniques.11 presses use non-toxic chemicals, 9 use eco cleaning agent, 8 use recycled material and 6 use ETP system. The water based varnishes; carbon neutral machines and ROHS system are used by innovative printers only.

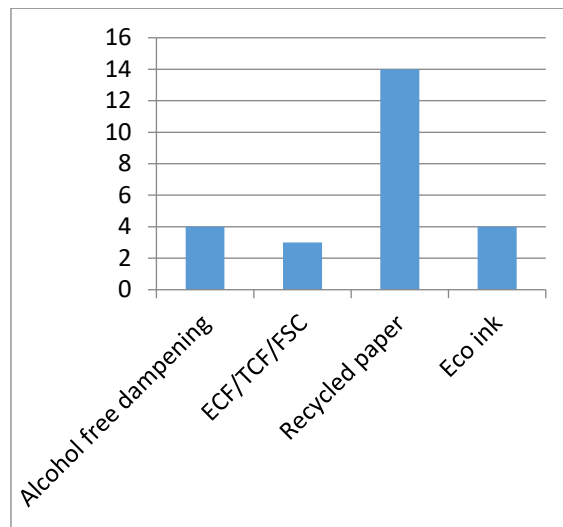


Fig.3.Eco-Friendly techniques available in printing Presses

Data gives the result that recycled paper is widely used among the printers. Eco ink, ECF/FSC and alcohol free dampening is not much widely used because of lack of technologies transfer and higher initial cost. But innovative printer uses these eco-friendly techniques as shown in Fig 3.

The survey held in fifteen industries give the information about that 50% printer have good and 50% printer have average eco-friendly techniques used or tested.

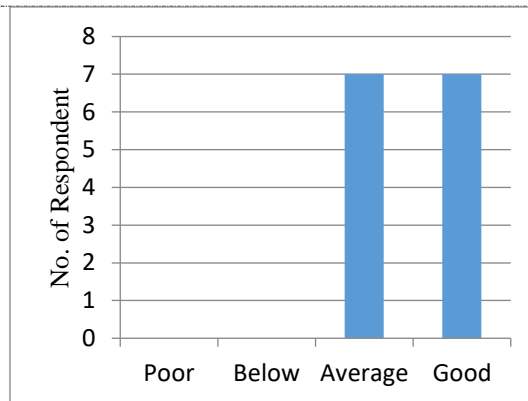


Fig.4. Result of the eco-friendly techniques using or tested by printers

V. RESULT AND DISCUSSION

Eco-Friendly techniques coming forth in sheet fed offset presses

1. IPA (Isopropyl alcohol) free/alcohol free dampening techniques are adopted by innovative printers.
2. Eco-friendly and bio-degradable inks, non-toxic varnishes, non-harmful chemicals, eco-friendly cleaning agents are used in 30-35% printing presses.
3. Recycled paper, ECF/TCF/FSC and recycled paper for corrugated board/duplex board are available in printing presses. Printing presses are using these techniques in their plant for increasing eco-friendly product and services.
4. ROHS (Restriction of hazardous substance) technique is rarely available in market and only some printing presses adopt these techniques.
5. ETP/STP system is widely available in market and printing presses. Many printing presses adopt these techniques for treatment of waste water problem or reusing waste water.
6. Advance machine available in market like Heidelberg 7 colour machine with CO₂ neutral and noise less machine. Now printing presses adopt these types of machines to reduce pollution.
7. High grade safety systems are configured in printing presses and now adopt these kinds of system for improving workers safety during press running.
8. Some printing presses are using scrap materials and rejected material reused. All printing presses more concentrated over eco-friendly product and services for safe environment.

The result obtained from observation is help in finding the new eco-friendly techniques used and adopted by sheet fed offset presses now days. Today printing presses more concentrate over eco-friendly techniques for providing safe environment and reduce carbon footprint during press running. The printing presses today think about more eco product and services.

VI. CONCLUSION

1. Eco-friendly ink, bio-degradable ink and chemicals, non-toxic varnishes and eco-friendly cleaning agent are most widely accepted eco-friendly techniques among printers.
2. Recycled paper, ECF/FSC paper are most widely adopted by printers.
3. ETP, STP and ROHS (Restriction of hazardous substance) techniques are using by printers.
4. Heidelberg seven colour machine with CO₂ neutral and advance machine available in printers and rarely used machines among printers.
5. IPA free printing and alcohol free dampening are mostly planning techniques by printers.
6. Today sheet fed printing presses used eco-friendly printing plates for printing sheets and many presses reduces the alcohol percentage from 10% to 7% and planning for alcohol free printing.
7. Sheet fed presses now days are more concentrating to reduce air, water and noise pollution during press running.
8. Companies are providing more advance safety equipment like gloves, masks and helmets providing to employees for their safety. Companies are more health conscious of their workers, staff and surrounding.

**VII. REFERENCES**

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APPENDIX-I

1. Do you concentrate more on quality or bring eco-friendly
 - a) Yes
 - b) No
2. What are eco-friendly techniques now available in your organization
3. Have you ever tried for eco-friendly product or services
 - a) Yes
 - b) No
4. You are not using eco-friendly techniques then tell reason in brief
5. What are future eco-friendly techniques you are planning for
6. Eco-friendly techniques available in your organization out of following
 - a) Alcohol free dampening
 - b) EC/ TCF / FSC
 - c) Recycled paper
 - d) Eco ink
7. How good are the results of the eco-friendly techniques you are using or have tested
 - a) Poor
 - b) Below
 - c) Average
 - d) Good
 - e) Additional Information
8. Are you using or have you tested eco-friendly cleaning agent
 - a) In use
 - b) Tasted
 - c) No
 - d) Additional Information

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