

Effect Of Web Breaks On Productivity In Newspaper Production

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Abstract

In newspaper industry, web breaks have a considerable effect on productivity. Quality of newsprint, condition of the pressroom, operator skill and management policies are the main reasons of web breaks. This study was carried out on two web offset machines in a printing press of West Bengal for a period of six months. Root causes of web breaks have been identified and observations have been made on the effect of web breaks on productivity.

Keywords: Newsprint, Pressroom, Productivity, Web breaks, Web offset machine.

INTRODUCTION

One of the major causes of printed waste is web break. It plays havoc on productivity in newspaper production. Various factors regarding material, personnel, environment, methods and machines are responsible for web breaks. Observation shows that controlling the no. of web breaks, the productivity can be improved impressionably. This study was taken to investigate the effect of web breaks on productivity in newspaper production. The scope of this study was limited to the observation of web breaks and productivity of two machines over a period of six months in a printing press of West Bengal.

DEFINITION OF WEB BREAKS

Web break is an integral part of production waste. The web faces varying levels of stress as it travels from the reelstand to the folder in a rotary press. The web tension fluctuates and tension peaks occur frequently. Again, there are vibrations transmitted through the machine, which, when combined with aerodynamic effects acting on the moving web, produces type of instability known as 'web flutter'. If paper is already defective, i.e., it has holes, tears, shives etc., it is much damaged by the tension peaks and probability of web break is greatly increased.

METHODOLOGY

Our current study was carried out on two web offset machines viz. Manugraph Cityline Express and Manugraph Hiline. The maximum machine speed were 30,000 imp/hr and 45,000 imp/hr respectively. Newsprint with a grammage of 45 g/m² and reel width of 700 mm and cut-off length

546 mm was used.

CAUSES OF WEB BREAKS

There are numerous causes of web breaks in a press. Most of the web breaks are the result of cumulative factors which causes strain to the web beyond its breaking point. When the energy absorption capacity of paper is sufficient, it can withstand break. Elasticity of paper enables it to absorb normal stresses. Web break may be caused due to the paper manufacturing in substandard method, but often it is due to press problems, bad adjustments.

Reasons for web breaks can be divided into six main categories –

- Materials related
- Press related
- Reelstand related
- Folder related
- Operating errors
- Unknown causes

A well established web break recording system must be developed to get more information.

Materials Related

- Newsprint and reel related
- Ink and water related
- Excessive water feed
- Excessive inking
- Overly tacky ink
- Plate related

Press Related

- Emergency 'red button stop'
- Sympathy break
- Air shut-off
- Improper web tension
- Improper impression setting
- Water, ink or foreign objects fall on web
- Imperfect cylinder packing

- Press start/stop
- Pipe rollers and compensators out of alignment
- Inaccurate adjustment of cocking rollers
- Accumulation of foreign matter on pipe rollers and compensators
- Mechanical defect in the web guidance devices
- Other mechanical problems
- Press misaligned or not exactly level

Reelstand Related

- Reel not up to speed
 - No reflective tape
 - Sensor defective or dirty
 - Press stops in cycle
 - Tabs come loose
 - Tab sticks to blanket
 - Tab does not pick up
 - Tab attached in wrong position
 - Knife failed
 - Knife cut too early
 - Knife cut too late
 - Reel kept going back
 - Press slowed in cycle
 - Unsuitable adhesive
 - Burrs on tension belts
 - Loose tension belts
 - Dirty or worn-out paster brushes or rollers
 - Improper setting of tension on paster brushes or rollers
 - Incorrect load on brake
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- Malfunction of paster carriage
- Other paster malfunctions

Folder Related

- Draw rollers pulling insufficiently or excessively
- Slitter and /or slitter check dull or not set properly
- Former angle is wrong
- Turner bar angle is wrong
- Excessive air
- Foreign matter accumulation on former and/or turner bars
- Imperfect web tension
- Improper cutting or folding
- Fly damage or incorrect adjustment
- Incorrect setting of guiding elements
- Other folder malfunctions

Operating Errors

This is basically all human errors.

Unknown Causes

No reason can be found in some web breaks.

WEB BREAK VS. PRODUCTIVITY

Web breaks have a great effect on the productivity of the press. Web breaks not only causes loss of newsprint and time, but causes financial damage of the press. It is well known that in a newspaper production, the maximum cost is due to procurement of material. Hence increased no. of web breaks causes loss of material, thus leading to financial loss.

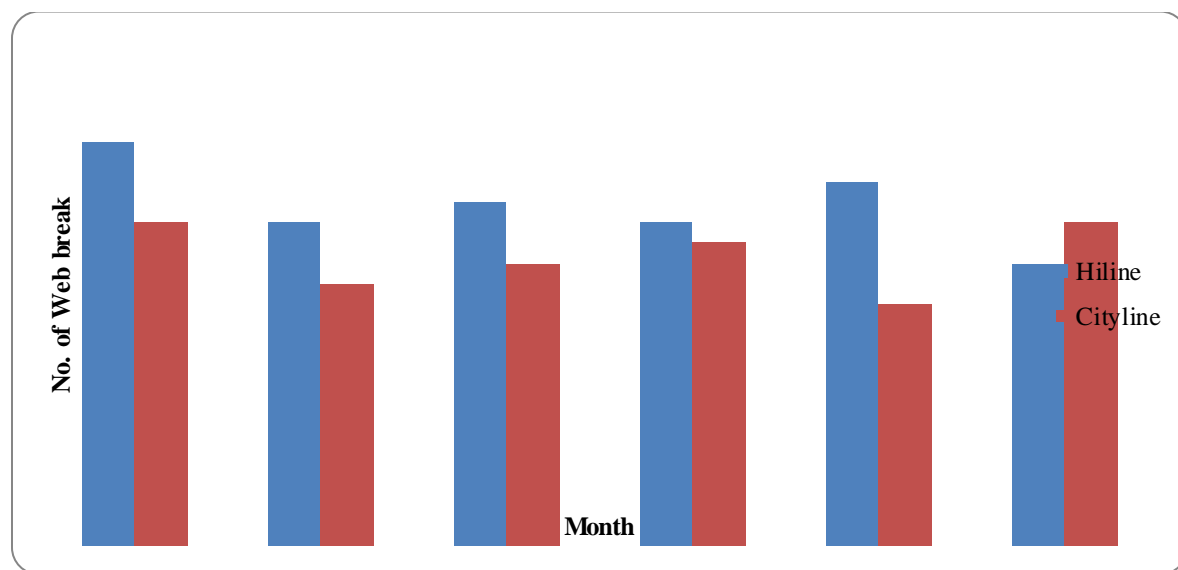
Though, web breaks leads to loss of time and money but there is still very little awareness to measure it quantitatively. The time taken to restart the press after a web break can vary widely depending on the number of webs involved, whether the webbing up is manual or automated, the need for cleaning the blankets etc.

The double-width presses take longer to web up than single-width presses, a factor that is relevant in the Indian context. It is obvious, that each minute of delay can result decrease in productivity.

An attempt was made to study the productivity of two web machines in relation to their web breaks over a period of six months.

RESULTS AND DISCUSSION**Table-1:** Monthwise Web breaks in Hiline and Cityline

Month	No. of Web break (Hiline)	No. of Web break (Cityline)
Jan. '12	20	16
Feb. '12	16	13
Mar. '12	17	14
Apr. '12	16	15
May '12	18	12
Jun. '12	14	16

**Fig-1:** Bar diagram of Monthwise Web breaks in Hiline and Cityline**Sample Calculation**

For Hiline machine –

Machine speed – 45,000 imp/hr

Run time with downtime – 1.07 hrs

Total copy – 36,000 copies

Actual copy = 36,000 imp / 1.07 hrs = 33,644 imp/hr

Productivity = (Actual copy/Maximum copy) x 100%

$$= (33,644/45,000) \times 100\%$$

$$= 74.76\%$$

For Cityline machine –

Machine speed – 30,000 imp/hr

Run time with downtime – 1.4 hrs

Total copy – 36,000 copies

Actual copy = 36,000 imp / 1.4 hrs = 25,714 imp/hr

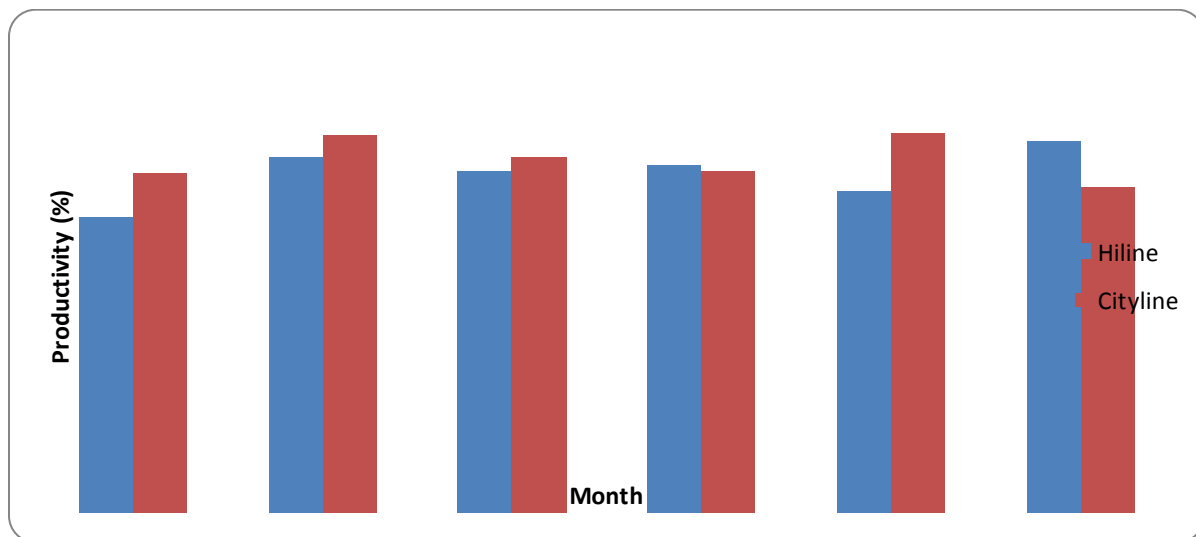
Productivity = (Actual copy/Maximum copy) x 100%

$$= (25,714 / 30,000) \times 100\%$$

$$= 85.71\%$$

Table-2: Monthwise Productivity in Hiline and Cityline

Month	Productivity in % (Hiline)	Productivity in % (Cityline)
Jan. '12	74.76	85.71
Feb. '12	89.78	95.49
Mar. '12	86.46	90.02
Apr. '12	88.14	86.40
May '12	81.44	96.23
Jun. '12	94.16	82.35

**Fig-2: Bar diagram of Monthwise Productivity in Hiline and Cityline**

By analyzing the monthwise web breaks and productivity figures, it is observed that in Jan. '12, the no. of web breaks was maximum and productivity was minimum whereas in Feb. '12, the no. of web breaks was minimum and highest productivity was achieved.

From the results, it is seen clearly that every web break carries the risk of damage to the printing press and less the risk, greater the production reliability. It is also observed that productivity is directly related to the no. of web breaks. Higher productivity can be achieved by minimising the no. of web breaks. Reduction in web breaks not only prevents loss of time and material, but also improves productivity. If web breaks can be controlled on a steady and systematic manner, it will directly improve productivity.

CONCLUSION

In the current study, some important causes of web breaks have been identified which include quality of the newsprint i.e. it is not upto the recommended standard due to manufacturing defects, condition of the pressroom and operator skill. It has also been observed that productivity of the machines suffer substantially with the increase in web breaks. Increase in web breaks, not only leads to loss of time and money, but can impart damage to the press. Higher productivity can be obtained by controlling web breaks, which demands not only good newsprint quality but also improved operator skill. Better awareness and a change in mindset will help to achieve the goal.

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