

## GLOBAL JOURNAL OF ENGINEERING SCIENCE AND RESEARCHES AN OBSERVATORY ANALYSIS OF FOUNTAIN SOLUTION USED IN WEB FED OFFSET & SHEET FED OFFSET PRESSES WITH REGARD TO PH AND CONDUCTIVITY FACTORS

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### ABSTRACT

In this paper, we have analyzed Fountain Solution Used in Web Fed Offset & Sheet Fed Offset Presses with regard to pH and Conductivity factors. 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

This case study is done at,

- HT Media Meerut.
- PrabhatKhabar Ranchi.
- Sachdeva Enterprise Delhi.

We collected the information of the consumption of fount solution on different machines and tried to minimize the consumption of fount solution

#### Research Objectives

The Objective of this study is to collect the information of the consumption of fount solution on different machines and minimizing the consumption of fount solution.

- Case study of “HT Media Meerut”.
- Case study of “PrabhatKhabar Ranchi”.
- Case study of “Sachdeva Enterprise Delhi”.
- To get the exact percentage of a fount to be mixed with water for making fountain solution.
- Minimized the consumption of fount solution in sheet fed and web fed Printing.
- Providing the complete detail of web fed and sheet fed fount solution.
- Impact on pH and conductivity during Printing.

### II. RESEARCH METHODOLOGY

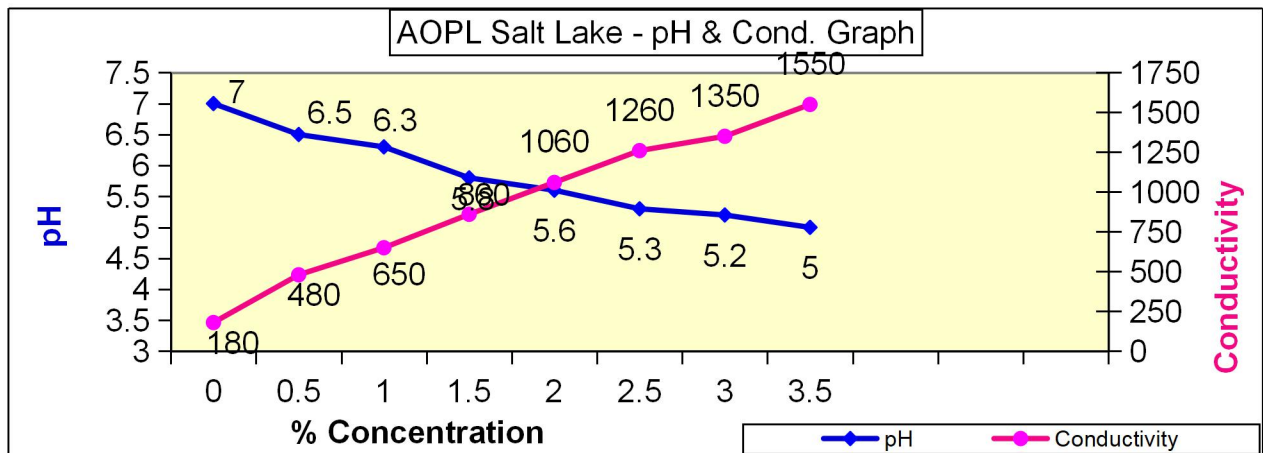
The whole Study includes the complete detail of fount solution and its behavior on sheet-fed & web-fed. The following methodology was adopted during the study:

- Arrange the trial of web fount and checking the exact consumption of fount and changes in parameters (PH, Conductivity) with respect to printing.
- Arrange the trial of sheet fed fount and study the consumption of fount and also study about the parameters changes during printing.
- Data was collected from different Printing machines.

III. DATA COLLECTION

Data collection in february month (AOPL salt lake)

pH & Conductivity Graph			
% Concentration	pH	Conductivity	Hardness (ppm as CaCO <sub>3</sub> )
		( Siemens)	
0.00	7.60	280	130
0.50	6.30	540	270
1.00	5.90	980	440
1.50	5.60	1330	660
2.00	5.40	1640	820
2.50	5.30	1960	1000
3.00	5.20	2250	1100
3.50	5.10	2560	1220



Observation

- We Took the JUG Test in our Liquid Gold 2000 :-
- We took the test up to 4.0% the readings are given for your reference.
- Customer facing problems of fluff accumulation during printing over the paper and Blanket. So we have to reduce fluff accumulation.
- Technova suggest them to add lintofix to counter fluff accumulation. So this Product is suitable by using this product they didn't require any additive to counter this Problem

**Executive summary**

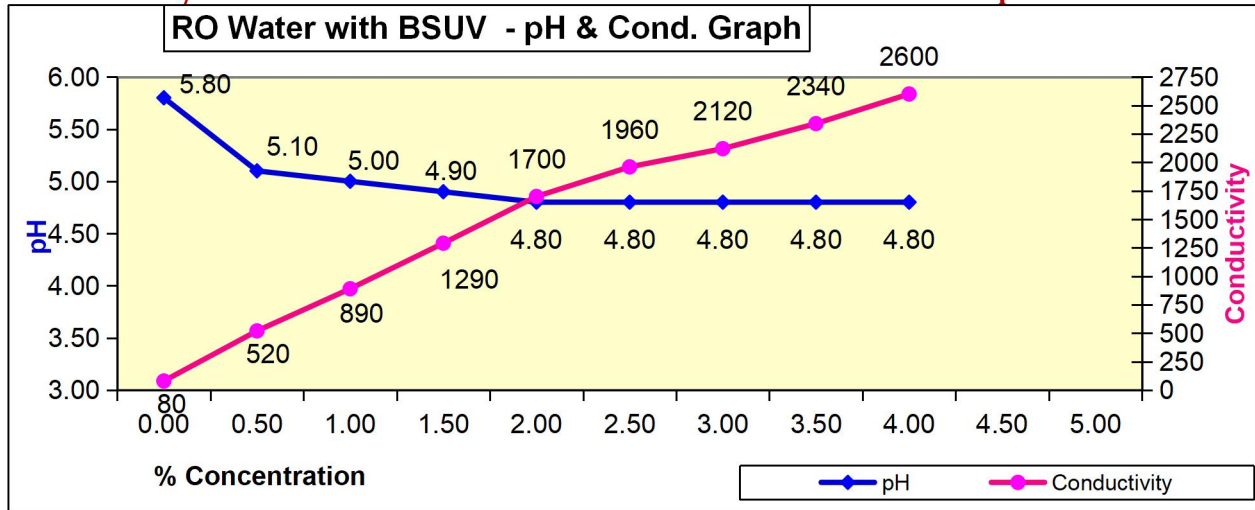
- M/s. HT MEDIA has been using Technova 405. They have been using fount 2.20% to 2.7 for Cloth Damp. and also for BRUSH Damp. Along with RO water for a while and were looking at a fount which can run in brush as well as Cloth Damp. And also control the Fluff Accumulation.
- We have recommended RBP Liquid Gold 2000 in percentage fount 2.0% and can run in Brush and Cloth dampening machines.
- Press started up with normal settings.
- The average water settings where generally in below 60% range.
- Initially we set the water level avg. 50% start up good.
- Ink water balance is good, start up wastage normal
- LG 2000 started with desired results.
- Print quality is better than the technova 405.
- During the press trial included no piling (Image and non-image),
- Smooth ink lay down, controlled dot gain
- There is No Fluff Accumulation over the paper and Blankets. Customer did not require cleaning the Blanket in the night as they usually did when they used technova 405.

**Conclusions**

- The initial trial started well. No significant issues observed.
- Fluff accumulation problem has solved.
- The water level is low.
- All ink densities looked good with smooth lay down.
- Kapoor Imaging Pvt Ltd recommends that M/s. HT Media continue to run Liquid Gold 2000 for clean and smooth Printing.

**Data collection in march month at prabhat khabar in ranchi (RO water with bsuv)**

pH & Conductivity Graph			
% Concentration	pH	Conductivity	Hardness (ppm as CaCO <sub>3</sub> )
		( Siemens)	
0.00	6.20	280	140
0.50	5.20	620	300
1.00	4.9	1050	520
1.50	4.7	1450	730
2.00	4.6	1800	900
2.50	4.6	2100	1000
3.00	4.5	2480	1240
3.50	4.5	2750	1370



**Observation**

- We Took the JUG Test in our BSUV
- We took the test up to 3.50%.
- This product is better to the Water because pH reach 4.8 & Cond. reach 1500 at 1.8%, there is no other issues in this product

**Executive Summary**

- M/s. PrabhatKhabar has been using TN Nova Fount Secura. They have been using fount 2.20% for Brush Damp. Along with RO water for a while.
- We have recommended BSUV in percentage fount 1.80% and can run in Brush dampening machines.
- Press started up with normal settings.
- The average water settings where generally in below 70% range.
- BSUV started with desired results.
- However this did not impact the overall print quality.
- The conductivity and pH remained stable throughout the night.
- During the press trial included no piling (Image and non-image),
- Smooth ink lay down, controlled dot gain.
- Ink density on paper is stable.

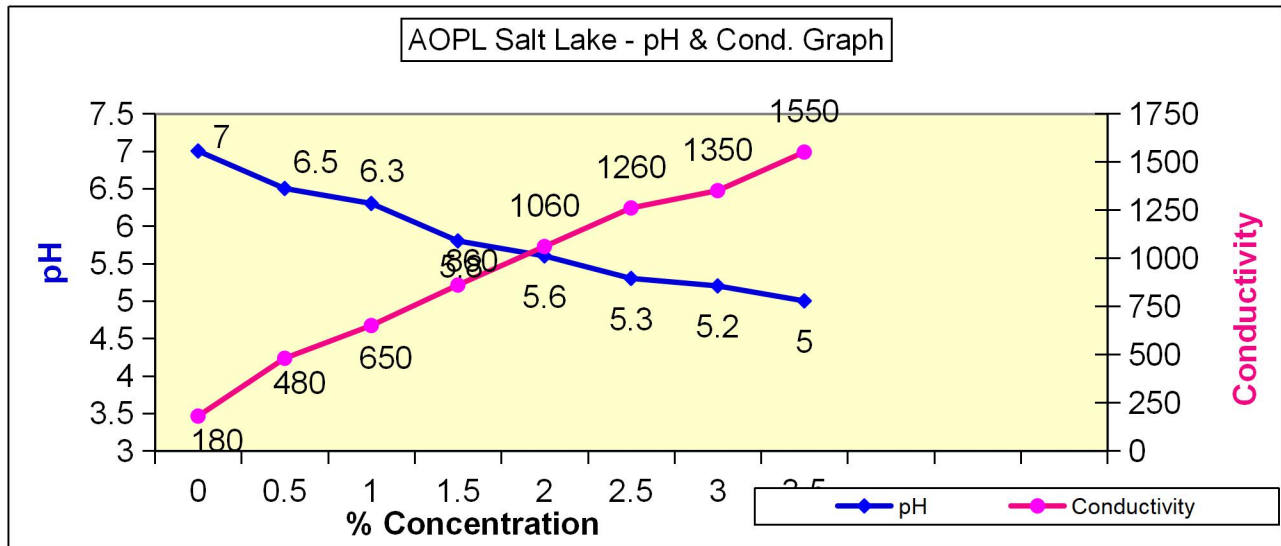
**Conclusions**

- The initial trial started well. No significant issues observed.
- The water levels were within normal limits.
- All ink densities looked good with smooth lay down.

**Data collection in april month at sachdeva enterprise in delhi (AOPL salt lake)**

pH & Conductivity Graph			
% Concentration	pH	Conductivity	Hardness (ppm as CaCO <sub>3</sub> )
		( Siemens)	
0.00	7	180	90
0.50	6.5	480	240

1.00	6.3	650	320
1.50	5.8	860	420
2.00	5.6	1060	530
2.50	5.3	1260	630
3.00	5.2	1350	650
3.50	5.0	1550	750
4.00	5.0	1750	850



#### IV. LIST OF SUGGESTION

During my period in Kapoor Imaging Pvt Ltd. we have conducted so many trials in newsprint and also in packaging segment. Some trials I have shared in this thesis. During these trials I had observed number of things by which we can reduce our fount consumption. These trials are in both of the Machines sheet fed and web fed due to we can easily compare both of the fount solution.

During this period I had also done a trial of alcohol free fount.

- The difference of consumption ratio in both fountain solutions is very high. Either we compare sheet fed fount and web fed fount or we compare alcohol free fount and fount with IPA.
- The consumption of IPA fountain solution is more than alcohol free fountain solution.
- The evaporation of alcohol free fount is less than IPA fountain solution.
- Web fed fount solution need higher conductivity in low Doses because speed of web machines is much higher than the other once.
- Before adding fount in water must check exact ph and conductivity with different- different percentages so that we get the exact doses of the fount we required.
- In web offset we need conductivity in Between 1200 to 2000.
- In sheet fed offset we required only 1200 to 1600 conductivity.
- Chillers Temperature must be below 18 C, by lowering the temperature we can also reduce the fount doses.

## V. RESULT & DISCUSSION

- The difference of consumption ratio in both fountain solutions is very high. Either we compare sheet fed fount and web fed fount or we compare alcohol free fount and fount with IPA.
- The consumption of IPA fountain solution is more than alcohol free fountain solution.
- The evaporation of alcohol free fount is less than IPA fountain solution.
- Web fed fount solution need higher conductivity in low Doses because speed of web machines is much higher than the other once.
- Before adding fount in water must check exact ph and conductivity with different- different percentages so that we get the exact doses of the fount we required.
- Chillers Temperature must be below 18 C, by lowering the temperature we can also reduce the fount doses.
- In general procedure most of printing unit using 8% to 10 % alcohol and 3.5% to 4% with water for control pH, TDS and Conductivity, alcohol is a petroleum base product for that the time of circulation of water the part of Alcohol evaporated and mix in environment. Due to this our costing of fount solution is increasing. So we have to manage the temperature below 20 C.
- The other option for reducing the cost we have to use alcohol free fount they have very less evaporating contents. This type of fount iseco-friendly. Unitrol IPA free is one of the very stable products in Indian market and this product is eco friendly.

## VI. CONCLUSION & FUTURE SCOPE

This research focuses on to the quality management & waste reduction during printing in different presses during the Trials. In all these methodologies, when check list gets adopted number of wastage depending upon the chiller and machine availability. This preliminary result can be used and in future check point suggestions incorporated in the printing section may be indicative for other organizations. They may be modified, increased or decreased. The factors to be considered to implement the suggestions properly, we generate a check list in form of table to check the different factors before all the trials to be handled on the different machines. And check point helps to reduce the wastage of fount, paper & board with proper quality control. The study may be concluded in a manner that, If all suggestion were implemented for reducing wastage & improving quality will implemented then a positive result will achieved.

- It also helps us to develop a batter fount which having combine specification of sheet-fed and web-fed fount.
- It also helps us to minimize the cost of the fount solution

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