

**INTERNATIONAL JOURNAL OF ENGINEERING SCIENCES & RESEARCH
TECHNOLOGY****SOLID INK DENSITY ANALYSIS FOR WEB-FED PUBLICATION PRESSES: A
CASE STUDY OF HT MEDIA LTD., LUCKNOW****Swati*¹ & Hitesh Garg²**¹Department of Printing Technology GJUS&T, Hisar²Sterling Publishers Pvt. Ltd., Greater Noida

DOI: 10.5281/zenodo.829755

ABSTRACT

This paper throws light on solid ink density analysis which has been top print quality concern for newspaper printing organizations. Objectives of this paper is to study WAN-IFRA standards used in the newspaper and after final printing the density was evaluated on solid ink patches to match with. For the more accurate evaluations, density is checked at more than one area covering all sides of the newspapers. The density pattern was checked for Cyan, Magenta, Yellow and black sequentially on newspapers on different towers and deviations were analyzed.

KEYWORDS: Quality, Solid Ink Density, WAN-IFRA, Density Deviation, Print Quality Standard.**I. INTRODUCTION**

Solid ink density is the measurement of a solid printed patch on the substrate or paper including the paper density. It is generally related to ink film thickness and helps in controlling dot gain while printing. A densitometer is required for measuring the solid ink density that reads print density. Printing industries are increasingly adopting digital technologies to complement or replace analog ones. The terms digital and analog (or analogue) designate both types of signals for representing data and methods of print reproduction. Analog signals and computers rely on discontinuous patterned transmissions of discrete amounts of electricity of light to communicate data. Digital printing requires minimal press set-up and has multi-colour registration built-in to its system. This eliminates many of the front-end time consuming processes and permits quick response and just-in time print delivery. Digital processes can vary every print "on-the-fly" i.e. while production printing, providing variable data, personalisation, and customisation. Most digital printing technologies are non-contact printing which permits printing of substrates without touching or disturbing them. This eliminates image distortion encountered "in some analog processes such as screen printing. It also does not require as aggressive substrate hold down methods which can distort or damage some substrates such as fabrics. Solid ink density is also a very important properties for print quality.

II. RESEARCH OBJECTIVES

- Objective of this paper is to find density pattern in newspaper and deviations it bears while compared with WAN IFRA standards.

III. RESEARCH METHODOLOGY

To measure the solid ink density for web-fed; good copies received were checked for ink density analysis and after that check the density tabs on the bottom of the paper in HT Media Ltd, Lakhnau. D-19 C densitometer is taken for the measurement. Set the densitometer in **Status** –ISO E, **Illumination** – D 50, **Observer** - 2°, Mode – relative, measure paper white. Then measure the samples taking C M Y K as the sequence. Now fill up format with respective values. Analysis was done on the values, which are collated through linking the various files.

IV. DATA COLLECTION

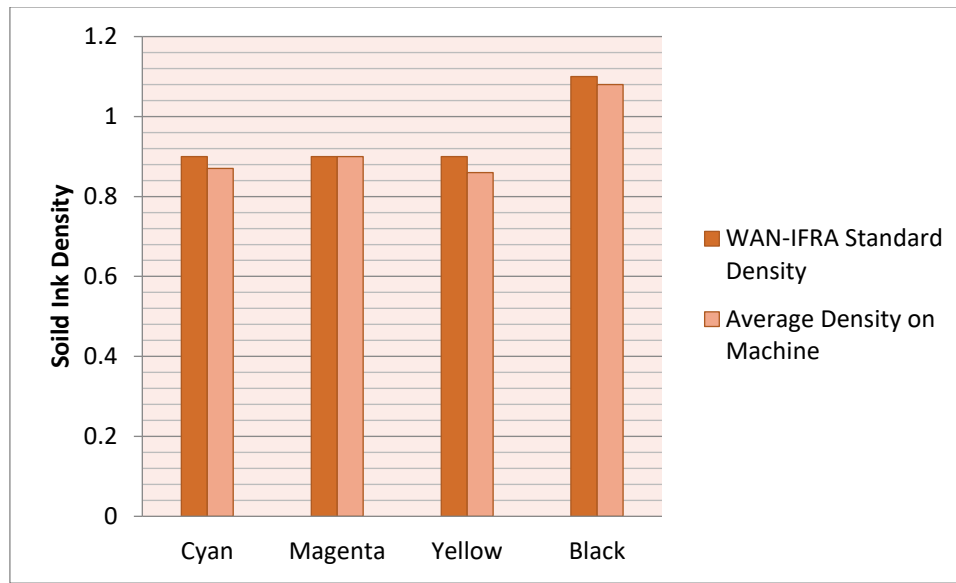
WAN-IFRA (ISO 12647-2:2013) Standard for Web Offset Publication Presses

Inks	Solid Ink Density
Cyan	0.90
Magenta	0.90
Yellow	0.90
Black	1.10

	Production Data Hindustan Times												
	Pg. no.	LEFT SIDE POSITION				MIDDLE POSITION				RIGHT SIDE POSITION			
		C	M	Y	K	C	M	Y	K	C	M	Y	K
Tower 1	5	0.93	0.93	0.99	1.05	0.78	0.93	0.88	1.08	0.79	0.88	0.88	1.10
	6	0.86	0.73	0.76	1.15	0.79	0.79	0.59	1.07	0.85	0.85	0.71	1.14
	19	0.93	1.07	0.69	1.30	0.85	0.95	0.66	1.30	0.93	0.94	0.60	1.32
	20	0.85	0.93	0.90	1.15	0.94	0.95	0.85	0.98	1.01	0.91	0.71	1.08
Tower 2	7	0.92	0.94	0.93	1.13	0.95	0.90	0.88	1.11	0.95	0.85	0.86	1.13
	8	0.90	0.87	0.91	1.10	0.85	0.91	0.94	1.09	0.86	0.90	0.81	1.15
	17	0.82	1.02	0.90	0.92	0.88	1.07	0.97	0.99	0.85	0.93	0.91	0.98
	18	0.89	0.99	0.93	1.11	0.80	0.94	0.99	1.15	0.87	0.94	0.99	1.15
Mono for Black only	9	-	-	-	1.07	-	-	-	1.12	-	-	-	0.96
	10	-	-	-	1.20	-	-	-	1.30	-	-	-	1.15
	15	-	-	-	-	-	-	-	-	-	-	-	-
	16	-	-	-	-	-	-	-	-	-	-	-	-
Tower 3	11	-	-	-	-	-	-	-	-	-	-	-	-
	12	0.94	0.88	0.92	1.15	0.89	0.89	0.90	1.14	0.87	0.92	0.85	1.13
	13	0.95	0.99	0.85	1.09	0.95	1.01	0.85	1.09	0.93	0.91	0.85	1.09
	14	0.89	0.90	0.86	1.10	0.91	0.90	0.90	1.08	0.87	0.89	0.89	1.08
Tower 4	1	0.87	0.95	0.88	1.10	0.90	0.93	0.93	1.05	1.06	0.98	0.93	1.01
	2	0.85	0.93	0.90	1.15	0.94	0.95	0.85	0.98	1.01	0.91	0.71	1.08
	23	0.95	1.03	0.80	1.22	1.00	1.03	0.85	1.20	0.93	0.95	0.74	1.27
	24	0.86	0.92	0.99	1.05	0.87	0.99	0.95	1.12	0.86	0.93	0.91	1.08
Tower 5	3												
	4	0.86	0.89	0.85	1.24	0.90	0.95	0.77	0.99	0.87	0.91	0.76	1.09
	21	0.90	0.91	0.79	1.05	0.85	0.88	0.82	1.15	0.85	0.88	0.94	1.05
	22	0.87	0.92	0.91	1.05	0.87	0.87	1.05	1.05	0.82	0.90	0.95	1.09
Avg.		0.88	0.91	0.85	1.11	0.87	0.9	0.88	1.06	0.85	0.89	0.88	1.08

Average Density on Machine Production Line

Inks	Solid Ink Density
Cyan	0.87
Magenta	0.90
Yellow	0.86
Black	1.08


Possible Deviation Analysis

V. CONCLUSION

1. WAN IFRA is becoming popular Solid Ink Density Standards among various newspaper printing organizations.
2. The density deviation was found only 0.03, 0.00, 0.04 and 0.02 in CMYK while compared with WAN-IFRA standards
3. There is only negligible density deviation, the HT organization was bearing.
4. The organization follows standards strictly.

VI. REFERENCES

- [1] AmanBhardwaj, Krishan Kumar (2016), "Effect Of Paper Gloss On Solid Ink Density Printed With Digital Printing Process" , International Journal For Technological Research In Engineering Volume 3, Issue 10.
- [2] AmanBhardwaj, Vandana (2016), "Comparative Analysis Of Solid Ink Density, Print Contrast And Print Gloss Of Metalized Board Printed With Sheet Fed Offset Printing Process And Dry Toner Based Digital Printing Process", International Journal Of Engineering Sciences & Research Technology, Volume 5 Issue 7.
- [3] VikasJangra (2016), "Analyzing behavior of Solid Ink Density in Sheet-Fed Offset and Digital Printing", International Journal for Scientific Research & Development| Vol. 4, Issue 05.
- [4] <http://www.color-source.net/en/index.htm>
- [5] http://files.idealliance.org/G7/PressOpGuide/Sheetfed_Offset/G7_Press_Guide
- [6] http://www.wan-ifra.org/sites/default/files/field_article_file/WAN-IFRA_Report_ISO12647-3_0.pdf

CITE AN ARTICLE

Swati, Ms, and Hitesh Garg, Mr. "SOLID INK DENSITY ANALYSIS FOR WEB-FED PUBLICATION PRESSES: A CASE STUDY OF HT MEDIA LTD., LUCKNOW." *INTERNATIONAL JOURNAL OF ENGINEERING SCIENCES & RESEARCH TECHNOLOGY* 6.7 (2017): 513-15. Web. 15 July 2017.