



World Association  
of News Publishers

Services of WAN-IFRA'S

# Research and Material Testing Centre



[www.wan-ifra.org/rmtc](http://www.wan-ifra.org/rmtc)

[infoindia@wan-ifra.org](mailto:infoindia@wan-ifra.org)

What services you can get from

WAN-IFRA's  
**Research and Material Testing Centre**  
**(RMTC)**

**RMTC** is a professionally managed laboratory and training centre that offers newsprint & ink testing, consultation projects, and training needs for newspaper production houses. It is equipped with IGT printability tester, Grammage tester, etc., This centre was established specifically to cater the needs of news publishing industry and undertake research works of WAN-IFRA and WORLD PRINTERS FORUM.

Visit:

[Research and Material Testing Centre](#)

Write to:

[infoindia@wan-ifra.org](mailto:infoindia@wan-ifra.org)

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# 1. NEWSPRINT AND INK TESTING

## 1.1 Newsprint & Ink property testing:

Below are the tests that could be carried out for the benefit of the material standardisation.

1		WAN-IFRA Material testing packages	
WAN-IFRA: Custom test studies	1.1	<b>Newsprint &amp; ink printability tests</b> ISO 2846-2 conformance tests, Set-off & Print through, picking(fluff), Trapping(wet-on-wet)	
	1.2	<b>ISO 2846-2 Conformance Test</b> Ink Mileage (requirement), Optimum IFT, Color conformity, Transparency.	
	1.3	<b>ISO 12647-3 Conformance study for Newsprint &amp; ink</b> Newsprint LAB, Primary & Color conformances to ISO, Color space overlap with ISO.	
	1.4	Characteristic property study of various GSM of paper - 40 vs 42 vs 45 gsm (1 sample of Each 40, 42 & 45 gsm tested & compared for 10 Key properties.)	
	1.5	Vendor selection guideline based on quality standards for paper & ink	
	1.6	Newsprint Yield - Grammage consistency & Deviation (Per Brand of NP)	
	1.7	Set-off, print-through, Trapping tests on paper & Ink combination (1NP & 1cmk ink set)	
	1.8	General print Quality Evaluation - Visual (Based on ICQC metrics, max 32Pgs per copy)	
2		Key Newsink Property Tests *	
Ink testing	2.1	Ink Mileage (CMYK ink on 1 Newsprint set)	
	2.2	Fineness of grind (pigment size)	
	2.3	Color shades at optimum density ( at 0.8D , Per CMYK set)	
	2.4	Transparency	
	2.5	Viscosity	
3		Key Newsprint property Tests *	
Physical	3.1	Grammage	
	3.2	Dimensional stability / Change	
	3.3	Thickness	
	3.4	Bulk	
Optical	3.5	Shade	
	3.6	Gloss	
	3.7	Brightness	
	3.8	opacity	
Mechanical	3.9	% of Elongation	
	3.1	Tensile strength -- MD & CD	
	3.11	Tearing strength	
Miscellaneous	3.12	Moisture content	
	3.13	Porosity or Roughness	
	3.14	Ash Content	
	3.15	Pick test	
		<b>Total</b>	

WAN-IFRA is always known for its research approach and as an extension of this service, we extend this research and study approach to suit testing on your materials. So, we offer the following studies to improve its performances before you consume them in the shop floor. Special material test study by WAN-IFRA includes,

- **Newsprint Yield Study - Grammage consistency & Deviation:** This special study will check the consistency of GSM and ground facts on the newsprint yield. Remember, even small increase from the actual GSM (what supposed to be) will incur poor yield and ultimately the product cost.



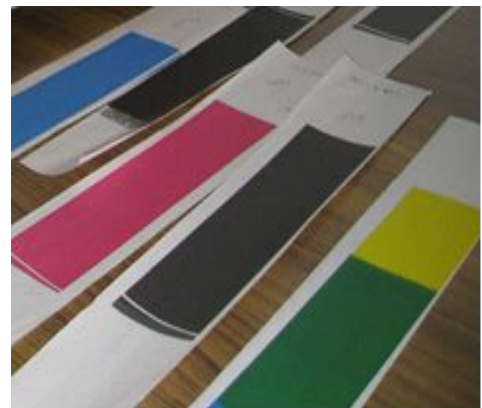
- **Characteristics study of various GSM of paper - 40 Vs 42 Vs 45 gsm:** As many migrate from 45 to 42 or lower

GSM, this study will be helpful in finding what all the quality concerns and compromises between your existing 45 or 42 gsm to lower GSM, comparative study.



- **Newsprint Storage time study (Time based characteristic study):** Even newsprint has its own shelf life, this study will find out the storage self-life of your newsprint before the characteristic's properties of newsprint voids / changes.

- **Ink mileage a study (Different Ink Vs Different paper):** This study will test mileage of different ink on different paper and this will absolute guide to choose the ink with better mileage rather than comparing it with approximate mileage in terms of pages produced per kg (calculated on basis of varying coverage of tints, texts & images, which will vary in every day edition).



- **Vendor rating and selection guideline based on paper & ink testing:** This study is purely based on testing results of different materials from different manufacturer & suppliers. Vendor rating could be don't based on quality reproduction parameters or based on financial benefits like better mileage & yield.
- **Fountain solution dosage fixing study:** This study will help to fix right dosage % to arrive at right pH and conductivity, will be ideal to conduct when you are switching from one fountain solution brand to another. Random test would also ensure to right % and manage the fount consumption.

## 2. PROJECTS & CONSULTATIONS

### 2.1 Print Quality & Standardization:

#### 2.1.1 Intra-company Quality Audit and Improvement (QES)

In this consulting project, all the departments that are responsible for the good quality of reproduction of the newspaper will be examined and any weak points in any of the departments will be identified. Then, modifications, improvements and recommendations will be done to standardised the production in accordance to international standards (ISO 12647-3). The project can be done in all the printing locations to achieve company-wide quality standardization.

The project will be achieved through

- Identifying problem areas in each department –  
Advertisement processing, image processing, page making, CTP and press
- Communicating the best practices to each department
- Training the staff on best practices and standards
- Implementing color management in pre-press
- Modifying the existing workflow to achieve best results
- Printing the WAN-IFRA test forms and analyzing the result
- Producing a detailed report explaining the findings



Training on the following topics will be covered during the project

- Colour management essentials in pre-press
- Image adjustments and color separation
- CTP exposure standardisation and linearization
- Introduction to ISO 12647-3 standard
- Dot gain analysis in the press and RIP calibration
- Standardization of newsprint and newsink



### 2.1.2 Print quality evaluation of printed samples

Evaluation of print quality based on WAN-IFRA ICQC cuboid. The service evaluates the print quality for a period of one year and measures the progress. This includes technical evaluation from the printed cuboid against ISO 12647-3 standard targets and General Print Quality of the printed newspaper (Visual quality) from customer point of view.

An assessment of visual quality parameters will be conducted on the copies you send or copies from market. Each quality defect will be assessed from the customer (reader) point of view and cumulative scores will be used to compare intra branch or publication titles. Following 18 defects will be assessed on the copies printed by the publisher.

1. Over inking or under inking, density fluctuations
2. Disturbing strike-through, print-through
3. Disturbing mis-register
4. Disturbing set-off
5. Impressions from draw rollers, path rollers
6. Dirt stains, finger print marks
7. Printing plate edges
8. Printing plate scratches
9. Poor lateral register, poor ribbon register
10. Disturbing toning
11. Paper wrinkles / Creasing
12. Hickeys / Picking (Fluff accumulation)
13. Pin holes in image area
14. Slur / Doubling
15. Deficient sharpness, low resolution, moiré
16. Color cast
17. Deficient contrast, brightness
18. Deficient tonal reproduction (Flat, missing highlight / shadow)



Periodical evaluation of the copies over pre-agreed duration will be evaluated and the scores will be shared based on tentative quality points achieved. These points stay as reference for the improvement over a time and for future reference.

## 2.2 Process improvements

### 2.2.1 Benchmarking of Newspaper production KPI.



WAN-IFRA offers benchmarking of production KPI between print sites of company and compares against the industry average benchmarking values achieved from participation of multiple publishing companies. We arrived at 14 Environmental and Economic Key Performance Indicators (e<sup>2</sup>KPI) were in collaboration with icmPrint.

WAN-IFRA'S Benchmarking project will give the following advantages.

- ✓ Give a clear picture of excessive utilization and wastage.
- ✓ Be easy to measure (limited number of metrics with easy access to data).
- ✓ Cover environmental and economic aspects.
- ✓ Be used for internal (between print sites) and external (between participants) benchmark

In phase 1, 14 benchmarking e<sup>2</sup>KPI's are measured to calculate efficiency of the production site.

1. Energy Efficiency
2. Paper Efficiency
3. Production surface occupation
4. Stock turn
5. Water consumption
6. Developer consumption
7. Ink consumption
8. Washing solvent consumption
9. Oil consumption
10. PE Film packing
11. Web break frequency
12. Manpower efficiency
13. Industrial liquid waste generated
14. Dampening solution consumption



Newly participating companies could still compare their benchmarking performances with the existing participants and industry average benchmarking value by including their participation. A detailed report will be sent to the participant after analysis and calculation of benchmarking values. In the report participating site weak and better KPI's will be mentioned, where the participant could work upon to improve the corresponding KPI's to break the benchmarking average. Results will also give an idea about maximum and minimum possible performance for each KPI.



## 2.2.2 Building a new printing plant

Building a new printing plant or installing a new press is a huge investment that needs to be used for a long period of time. Selection of suitable machineries and capacity is crucial. The installation project needs careful planning and execution. Since the project involves co-ordination between many teams, adherence to time schedule is very crucial. WAN-IFRA offers consulting services in this area to handle smooth.

The project involves the following

- Press and Mailroom selection. Choosing the right machinery for the requirements
  - Press width, speed and configuration
  - Number of folders, accelerated drying, types of ink train, ink blades and vibrator cooling
  - Load bearing reel stands, concrete platform
  - Mailroom: Stackers, counters and waste copy ejection
  - Choice of automation and auxiliary equipment
- Importing a used press
  - Selecting the press, advice in modifying and re-configuring
  - Advice on formalities involved in importing a used press
  - Installation of presses
- Site development and building plan
  - Site location and land area
  - Designing a press building and considerations for future expansion

## 2.2.3 Grow Green

The Grow Green project is WAN-IFRA's global initiative to reduce the environmental impact of newspapers. Soon, all the countries will be concerned about environment – air & water quality and greenhouse emissions. Also, environmental and lean management leads to less wastage and optimum usage of raw materials means less impact on environment and more savings.

### Objective of the project

- Reduce the carbon footprint of the printing centre
- Measure the Environmental Key Performance Indicators (eKPI) to benchmark the consumption of materials and utilities with internationally accepted standards
- Identify key projects that will reduce the environmental impact, improve eKPI and save cost
- Analyse the impact of the printing centre on environment and training in "ClimateCalc".

### Project structure

The above objectives will be achieved through the below methodology

- Start-up Workshop to communicate the Concept of Green Publishing
- Environmental audit to analyse the polluting areas of the plant
- ClimateCalc Audit to evaluate the carbon footprint of the printing plant
- Presentation of Environmental audit report and ClimateCalc audit report.

## 2.3 ISO audit and Certifications

WAN-IFRA ISO Certification is specially tailored for newspaper and printing industry. Efficient implementation is possible only if the process is understood thoroughly.

### 2.3.1 ISO 12647-3 Certification: Cold-set Newspaper production



It's the only technical ISO certification applicable for newspaper and cold-set web off-set process. WAN-IFRA's ISO 12647-3 certification procedure verifies the compliance of workflow, procedures and quality of reproduction of a newspaper printing plant to the specifications of ISO 12647-3. This certification was adopted and implemented by many global newspaper companies and its valid for a period of two years and can be renewed after two years. Our certification process involves three stages

1. **Preliminary audit:** WAN-IFRA consultant visits the production facility to do a preliminary audit of the workflow and the compliance of the production facility to ISO 12647-3. Problem areas will be identified, and recommendations will be provided to improve.
2. **Cuboid evaluations:** The monthly evaluation is based on WAN-IFRA cuboid, printed once a month for a period of 6 months. Visual General Printing Quality (GPQ) will also be done during this period.
3. **Certification audit:** WAN-IFRA consultant will visit the production facility again to verify that the entire reproduction workflow for conformance of ISO 12647-3 standard. The audit includes a workflow analysis, exposure tests and the production of a test print, carried out in the presence of the auditor, who also performs the evaluation. The printing plant will be certified based on compliance.

### 2.3.2 Integrated Management System (IMS, ISO 9001 / 14001 / 45001)



The need for various Management Systems are emerging, at the same time there is also more concern on how to implement each one of those. Besides, traditionally organizations of all kinds have adopted different management systems (i.e. QMS: ISO 9001, EMS: ISO 14001, OHSMS: ISO 45001) at a

different period of the times in succession based on ISO versions of management systems.

Accordingly, there is also a great movement in institutionalizing a structured, systematic and documented management systems to achieve the objectives that are crucial to the business. Every business today needs closer watch; unless there is a close watch, quality can never be ensured. Monitoring the business also ensuring quality is no easy task. This "Integrated Management System - IMS" of ISO systems would be an ideal solution to integrate within the organisation.

#### **Why Integrated Management System (IMS)?**

- ONE Management System to focused on Vision and Mission of the organisation.
- Results in effective Continual Improvement areas and meet strategic objectives.
- Common Management Review Meeting and common audit report
- Cost effective and less time consuming: as Less audit time as compare to individual certifications.

## 3. PRINT PRODUCTION TRAININGS & WORKSHOP

### 3.1 Densitometry and Colorimetry Workshops



This workshop training program focuses on the operation and use of density and color measurement equipment in newspaper organizations.

This workshop will train the employees for effective use of the tools & instruments like Spectro photometer and use of spreadsheets to calculate process control. This includes ideal setting & handling of densito-meter and Spectro-photo meter. This could be two day or one day long workshop as in-house at your print locations or even as public training at specific locations.

#### Densitometry

- All about densitometry: Explanation of Density, Dot gain, Mid-tone spread, Trap, Print contrast, Hue error and grayness – Formulas and theory.
- Using Spectro densitometers for density measurements: Settings and standards
- How to use MS excel for analysis.
- Inter-instrument agreement analysis of the density measurements – Comparison of equipment from different branches.

#### Color Measurements

- Introduction to L\*a\*b\* color space
- Using Spectro densitometer for colour measurements: Settings and standards
- Delta E<sub>1976</sub> calculation
- How to plot and analyze the 2-d color gamut of your press
- Inter-instrument agreement analysis of the Colour measurements – Comparison of equipment from different branches

#### Measurement and Analysis of Control strips

- On the spot evaluation of Control strips
- Discussion of the report

#### General print quality

- How to evaluate general print quality of a newspaper?
- What are the common printing defects to look for?
- Live evaluation of printed copies and team exercises

## 3.2 Best practices in color correction to improve print quality

Editorial (design) and color correction has huge influence in the quality of final printed newspaper. If color correction is bad and selection of profile is wrong, it could never lead better visuals on the print quality of final printed newspaper. This advanced workshop aims to provide a clear understanding of all the important color correction tools that are available in Photoshop and their usage. The training will help the color correction operators to learn to optimize a picture quickly with minimal steps in Photoshop. The operators will also learn to analyse an original, decide what corrections are needed and which tools to use to get the desired effect. The training will be a hands-on training, accompanied with theoretical explanation of the concepts.



### Course Structure

#### *Module 1: Scanning and resolution*

- Scanner calibration and applying icc profiles to scanned images
- Resolution of images and its importance in print production
- Bit depth and gray levels.

#### *Module 2: Monitor calibration*

- Settings for monitor calibration
- Room lighting conditions
- Hands-on monitor calibration

#### *Module 3: Color settings in Adobe Photoshop*

- Different color spaces – RGB, CMYK and B/W
- ICC Profiles for different color spaces and different substrates
- Rendering intents and other color management policies

#### *Module 4: Tools for effective color correction*

- Reading histograms and use of levels and curves on images
- Removing color cast, fixing gray balance
- Improving details in Highlight and Shadow
- Adjusting for exposure deficiencies, skin tones and hue/saturation
- Achieving good tonal range, brightness, contrast, brightness and contrast for B/W images
- Applying localized correction to specific areas in image
- Applying correct sharpness for images
- Color correction specific for B/W images

#### *Module 5: Daily evaluation of pictures*

- Analysis of printed copies and evaluating results
- Daily meeting and creating minutes.

### 3.3 Simulated Press Training

The state-of-the-art Simulated Press training facility at the WAN-IFRA Research and Material Testing Centre (RMTC) in Chennai is the only such facility in South Asia.

The training on Simulator is exactly like on-site press training, as the simulator behaves exactly like the printing press; showing the cause-effect of good and bad printing, except that it happens virtually without any time and material wastage. The training will be ideal for experienced printers and new recruits to learn to troubleshoot almost all the problems and causes that may occur in a press and to learn the general working of a press.

The simulator at RMTC can simulate 4x1, 4x2 and 2x1 press and thus allow wide range of training possibilities.

Individual and collective training modules are offered on the following

1. Web tension
2. Print quality
3. Materials
4. Reel stands
5. Infeed unit
6. Printing unit
7. Superstructures
8. Folders

Two Models available

- ✓ Beginners Module
- ✓ Expert Module



### 3.4 Pressman Training

In any industry, training the staff will help them to understand the process better, minimise the manual errors and assure quality.

WAN-IFRA RMTC offers pressman training program that covers all topics from materials, production, machine and maintenance.

- Lithographic process, Color reproduction and standards
- Overview of consumables - paper, Ink, Fountain solution, Plates, Blankets and Chemicals
- Functional explanation of printing machine units
- Major production issues and solutions to solve them
- Best practices for operating and maintaining a press
- Waste reduction and productivity metrics
- Maintaining consistent quality

The training can be combined with simulator training for best results

### 3.5 Ink – Water Balance training

Ink-water balance is always been a subject of interest in getting a good print product. Moreover, printing on lower gsm Newsprint demands a better understanding of ink-water balance to minimise the adverse effects like set-off, print through and fan-out.

WAN-IFRA RMTC offers a hands-on training program on Ink-Water balance, which aims the following,

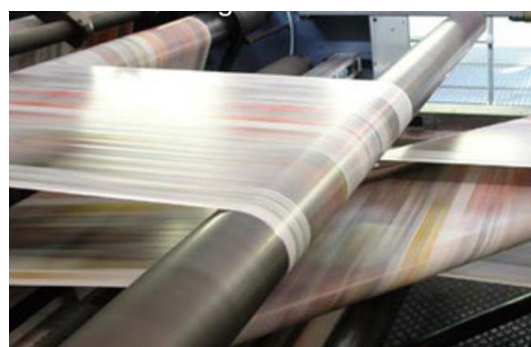
- Theoretical understanding of Ink composition, fount solution, pH and conductivity.
- Best practices for maintaining dampening system
- Ink-water curve generation based on real time settings to achieve quality print
- Minimizing Ink accumulation on guide rollers, turner bars and former

Below table briefs the topic covered

Topic	Points covered
Ink	How ink is manufactured, what are the ingredients and properties of inks. How they are measured and how the properties can affect productivity
Water and fountain solution	Qualities of good water for production, what are the components of fountain concentrate, pH and conductivity of fountain solution
Offset process	How ink and water enable printing
Inking and dampening system	Best practices for maintaining the inking and dampening system, cleaning procedures, Spray bar mechanism, maintenance and cleaning
Ink and water curve	Setting up the ink and water curve (This topic will involve test run). How to handle different brands of paper.

### 3.6 Optimizing Web Tension

Optimised web tension setting and maintaining it throughout the production is very important to achieve consistency in quality of printing. Irrespective of the technology of machine, operator needs to understand the tension and its right setting, which will help them in day-to-work. Also, this training program will help them to set the machine during lower grammage printing.



web day

The training program involves theoretical explanations and real time simulations in press and hands-on sessions. Training program covers the following things in detail,

- Equipment’s in a press that helps to maintain web tension and functional explanations of those
- Reasons for tension variations in a press during production
- Cause and effect simulation of different web tension settings
- Changing tension with different tools
- Optimising tension setting for different newsprint brands and width
- Real time tension problems and solutions

#### 4. CONTACTS:

Write to us to know more details about any of our services offered by WAN-IFRA and Research and Material Testing centre.

**WAN-IFRA South Asia Pvt. Ltd.**

54, 3<sup>rd</sup> Floor, SIET admin building, KB Dassan road,  
Teynampet, Chennai-600018, Tamilnadu, India.

(Or)

**Research and Material Testing Centre,**

C/O PII-RIND, 2nd Main, CIT campus,  
Taramani, Chennai 600113, India

Email: [prabhu.n@wan-ifra.org](mailto:prabhu.n@wan-ifra.org)  
[infoindia@wan-ifra.org](mailto:infoindia@wan-ifra.org)

Web: <https://wan-ifra.org/rmtc>