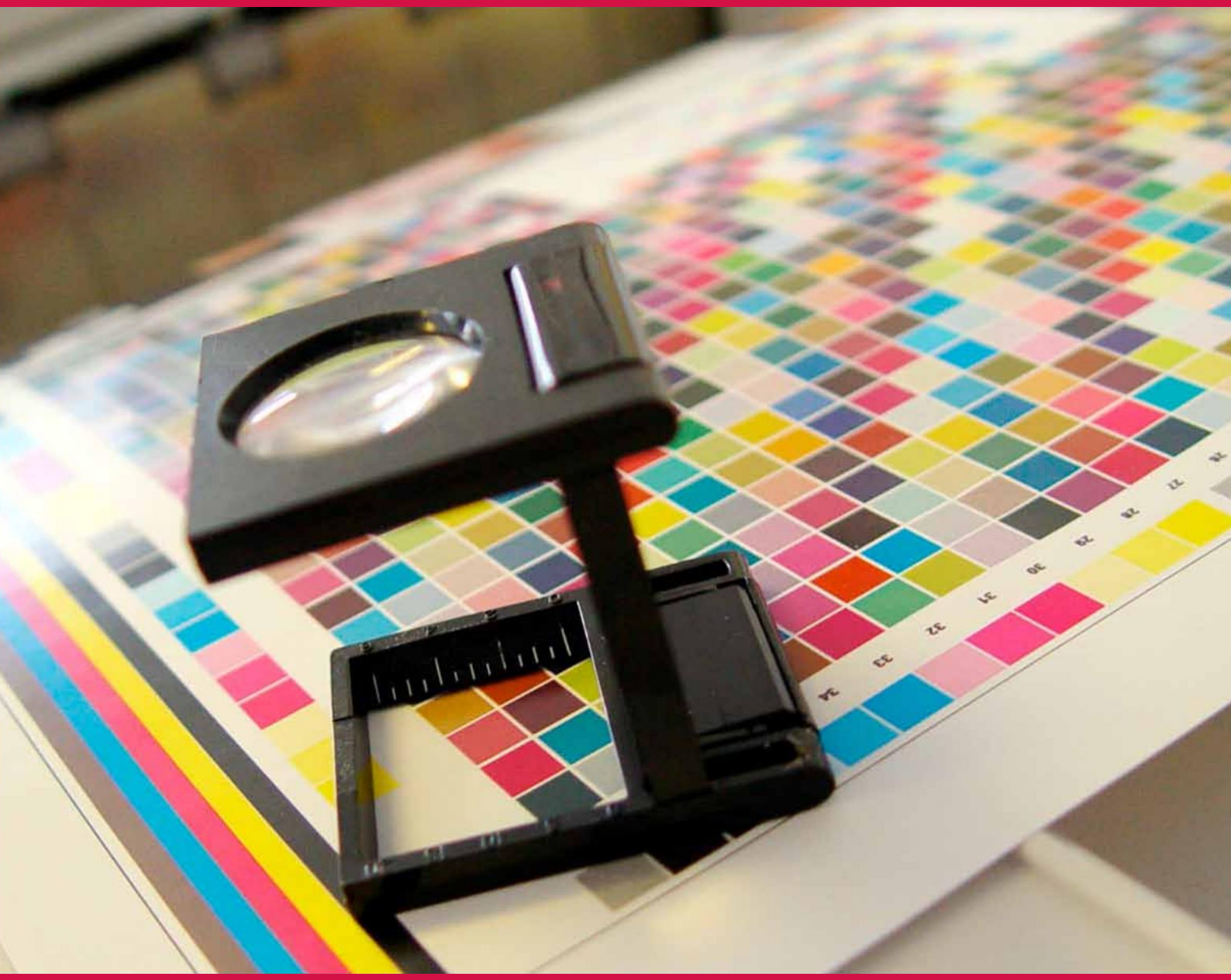
WAN IFRA
World Association of Newspapers and News Publishers

Services of

Research and Material Testing Centre (RMTC)



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What services you can get from

WAN-IFRA - Research and Material Testing Centre (RMTC)

Visit:
Research and Material Testing Centre web page

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PROJECTS & CONSULTATIONS :

1. Print Quality & Standardization:

1.1 Intra-company Quality Audit and Improvement

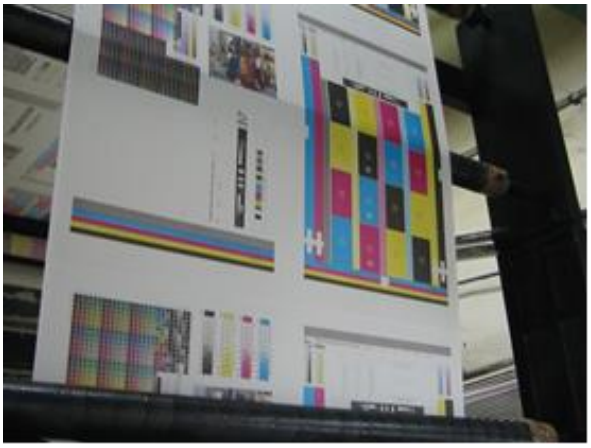
In this consulting project, all the departments that are responsible for the good quality of reproduction of the newspaper will be examined and any weak points in any of the departments will be identified. Then, modifications, improvements and recommendations will be done to standardise the production 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 formes and analysing the result
- Producing a detailed report explaining the findings

Training on the following topics will be achieved 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
- Standardisation of newsprint and newsink



1.2 Newsprint and ink testing

WAN-IFRA Research and Material Testing Centre (RMTC), established in 2007, is a one stop centre for newsprint and newsink testing needs. This laboratory is managed by print professionals, equipped with IGT printability testers, Grammage instruments, etc., which simulates the real PRESS conditions to study your raw material properties. The centre was established specifically to cater the needs of news publishing industry and undertakes research works of WAN-IFRA and WORLD PRINTERS FORUM.
Following are the various testing packages & specialized study (based on tests) that could be customized.

1.2.1 WAN-IFRA Material testing packages:

Following three testing packages covers the various testing combinations. One can choose any of the package based on the need.

Newsprint & ink printability tests:

- Optimum density setup
- Ink requirement & Mileage
- Print through
- Picking (fluffing)
- Trapping (wet on wet)
- Set-off
- Strike-through

ISO 2846-2 Conformance Test:

- Ink requirement
- Optimum ink film thickness range
- Color deviation at different IFT
- Transparency

ISO 12647-3 Conformance study for Newsprint & ink :

- Newsprint shade
- Primary & Color shades
- Primary & secondary color deviation from ISO 12647-3
- Color space overlap with ISO

1.2.2 WAN-IFRA Special study on newsprint & Ink:

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

- **Best paper in terms of quality standards :** This study will help in prioritizing the newsprint in terms of quality of the newsprint and printability

- **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 characteristics 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 dont 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.

1.2.3 Newsprint & Ink property testing:

Paper Testings	Ink Testings
Grammage tests	Fineness of grind (pigment size)
Printability tests	Color shades
Newsprint shade	Ink Mileage
Mechanical properties	Transparency
Physical properties	Set off
Optical properties	Print through
Miscellaneous	Trapping
	Viscosity
ISO 12647-3 & ISO 2846-2 conformance tests	

1.3 Print quality evaluation

Evaluation of print quality based on WAN-IFRA INCQC 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 qualiity 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 evaluated on the copies.

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)

2. ISO audit and Certifications

2.1 ISO 12647-3 Certification: Certification for cold-set Newspaper production

This is a technical ISO certification applicable for cold-set web off-set and Newspaper print production. WAN-IFRA's ISO 12647-3 certification procedure verifies the compliance of workflow procedures and the quality of reproduction of a newspaper printing plant to the specifications of ISO 12647-3. It's the only technical ISO certification for newspaper production. This certification was adopted and implemented by many global newspaper companies.

WAN-IFRA 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. **Six monthly evaluations**: The monthly evaluation is based on WAN-IFRA cuboid that has to be printed once a month for a period of 6 months. Visual assessment of the general printing quality will also be done during this period

3. **Certification audit**: At the end of the six-monthly evaluations, WAN-IFRA consultant will visit the production facility again to verify that the entire color reproduction workflow is in conformance with 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 the degree of compliance.

The Certification is valid for a period of two years and can be subsequently renewed after two years. Re-certification process is easier and project cost is also lesser than first time certification as some audit steps (pre-audit) not mandatory for re-certification.

2.2 ISO 9001 Quality Management System Certification

Sets out the criteria for a quality management system and is the only standard in the family that can be certified to any organization, large or small, regardless of its field of activity. In fact, there are over one million companies and organizations in over 170 countries certified to ISO 9001.

This standard is based on several quality management principle including a strong customer focus, the motivation and implication of top management, the process approach and continual improvement. Also, helps the organizations to meet customer requirements consistently, enhance customer satisfaction, improve quality across operations and meet business objectives. It covers the following sections of any production & manufacturing process to improve the process and product quality.

- Requirements for a quality management system with documentation and planning
- Responsibilities of management
- Management of resources, including human resources and an organization's work environment
- Product realization, including the steps from design to deliver
- Measurement, analysis, and improvement of the QMS through activities like internal audits and corrective and preventive action

2.3 ISO 14001 Environmental Management System

This certification specifies requirements for an environmental management system to enable an organization to develop and implement a policy and objectives which consider legal requirements and other requirements to which the organization subscribes, and information about significant environmental aspects. It applies to those environmental aspects that the organization identifies as those which it can control and those which it can influence.

ISO 14001:2015 is applicable to any organization that wishes to establish, implement, maintain and improve an environmental management system, to assure itself of conformity with its stated environmental policy, and to demonstrate conformity with ISO 14001:2015.

This standard is gaining popularity and becomes mandatory for a growing organisation as the government policy on environment is firmer nowadays. In a global context this certification shows the commitment to the environment and society .

2.4 ISO 45001 Occupational Health and Safety Certification

This certification specifies requirements for an occupational health and safety (OH&S) management system, and gives guidance for its use, to enable organizations to provide safe and healthy workplaces by preventing work-related injury and ill health, as well as by proactively improving its OH&S performance. ISO 45001:2018 is applicable to any organization regardless of its size, type and activities

ISO 45001:2018 is applicable to any organization that wishes to establish, implement and maintain an OH&S management system to improve occupational health and safety, eliminate hazards and minimize OH&S risks (including system deficiencies), take advantage of OH&S opportunities, and address OH&S management system nonconformities associated with its activities. ISO 45001:2018 helps an organization to achieve the intended outcomes of its OH&S management system.

2.5 Integrated Management System (IMS) ISO 9001 + 14001 + 45001

The increase in need to implement 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 and every business today need closer watch; unless there is a close watch, quality can never be ensured. Monitoring the business also ensuring quality is no easy task. Hence the approach is to integrate the Management Systems within the organisation. A ISO certification system that would fit for this integration is "Integrated Management System - IMS".

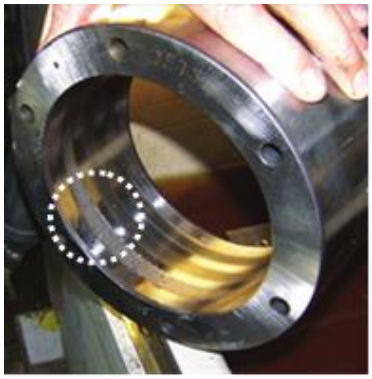
Why Integrated Management System (IMS)?

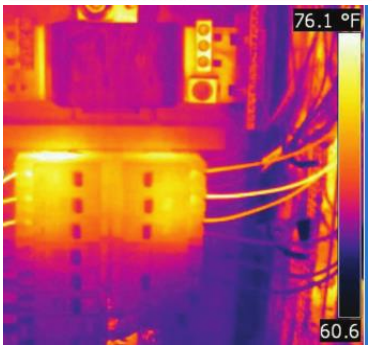
- ONE Management System to focused on Vision and Mission of the organisation.
- Results in effective Continual Improvement areas and meet strategic objectives.
- Common Management Review Meeting and common audit report
- Cost effective and less time consuming:
    - ✓ Less Audit time as compare to individual certification and training.
    - ✓ Common Internal Audit – with integration of requirements of all standards.
    - ✓ Documentation effort is reduced as one quality Manual for all three certifications.

3. Press and production

3.1 WAN-IFRA Mechanical audit of presses

A printing machine has hundreds of moving parts that needs to be inspected to check the condition of the press. Inspection of such large number of parts is difficult by conventional inspection methods. Hence in this project, three conditional monitoring tools, namely Thermography, Vibration analysis and Ultrasonic analysis will be used.





Mechanical audit of the presses aims to achieve the following objectives.

- Audit the present condition of all mechanical parts of the press
- List out issues found and provide recommendations for rectification
- Provide guidelines for best maintenance practices to avoid any critical problems
- Train the staff on maintenance methods

All the mechanical and electrical parts of the press will be audited. The consultants will use three different "Condition monitoring" technologies to get a clear picture of the machine's overall condition. All major parts of the press, as given in the below table will be audited.

Machine part	**Analysis tool/method**
Inspection of electrical and mechanical parts of infeed unit	Thermography
Inspection of electrical and mechanical parts of Reel stand	Thermography
Inspection of electrical and mechanical parts of Print towers (4-high and Y)	Thermography
Inspection of electrical and mechanical parts of Super structure	Thermography
Inspection of electrical and mechanical parts of Folder	Thermography
Analysis of clutch and gear box	Vibration analysis
Analysis of main drive condition	Vibration analysis
Analysis of folder main bearing	Vibration/ ultrasound analysis
Analysis of plate and blanket cylinder bearing	Ultrasound analysis
Analysis of oscillator bearings in printing unit	Ultrasound analysis

3.2 Benchmarking of Newspaper production KPI.

WAN-IFRA offers benchmarking of production KPI between print sites of company and between compares against the industry average benchmarking values achieved from participation of multiple publishing companies. We arrived at 14 Environmental and Economic Key Performance Indicators (e²KPI) 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 e²KPI'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 be still comparing their benchmarking performances with the existing participants and industry average benchmarking value.

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 a idea about maximum and minimum possible performance for each KPI.

3.3 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 to achieve the following,

- Theoretical understanding of Ink composition, fountain solution, pH and conductivity and its measurement
- 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 proposed on Ink-Water balance

Below table briefs the topic covered

Topic	**Points covered**
Ink	How ink is manufactured, what are the ingredients, what are the 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.

3.4 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 web tension and its right setting, which will help them in day-to-day work. Also this training program will help them to set the machine during lower grammage printing.

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

- Equipments 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

3.5 Grow Green

The Grow Green project is WAN-IFRA's global initiative to reduce the environmental impact of newspapers. In the near future, all the countries will be concerned about environment – air quality, water quality and green house emissions. Legislations will soon emerge. Companies that anticipate this situation will be in a good position to choose their future investments and schedule them.

Secondly, environmental considerations and lean management and are closely connected. 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 r projects that will reduce the environmental impact, improve eKPI and save cost
- Analyse the impact of the printing centre on environment (Air, water, soil and noise)
- Training in the "ClimateCalc" carbon footprint calculator

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.

3.6 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
  - Approvals required for printing plant
  - Designing a press building
  - Considerations for future expansion
- Press installation and commissioning
  - Planning, Executing and Commissioning
  - Acceptance of the press & mailroom system

4. Print production & Quality

4.1 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_{1976} 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

4.2 Color correction training in Photoshop

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.

4.3 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

4.4 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

5. Consultants

Prabhu Natrajan, Research Manager, WAN-IFRA

Prabhu is responsible for the activities at WAN-IFRA Research and Material Testing Centre, Chennai which offers newsprint and newsink testing, print quality evaluation, research and training on various newspaper production topics. He is also the project manager for International Newspaper Color Quality Club (INCQC).

Jaiganesh M, Research Engineer, WAN-IFRA

Jaiganesh is a Mechanical Engineer with 7 years of experience in installation, commissioning and maintenance of web-offset presses and corrugating machineries. His areas of expertise include machine installation, commissioning, start up and operator Training, maintenance, production planning and scheduling.

K Krishnan, Associate Consultant, WAN-IFRA

Krishnan is the former Vice-President, Production for Kasturi & Sons Ltd., publishers of The Hindu and Businessline daily newspapers. He has over 30 years of experience in Project Management, Press Installations and Production planning. Krishnan is a mechanical engineer from Anna University, Chennai. His areas of expertise include project management, press Installations, production planning and budgeting.

Benoit Moreau, Environmental Manager, French Printer's association

Benoît was Environmental Manager for UNIC (French Printers' Association) where his work includes environmental diagnosis, environmental strategic audit, carbon footprint evaluation and training, for editors, printers and suppliers in Europe.

Hansjörg Maurer , Chief consultant, Pme maurer GmbH

Hansjorg currently runs PME Maurer GmbH, a company which specialises in Proactive Maintenance consultancy. He is also VdS approved expert for electrical thermography worked in the printing press industry for over 20 years.

N Thanu Subramania Pillai, Prepress consultant, Dinamalar Tamil Daily

Thanu is an associate consultant with WAN-IFRA, Consultant & trainer in the area of color correction. He has over 35 years of expertise in color correction with software like Photoshop, Aperture, Capture One and Arkitex Intellitune and retired as the Sr. Manager, Graphics, The Hindu after working for 35 years in prepress department. Thanu is currently working with Dinamalar, a leading tamil daily.

6. Contact:

Write to us to know more details about this service and other services offered by WAN-IFRA and Research and Material Testing centre.

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