Lowry Computer Products pushes RFID labels into real world applications
Taking the mystery out of efficiency

Many converters are overlooking some easy steps to improve efficiency and increase productivity. Sean Teufler and Alexander James, Harper GraphicSolutions, look at standardizing processes before going to press.

Great initiatives have been undertaken by printing companies with the purpose of improving productivity and reducing spoilage by increasing efficiency and implementing standardization. Typically, these programs are aimed only at the press and press area. Many of these programs are strong out of the gate and have the best of intentions because the need for this change is easily recognizable. The initiative often lacks the specific targets that lead to quantifiable success. Wanting to be more efficient in the printing process is not enough to get the job done effectively. Following through with some simple modifications throughout the whole workflow will demonstrate the results measurable in increased productivity and reduced spoilage. Focusing on the standardizing of processes on press without looking at all the inputs that influence success will eventually lead to failure.

The real focus needs to be on the key elements surrounding production by identifying outlying areas that require attention and getting some measurable results to track the progress. We intend to focus not on the press and the operator, the popular target for efficiency programs because that is where the outcome is expected, but on the inputs to the production department: ink, prepress, anilox management and plate mounting.

The ink department is an area that has a dramatic influence on the improvement of spoilage, production and time management. The purpose of any ink department is to manufacture or blend the ink by using corrected and consistent formulas based on the press, anilox volume, and type of substrate. Let’s identify quantifiable signs of an inefficient ink department. Initially and most obvious will be the amount of on-press time required to match color and the setup material wasted in on-press proofing. This can be easily tracked and measured by downtime, wasted substrate and ink use or loss. What factors contributing to this problem would be apparent in this ink room setting? Poor ink formulas initiate a lot of on-press chemistry. Personnel must be able to accurately weigh ink and formulate according to application and anilox line screen and volume.

During the transition period to perfect formulas, additions to ink must be documented to help adjust the formula for the next time the particular color is needed on press. Each ink should be documented by anilox and volume. Ink room inputs can be double-checked as well. Incoming base ink inconsistencies can be controlled by checking via proofs that all base inks are of sufficient strength. Dispensing units do not guarantee that the bases are mixed properly by merely re-circulating the ink. Check the bottom of the drums with a stick for settled pigment.
especially on colors that do not get used up quickly. Other factors can contribute to error on press. Contamination by mixing equipment from poor cleaning habits will cause tinting issues on light or bright colors. It is difficult to mask any contamination and becomes a real problem that may require a fresh batch of ink for replacement. Make sure inks are blended long enough for a proper mix before they get to press. Use proofing systems that imitate the inking system on press. Typically, this can be met with a functional bladed anilox proofer with specifications that correlate to the same line screen and volume on press.

Printable viscosities can be brought close to press operating values while preparation is taking place in the ink room. Training for ink personnel will address all of these issues and help promote standardization by getting the team to function together and follow the same methods. Develop a keen awareness and an understanding of how ink quality affects the most important element of the process: precious production time and material waste. This will go a long way towards guiding the pressroom to greater efficiency.

In the prepress department technology varies but fundamentals remain the same. Process controls and defined workflow is required to ensure consistency and efficiency.

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Most companies will conduct a fingerprint and the prepress department will use the information to define compensation curve and colorimetric information. The data on every fingerprint is quite extensive; however, the majority of that information never gets fully utilized. Information defining minimum dots, minimum fonts (Serif and San Serif), minimum line rules (positive and reverse), press gain, trap (overprint), grey scale balance, densitometric targets, L*a*b* and L*c*h° are all relevant for defining what is achievable in a given environment.

Parameters for design, prepress, ink, anilox selection and press tolerances are all defined on a fingerprint. Based on that data a packet defining your company can be part of what you communicate to your vendors; design and prepress. Defining design specifications enables usage of a checklist as part of your workflow for every job your customers submit to you. In order to ensure the best possible result, a golden rule for every printer is to maintain a 2 to 1 ratio of image (raster) resolution to plate line screen. Think about it, by the time a design goes from the designer to printed product it very well could be up to five stages away from the original. Once jobs are entered into the prepress environment tolerances determined from the fingerprint should again be part of your workflow checklist. Raster images and vector graphics should be checked for minimum dot and trap tolerances. All imaging devices should have a calibration schedule defined as part of the weekly workflow. Each device will experience a ‘drift’ and without recalibrating on a regular basis you will never be assured of consistent results. Film output for each job should to be monitored with a transmission densitometer. Regardless of which film thickness (4 mil or 7 mil) is use the d-max should be
checked for a reading of at least 3.5 to 4.0. Depending on how your workflow is defined plating is either part of prepress or part of the production department. Regardless how plating is assigned workflow checks should be defined at this stage. Every brand of plates provides specifications for hardness of plates (shore A), overall plate, floor and relief thickness. Use that information as your benchmark when establishing tolerances in your given environment. Conduct exposure test on a regular schedule and with a plate micrometer monitor the floor and relief of your production plates. Multiple measurements should be taken on every plate. Check for overall plate uniformity and once processed, check the relief and floor thickness. If your budget permits, use a plate measuring device as part of your workflow to verify that established tolerances are being met. Of course don’t neglect the plate exposure and processor units. Abide by the recommended intervals for changing of the light bulbs and the washout solutions. The cost of changing bulbs is much less than the cost of press down time due to deficient plate exposure with worn supplies.

Other aspects of the plate department revolve around the mechanical. The choice in plate cylinders greatly affects the printed results. Aluminum cylinders can be functional provided they are not scarred by razor blades from the need to cut printing plates and mounting tape. Each cut grows the circumference of the plate and will cause fit and registration troubles. Closely grouped cuts on the surface of the aluminum plate cylinder can cause the high spot to print before the rest of the image. Hardened ceramic cylinders are resistant to cuts and abrasions. They are also more effective for minimizing plate fit issues because they are not likely to change in circumference.

Fine registration requirements make it important that tight circumference tolerances be kept with the plate cylinders. Plate cylinder bearings are also often neglected and they need to be tested by simply spinning the plate cylinder on your extended fingers for narrow web or spinning the plate cylinder on a shaft and feeling for vibration and grinding. Plate cylinder gears are also in need of checking for teeth wear. Normal operations of the press will cause the wear that sharpens the teeth of the plate cylinder. This causes a contact problem
between the plate cylinder gear and the impression roll gear. The results of the worn gear cause registration drift from poor gear-to-gear contact and gear bounce from gears bottoming out and teeth slap. Mounting tape choices cannot be overlooked. Various densities, closed and open cell configurations and adhesive release characteristics make for quite a selection. They are very critical to the results on press and the right type of cushioning for the plate application will be necessary to obtain print quality and maintain print consistency. Check with your suppliers and test the options.

Anilox management is an often neglected facet of the pre-production room environment. The reasons for this problem are easy to identify. It can be time consuming if not done properly by trained personnel. There also is a lack of appreciation for needing to understand how the volume of the anilox controls the ink film thickness. Each anilox, due to individual conditions of use over time can become unique in volume despite of the same line screen value. How does this problem get addressed? First, this type of undertaking requires ownership and control of the entire process by a few specialized individuals. Ownership and buy-in must also occur from any employee in direct contact with the anilox and its function.

Without ownership of the process, any ink or volume data will not be collected properly and therefore become invalid. Training can be addressed by your anilox supplier. They should have the technical resources available to help impart the knowledge required by your team. Anilox management can be easily defined. It consists of inventory control and standardization. Inventory control can be best approached through a thorough audit of the anilox and subsequent utilization of the data generated. Anilox must be cleaned and restored to the full potential volume to get accurate measurements for every audit. This data does not have to wind up unused in a folder, it can be given real-time responsibilities.

Information on roll condition, line screen and current volume can be installed on tags that travel with the anilox and can be updated when the time warrants another audit. This type of analysis and use of information is invaluable to the trained operator for proper anilox selection and ink technician for educated calculation of ink formulas. Audits without data utilization at press are a waste of valuable and pertinent information. Standardization is the best method to simplify the anilox inventory and make for a universally sound production environment.

Standardization is created from a thorough analysis of the pressroom anilox requirements, ink system capabilities and current resolution goals. This analysis generates ideal anilox choices and volumes to meet the needs of production process. Banded rolls can be utilized to test parameters in the production environment. Banded rolls consist of various line screens and volumes to test the capability of current and test ink systems. Once the trends are documented and the capabilities are ascertained, standardization will optimize and revolutionize anilox management.

Often times all the emphasis for standardization and efficiency programs is directed towards the operators to improve their time management, spoilage and production. The operators, in most cases, are set up to fail in this environment because they are asked to influence or compensate what they cannot control. Identify where the downtime is spent and how much spoilage is generated during setup. Run times and lower productivity can also be attributed to having to work with compromised inputs from the ink department, prepress, plate department and anilox management.

Defining your workflow in each input area and establishing checklists and standardization is the key to creating an efficient and consistent level of production. The final stage of the improvement initiative would be to educate one’s staff of support personnel on the importance of each stage and how they fit into the workflow. Too often individuals in various departments have no appreciation of how they contribute to the success or demise of every job on a daily basis. Once each department has been established and operated efficiently, it would be very beneficial to take the next step in the process. This is to take the time to walk an employee through the life cycle of a job. This procedure would consist of every department the job must pass through and what occurs at each of those stages. This fosters a greater appreciation of each department and builds greater team work ethic.