THE SOFTWARE ROUTE TO THE FINEST FINISH

In their last article, Lars Bendixen and Pete Alsten explained the benefits of digital cutting. Here they discuss the benefits of an efficient workflow

During the past few years, digital finishing of printed graphics has become an increasingly important part of a printing company's business.

As time has passed, so digital printing has become much faster. For ink-jet machines, most of the speed improvement is achieved by simply adding more nozzles to the system. This same principle cannot be applied to digital cutting. The actual cutting productivity is primarily defined by the intricacy of the shape t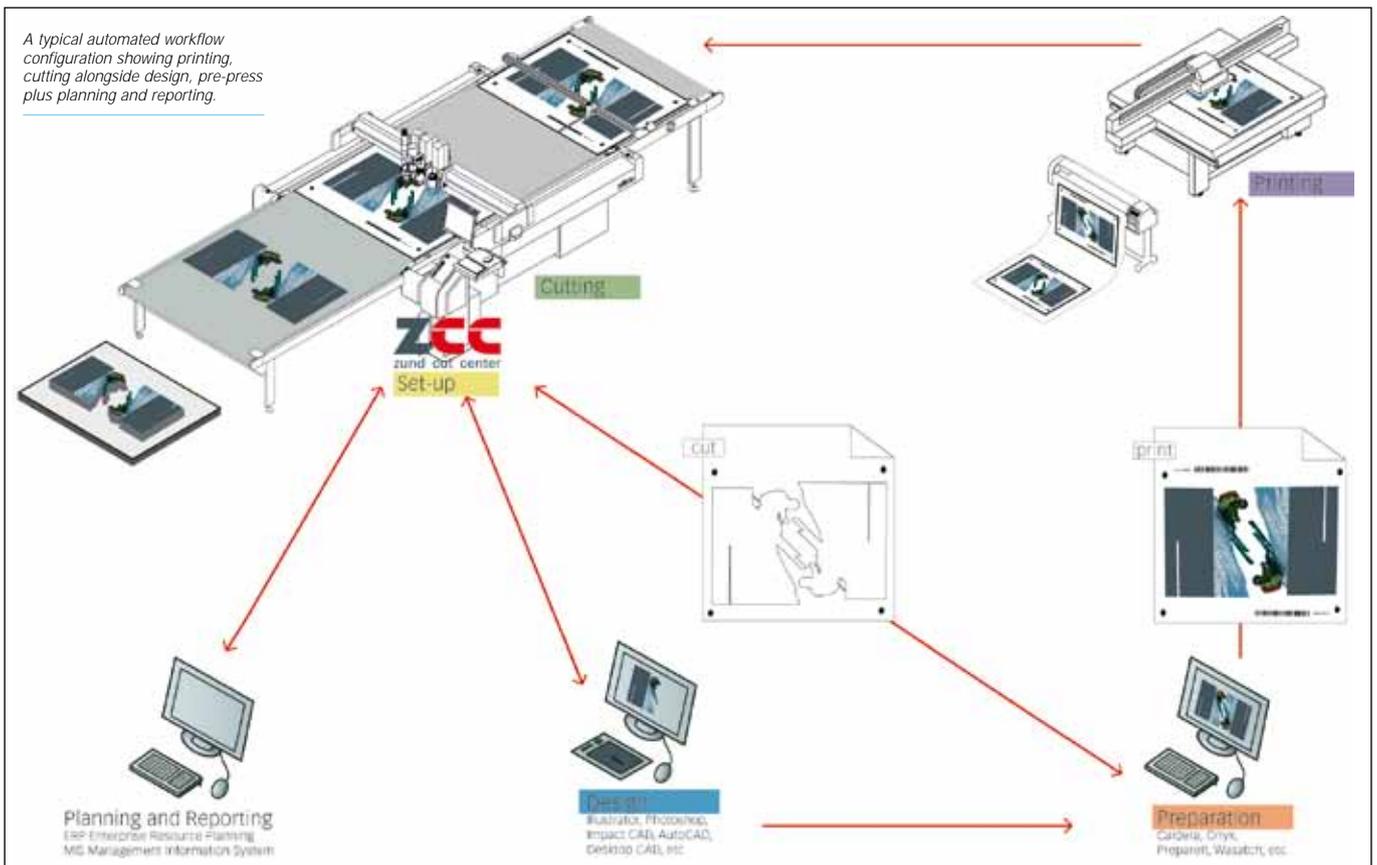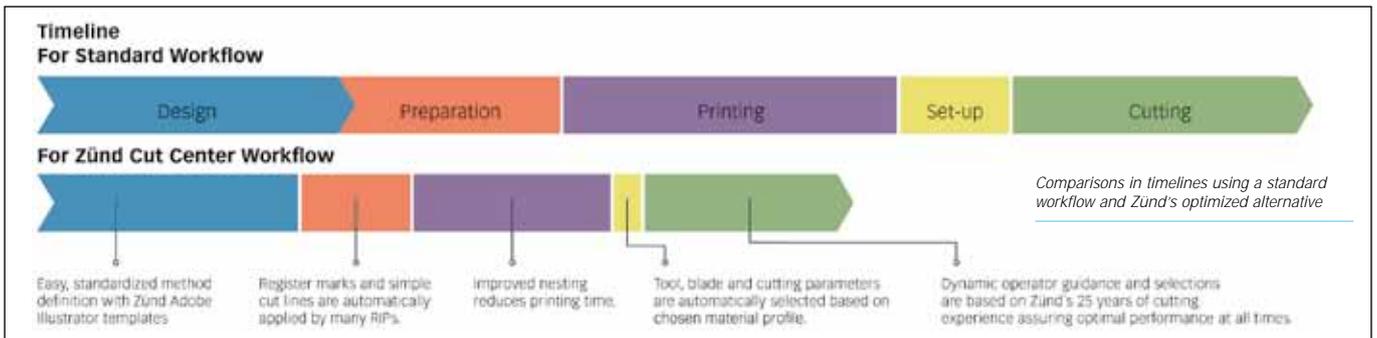o cut and the type and thickness of the material. Secondarily the workflow plays a major role in the overall productivity.

Traditionally one cutting system has been able to keep up with several of the fastest printers on the market. This is now changing. Multiple digital cutters may be required and if not managed correctly, the cutting work flow becomes the next bottleneck.

The process of working a digital finishing system into a company's workflow usually includes changes that could affect how designers and production personnel have been working for many years. These changes can cause resentment and a general feeling of being overwhelmed when facing the task of needing to adapt to these changes and begin a new learning curve for both file preparation and machine operation.

The most glaring problem shared by most print service providers when implementing a digital cutting workflow is the inefficiency of how their data is handled. This, in turn, results in an inefficient production workflow in general. Even the most efficient and productive businesses

Timeline
For Standard Workflow

Design | Preparation | Printing | Set-up | Cutting

For Zünd Cut Center Workflow

Comparisons in timelines using a standard workflow and Zünd's optimized alternative

Easy, standardized method definition with Zünd Adobe Illustrator templates

Register marks and simple cut lines are automatically applied by many RIPs.

Improved nesting reduces printing time.

Tool, blade and cutting parameters are automatically selected based on chosen material profile.

Dynamic operator guidance and selections are based on Zünd's 25 years of cutting experience assuring optimal performance at all times.

A typical automated workflow configuration showing printing, cutting alongside design, pre-press plus planning and reporting.

Cutting

Printing

ZCC
zund cut center

Set-up

cut

print

Planning and Reporting
ERP Enterprise Resource Planning
MIS Management Information System

Design
Illustrator, Photoshop,
Impact CAD, AutoCAD,
Desktop CAD, etc.

Preparation
Caldera, Onyx,
Preparint, Wasatch, etc.

waste a large amount of time handling print-and-cut files from one area to another, reworking files, renaming files and/or layers within files, and saving and/or locating specific files on a company's network. These issues can be further compounded by a designer's or a machine operator's lack of experience and expertise that can only be gained through months or years of working with the specific software packages, printers, and finishing equipment used by the companies for whom they work.

LISTENING TO CUSTOMERS

With thousands of digital finishing systems installed into the printing and graphics industries worldwide, Zünd has spent years listening to customers and learning their needs and desires for a digital production workflow that can be easily installed and learned by everyone necessary. Devising a workflow for everyday use that can be implemented by any company, large or small, has been no easy task.

Through a collaborative effort, Zünd Cut Center Software Suite now offers a solution that incorporates some of the best solutions created over the years for efficient file handling, proper layer naming structures within files, overall file management, production management, the use of proper cutting and routing tools with the correct parameters determined by materials, and the simplest overall user interface available on the market today. These features, combined with the ability of being open for integration with today's leading RIP, ERP, CRM, estimating, and job costing software packages, will change forever digital production workflows and how they are implemented and used.

While Zünd has been working on this revolutionary new product, others have also been hard at work on their own efforts to address the ever changing production workflow challenges seen by printing businesses. Some have been concentrating on file formats, such as JDF (job definition format), but Zünd sees these efforts as not going far enough. The current JDF specification is a great start in the right direction, but it falls short without a software solution that can utilise the information contained in these files. Standard JDF specifications further lack the details required for cutting.

Zünd Cut Center includes its own ZCC protocol to communicate job and order status to third party planning and scheduling software. In principle it works very much like JDF. Thus, the ZCC protocol can be seen as an extension to JDF, enabling anyone familiar with this format to understand and integrate the necessary elements or to create a complete JDF based workflow including digital cutting.

Many of today's popular RIP software companies have also been working on their own proprietary solutions for providing print companies with a more efficient workflow solution. Again, these efforts fall short due mostly to the main problem that they are "closed" systems, meaning that their solutions

only work for companies exclusively using their RIP software. The problems become most evident when a print service provider is using multiple printers from multiple manufactures with multiple RIPS. This scenario causes the problem of having a different workflow solution being used for each printer/RIP.

WORKING TOGETHER CLOSELY

The best solution to address the digital workflow solution is through a suite of software packages that work closely together to tie in all of a company's production and management systems. The Zünd Cut Center Suite accomplishes this task through the use of an innovative new Cut Queue, Cut Editor, and Cut Center that will allow a user to handle files easily in a standardised format supported by all of the most popular RIP software packages.

This new suite is also able to handle being installed into an environment where the user wants to change file naming structures as little as possible by being flexible and able to be adapted to that particular company's needs through importing their files with their naming structures and converting them automatically to the standardised form. This will allow for the system to be installed and used quickly with very little learning curve involved for the designers.

Increasingly shorter delivery times and just-in-time production both require careful planning and scheduling of resources, including design, preparation (pre-press), printing and cutting systems. Accurately predicting total production time becomes essential when committing to short delivery times and job monitoring is necessary to react quickly to changing priorities.

With convenience and time saving in mind, Zünd Cut Center provides a complete overview. Pending jobs can easily be sorted by priority, due date, order identification and, for example, the material. This makes it easy to group all jobs with the same tool requirements and parameters and, thereby, avoid having to change the cutter set-up.

At the other end of the production process, finishing via cutting/routing, the combination of the three software modules makes an even larger impact. The implementation and use of the Zünd Cut Center Software Suite can reduce a cutting machine operator's learning curve to just a few hours. The Cut Center takes advantage of an unprecedented library of materials commonly used in the printing and graphics industries that has been compiled over many years and is continually being added to. Updates to this library will be available for download from the Zünd web site.

The material library contains all of the necessary information regarding what the media is, what tools should be used for processing it, as well as the recommended parameters to be used for cutting/routing. All of this information is automatically assigned to each file entering the Cut Queue so that an operator doesn't need to

be an expert with each material to achieve expert quality cutting/routing results. By having all of a print service provider's files routed directly into the Cut Queue, it will also make an operator's job of finding the correct cut files much easier which, in turn, saves time and results in fewer mistakes.

The Cut Queue also actively keeps track of a job's progress by allowing anyone to have access to seeing the status of the jobs in the queue. The jobs in the queue can be sorted by any of the columns generated, allowing a user to see at a glance which jobs are hot, pending, being worked on or already finished.

EASIER SET-UP

The process of using the Cut Queue in combination with the Cut Center output module makes the job of the machine operator easier than ever. Because a lot of the decision making regarding tooling and cutting parameters has already been made for them automatically when the cut files were entered in the Cut Queue, the operator only needs to feed materials into the cutting system and verify that the system is configured with the appropriate tooling for the job.

The Cut Center software even makes these tasks easier by visually showing the operator the correct modules and tools needed for the job, as well as whether or not the machine is currently configured correctly. The software will then not allow a job to be processed until all of the correct modules and tools are in place and verified by the software. By having the software take control over all of these parameters, Zünd Cut Center is guaranteeing the proper use of the machine, as well as the cutting results, no matter who the operator is or which shift they work on.

As you may be able to tell from all of this, the task of creating and implementing an efficient, but easy to use, digital workflow solution has been long in coming and is anything but an easy task. It could not have come this far without the help and expertise of many people, especially all of Zünd's customer's. The Zünd Cut Center Software Suite is a revolutionary new tool designed to address many of today's production workflow problems while, at the same time, remaining flexible to change with the future and able to be integrated with many other software packages to help a company be as efficient as possible and gain control over their production processes. ■

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How Zünd Cut Center simplifies workflow

DESIGN STAGE
Print-to-cut registration

Most flat-bed cutting systems locate the position and rotation of the material to be cut by means of register marks. These are typically added to the artwork in software like Adobe Illustrator and, although this is an easy task, it still takes time. Just opening and saving files which can contain several hundreds of megabytes can cause a frustrating delay when a tight deadline needs to be met. A common mistake is to add too many register marks which will add to the total cutting time.

In the meantime, popular RIP software from vendors like Caldera, Onyx and Wasatch, are capable of automatically adding register marks. Zünd Cut Center specifications assure that only the necessary number of register marks are added and in the optimal positions.

Creating cut-lines and defining the desired cutting method

Different cutting methods and tools, such as for kiss-cut, die-cut or cut and crease operations, require different options and parameters at the cutter. The part of a design to be creased and which is to be cut can easily be defined, for instance, by designating different layers in the artwork for separate operations. It becomes a problem involving an additional file preparation step when the original designer or advertising agency doesn't know about cutting; the very minimum result means having to open, correct and save the artwork once again. Since no exact standards exist, everyone uses different names and definitions for each cutting method.

Certain RIP software products can automatically create simple cut lines used, for example to trim posters. Zünd Cut Center requires only few standardised steps and includes easy-to-follow guidelines and templates to ensure that standardised definitions are made at the design stage, then carried through the RIP/nesting process to the cutting stage.

PREPARATION STAGE
Cleaning up the artwork

Even though artwork looks right on the monitor, this is no guarantee that the final cut part also looks good and feels smooth. Most designs include unwanted elements, such as stray points, double lines and unclosed curves. Since these will not show in the print, designers usually pay no attention to them. Nevertheless, these factors have to be dealt with and different cutting methods, tools and blades all have an influence on the final cutting quality and speed.

Via hot folders, Zünd Cut Center automates a large amount of routine clean-up work and includes powerful tools to assure optimal cutting, even with less optimal data.

The preparation stage naturally also includes normal pre-press work, such as nesting for better material usage and the most efficient printing. With digital, or late stage cutting, considerable advantages can be achieved at this stage. This is outlined in Specialist Printing Worldwide, Issue 1, 2010.
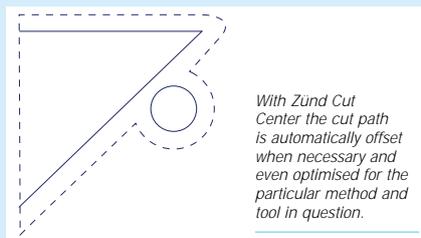
CUTTER SET-UP STAGE
Locating the proper cut file

As a result of the previous steps, the artwork may now have been saved in several different versions. Locating the proper cut file version is usually not a problem and some RIP software can automatically generate bar-codes to eliminate any doubt about which cut file is the most current and corresponds with a certain print. But how easy is it to locate the file when a customer orders 50 additional copies of the job he received three months ago?

Zünd Cut Center supports both file retrieval and rotation via bar-code. It also enables easy file location based on, for example, an order number or production date. It further stores all relevant parameters to ascertain that the job can be reproduced exactly as it was previously.

Retrieving information via bar-code is supported by Zünd Cut Center
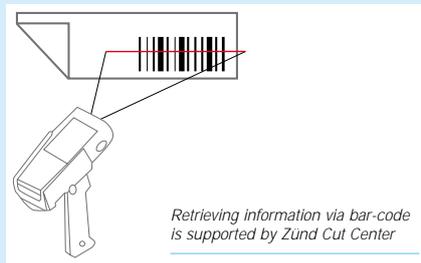
Setting up the cutter

Zünd Cut Center is the only cutting software to provide exact guidelines for the operator. Other systems rely on the user's experience when selecting tool, blade and cutting parameters and this often leads to inconsistent cutting performance and quality. Materials dictate the cutting method/tool and certain procedures, such as routing, require the cut path to be offset according to the diameter of the chosen router bit.

With Zünd Cut Center the cut path is automatically offset when necessary and even optimised for the particular method and tool in question.

Dealing with print distortions

No print is perfect. Distortions often arise from within the printing process itself, media stretching or shrinkage, or from lamination.

Different applications dictate different cut registration and compensation methods. Using register marks most cutting systems are able to compensate for basic distortions. When dealing with unstable media, like textiles, extreme distortions can occur just by laying out the media on the cutter and accidentally stretching and deforming the print. Other instances of problematic applications include panelled prints, which have to be cut to exact size to fit a frame, and corrugated displays that need to be cut and creased from the unprinted side thereby rendering the register marks invisible. Zünd Cut Center accommodates all print applications and offers ideal registration and compensation methods for all common print and media distortions.
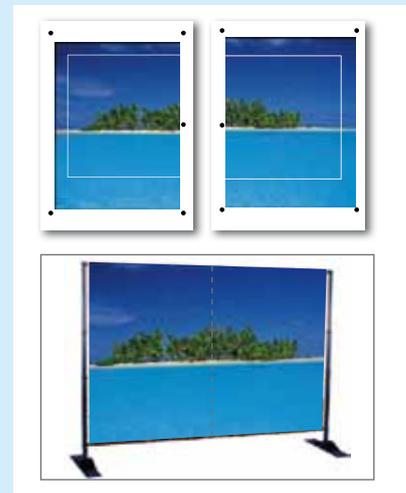
In some paneled jobs, each panel must be cut to exact dimensions and despite differently distorted, they still need to line up

CUTTING STAGE
Cutting performance

Most flat-bed cutters offer a variety of tools and blades to process various materials. Operator training is usually offered when the system is first installed and, normally, trial and error leads to operator experience which at the end determines the actual performance. When operators change positions and when multiple operators work on the same cutting system the result is inconsistency.

Zünd Cut Center encompasses a database with 25 years' cutting experience always assuring optimal performance. As new tools and know-how become available, the database is easily updated.

REPORTING

For final cost calculations it is necessary to keep track of how much time was spent where. When planning future expansion it is also helpful to know the real utilisation of the cutting system. Via the ZCC protocol Zünd Cut Center provides all data necessary for all relevant reports. ■