

## If the Use of Color in Large Format Technical Documents is So Valuable, Why Isn't It Used More Often?

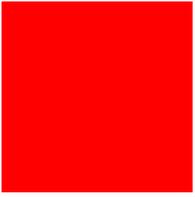
By: Joyce Virnich, VP Marketing, Océ Wide Format Printing Systems division, Océ North America, Inc.

Users of CAD, GIS, and other similar software applications are reaping greater value from producing large format technical documents in color. More architecture, engineering and construction (AEC), government, GIS, manufacturing and reprographic professionals want – and need – color to convey detailed information in maps, high precision line drawings, and sharp photographic images in the design creation and approval phases of a project. Research has shown that use of color leads to faster, more accurate decision-making. Color not only attracts attention and increases visual appeal, but it actually helps to sell the value of plans. Color aids in comprehension and retention. People are less likely to misinterpret drawings and more apt to retain complex information when it is presented in color, thereby reducing the potential for error. Color can also help to show more information in a given drawing size, easing the proliferation of documents.

The impact of color in the CAD community is far-reaching across many different user types who produce large format technical documents. An independent market research survey of 32 AEC, manufacturing and government organizations found that the demand for large format color plotters is gradually becoming more prevalent as the need for color applications over the long-term moves from a “nice-to-have” to a “need-to-have.” Current color usage among this sample averaged 22 percent across the three industries – a number expected to climb to 27 percent over the next year, with the heaviest adoption rate among government bodies, followed closely by the AEC community.

The research found that color in large format technical documents is primarily used for presentation quality sales and marketing applications, exhibits and posters – namely to ease interpretation and comprehension for faster decision-making. For example, architects use color in presentations to convey detailed designs, while engineers rely on color to clarify complex drawings to reduce mistakes in the production process. In the GIS market, more maps are now produced in color to facilitate interpretation. Color is also becoming more essential in the understanding of electronic drawings of chips and circuit boards with many levels, fine lines and small elements partly overlapping each other. The use of color is important in industrial designs to make products appear more realistic and assist with product evaluation. Color is also used for educational and training purpose, as color-coded views of schematics and drawings aid retention of material.





For most survey participants using large format color printers, improving image quality ranked in the top three attributes on their future “wish lists.” Given the compelling case for color, the market demand is clearly on the upswing. Yet, surprisingly, more than 50 percent of large format technical documents are still printed in monochrome (black-and-white). Why? Let’s explore some of the reasons why large format color is not living up to its true potential, and how this could eventually pose a serious risk to your business. Then we’ll discuss how to overcome some of the existing barriers and bring the value of color to more of your large format technical document programs.

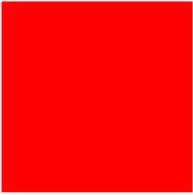
### The Problem: Barriers to Large Format Technical Color Output

One of the biggest obstacles to using color in the design and approval phases of a project for large format technical documents has been limitations in technology. An AEC firm may need to generate about 10 to 50 D size color drawings per day. While this is not a very high volume requirement, the CAD department experiences higher peak load demands at certain times of the day and cannot wait for color prints under tight timetables. To avoid congesting the network, the firm has simply resorted to black and white plots that are manually “tweaked” with magic markers to highlight contrast and fine detail. Is this approach really saving time?

Up until recently, the evolution of large format printing, copying and scanning equipment has simply not kept pace with the growing need for large format technical color output. For years, the large format color CAD market has been dominated by a “patchwork” approach to document management and delivery that is not well integrated. With no viable alternative, users have accepted the status quo. They’ve resorted to using piecemeal systems – separate printers, scanners and copiers – that are loosely integrated and usually require extensive human intervention to operate. Some vendors have attempted to combine these components into a single system, but the technology has been cumbersome and demanding. The reality is that these systems still remain separate components brought together in a makeshift solution.

The high cost of operations required to maintain multiple and disintegrated systems – and the consumables and contracts associated with them – has kept large format technical color print volumes to a minimum. If the equipment should fail, it’s difficult to know who to go to for service with so many components involved. Troubleshooting and problem resolution can take days or even weeks if one component crashes, paralyzing operations that lead to missed deadlines and productivity losses.

The cost of downtime can put a real drain on revenue, as can poor workflow. Older wide format color printing technology can require substantial operation intervention, diverting skilled professionals from their core responsibilities to “babysit” needy machines. For engineers typically making between \$25 and \$30 per hour, this is an expensive and wasteful use of resources. Frequent ink and media changing has been the norm, while sluggish file processing has created long wait times between prints. The process required to copy large format color originals has involved a multi-step, cumbersome sequence – first scanning an image to convert it to a TIFF/PDF file before it is rendered suitable for printing. Then there has been the constant



need to re-train staff, especially related to color scanning. Without proper training, users in a decentralized environment who have infrequent interactions with color scanners are far less efficient.

Technological barriers can cause more than just wasted resources. Antiquated large format technical color print technology can actually lead to lost business. How? For one, current “patchwork” systems are not robust enough to keep pace with customer demands for higher volume color technical documents. AEC firms and print-for-pay shops have had to turn down jobs because their existing equipment was unable to meet project deadlines. As customer satisfaction rates decline, business goes elsewhere.

#### The Ideal Solution: An Integrated System

To retain customers and continue to expand their revenue, today’s companies must embrace new large format technical color print technology. In short, they need a multi-function color system that addresses several needs simultaneously.

What should such a solution look like? First, many professionals using CAD, GIS, and other similar software applications would benefit from a completely integrated solution that ties together the functions of printing, copying and scanning into one, single system. This way, they don’t have to cope with multiple consumables, contracts and support channels.

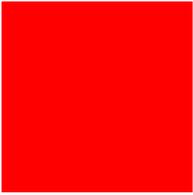
Second, the system should give users the option to productively produce documents in both black and white and color. This will allow companies to keep pace with customer demands for higher volume color and monochrome documents against tight project deadlines.

Besides the technological advantages of an integrated system, the equipment should inherently introduce business benefits. Ease of use would enable professionals to focus on their core responsibilities, not waste time tending machines, which ultimately would lead to increased labor productivity and a more streamlined workflow. The ability to produce more technical color documents faster would help firms to grow existing customer relationships and attract new business by maximizing the effective use of color in all their large format communications.

#### The Power of Productivity is in the Processing

The ability to produce more documents faster, as referred to previously, is one of the top desired outcomes of an integrated print, copy and scan system. Today’s users don’t want a piecemeal approach to document management. They don’t want to wait a long time for files to process or documents to print. Speed is a critical market advantage when working under demanding deadlines, and improving productivity is imperative. But, while the market typically has been enamored by print speed, this is only one small part of the total productivity equation.

There’s a new shift in thinking about productivity. For large format technical document output in a networked environment, the real power is in the processing. This is where most productivity



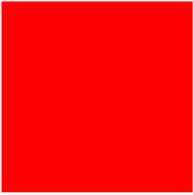
gains are seen. When considering adopting a new print, scan and copy system, it's more important to focus on the equipment's ability to pull, process, store and print multiple files concurrently. Today, as file sizes get ever larger, file processing power is the key factor to achieving faster output speed, not the physical movement of print heads across the paper.

While mechanical print speed is important, the system's power to process files is critical in determining the number of drawings printed per hour. Some of the newer print, copy and scan equipment on the market today features technology that offers faster file processing power. For example, the Océ TCS400 processes large color files up to three times faster than leading inkjet color print systems, thanks to the proprietary Océ Power Logic® Controller embedded in the system.

Color CAD document files are also getting larger. This is especially true for the types of big files used in large format color CAD output and GIS applications, where it's not uncommon for such files to be over 100MB. Processing time for large, complex files is especially important to firms like Gremley & Biedermann, a Chicago-based surveying company, which generates large format color CAD and GIS output (embedded photos, renderings and maps). "We cannot wait for prints when our business depends on getting high quality plots from large files. Prior to the Océ TCS400, it used to take more than 12 minutes to process a 182 MB file. Now we can do it in just one-third the time," said Bob Tremblay, CAD Manager, Gremley & Biedermann, Inc.

Large color files also tie up the network and negatively impact other network traffic. This is especially true when copying technical color originals, which in the past needed to first be scanned to file before printing. Now, this tedious scan-to-file process has been eliminated with one-touch color copying optimized for CAD applications – and freed up the network. For Gremley & Biedermann, walk-up color copying has been the biggest improvement. "We used to have to manually draw in lines and cross-hatching with magic markers on a black and white plot to duplicate a color original of a map or survey. Now, we just need to insert the original document, push a button and generate a color copy in a single step," Tremblay said. The productivity gains from faster, better processing are numerous for AEC firms and other businesses with large format technical color printing needs, restoring document control where it belongs: to the individual user.

Newer technology has made it possible for users to control the print queue directly from their desktops, so that jobs can swiftly be reprioritized and printed on demand. Systems that allow processed files to remain in the history queue enable reprints to be made without having to reschedule or resubmit jobs. Skilled operator or color knowledge is no longer required to operate today's more intuitive, easy-to-use print, copy and scan systems. For example, the Océ TCS400 is easy to operate and capable of meeting higher peak load demands due to its two on line media rolls, unattended printing modes and the set memory capabilities of the Océ Power Logic Controller. The result: professionals can focus on what they were hired to do and deliver more work faster – and in color.



## The Results: The Quickest Route to Cost Recovery and Control

So what are the benefits of a fully integrated technical color print, copy and scan system versus a patchwork approach? It's easier to work with and easier to live with. Many companies have simply "accepted" monochrome large format output in the initial design creation and approval phases of a project because they had no viable color alternative. They may also find it difficult to justify investing in new technology in today's economy. But, the reality is that spending money can actually save money in the long run.

For one, it's less expensive to operate a single, integrated system. Companies need only consult a single source for consumables, training, troubleshooting, and service. There's no more throwing good money against old technology. When the system is productive, users are productive. Document control is improved, workflow is streamlined and downtime is minimized.

Second, the growing demand by customers for technical color documents is not going to disappear. Today's AEC, GIS, manufacturing and print-for-pay businesses must be prepared to transform their working environments to meet the increasing popularity of color, just as Gremley & Biedermann did. Companies in these industries, however, shouldn't just view integrated technical color print systems as a means to keep up with the Joneses, but as a real opportunity to attract new business, both from existing customers (with greater retention and repeat business) and from future prospects. This means more revenue downstream. In no time, the system will likely pay for itself.

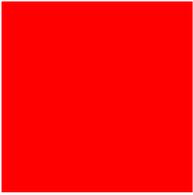
## Conclusion: The Future for Large Format Technical Color Output is Now

The market for large format technical color document delivery in the initial design creation and approval phases of a project has significant growth potential, and companies like Océ are satisfying a real demand in an industry previously limited by inadequate technology.

Today's companies investing in an integrated print/copy/scan system can overcome hidden barriers to success. In order to do so, they must think beyond the "speed trap" myth. Faster, more reliable, processing leads to greater productivity. The end result is greater output and quicker delivery of documents in higher volumes. All these factors add up to more business.

Just as significant as quantity is the ability to produce quality color copies and originals versus just black and white documents. Color output can be a tremendous selling point, as the use of color in highly technical documents has been proven to help customers make faster, more accurate decisions.

The future for large format technical color output is now. It's time to remove the shackles of antiquated technology and embrace a robust, reliable system that can scale up to greater demand – both for color and higher volume output. Not only will you realize a positive impact on your business, but an integrated solution will speak "volumes" to your customers!



#### About the Author

Since 1995, Ms. Virnich has been Vice President, Marketing, of the Wide Format Printing Systems division of Océ North America, Inc. based in Chicago. In this role she leads marketing strategy development and execution for Océ's hardware, software, and consulting services to its key markets in architectural and engineering document scanning, archiving, retrieval and printing; wide-format color graphics printing, reprographic and display graphics service bureaus, and dealer sales.

Virnich has over 22 years of sales and marketing experience with Océ in the USA and with Océ's worldwide headquarters in The Netherlands. Other Océ assignments included sales management on the West Coast for the Document Printing Systems division, various U.S. marketing responsibilities for the Wide Format Printing Systems division, and worldwide product management responsibilities for high-volume aperture card printers. Ms. Virnich has also held key product and marketing positions with Xerox Engineering Systems and CPT.

Ms. Virnich holds a Bachelor of Science degree in Business Administration from Northwestern University.

#### About Océ

Océ is a leading provider of digital document management technology and services. The company's solutions are based on Océ's advanced software applications that deliver documents and data over internal networks and the Internet to printing devices and archives – locally and around the world. Supporting the workflow solutions are Océ digital printers and scanners, considered the most reliable and productive in the world. Océ also offers a wide range of display graphics, consulting, and outsourcing solutions.

Netherlands-based Océ N.V. (NASDAQ: OCENY), with a workforce of more than 22,000 people and 2002 revenues of \$3.2 billion, maintains research and manufacturing centers in the Netherlands, the United States, Germany, France, Belgium, the Czech Republic, and Japan. Océ's North American headquarters is located in Chicago with major business units in Chicago; New York City; Boca Raton, FL; San Jose, CA; Salt Lake City; and Coventry, RI. North American revenues were \$1.3 billion for fiscal 2002, and employment is currently 9,600. For more information about Océ, visit [www.oceusa.com](http://www.oceusa.com). Outside the U.S., consult [www.oce.com](http://www.oce.com).