Fiery Servers: The Easiest Way to Get the Right Color Every Time

A white paper for color professionals about spot color matching

White Paper Series

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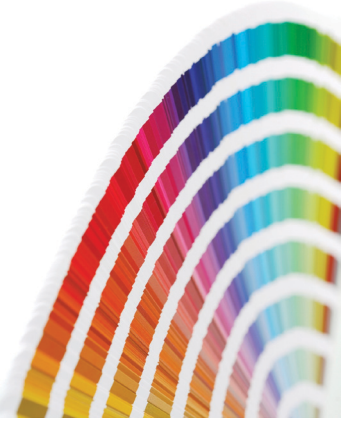

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Executive Summary

Fiery® servers make print businesses more productive, profitable and efficient. In addition, Fiery servers help protect corporate brand identity by rendering standard and custom colors more accurately.

This white paper outlines the challenges of producing accurate, repeatable color in a digital print environment, and how Fiery technologies address these challenges. You'll see how you can get the color you need using the Fiery Spot-On™ feature and other Fiery color-management tools. The paper also discusses how Fiery servers uniquely provide enhanced color tools that improve workflow and control costs, and touches upon the steps that you can take to achieve this improved color more quickly and easily than with competing color-management tools.

Accurate, Repeatable Color: The Key to Maintaining Corporate Identity

In today's business world, companies and organizations have corporate or brand colors as part of their brand identity. Brand owners are fiercely protective of these colors, demanding their accurate reproduction, whether the branded items are printed using offset, digital, gravure or other printing technologies – or produced for electronic distribution.

From corporate branding to high-level color matching in a commercial print setting, creating consistent and predictable color every time is essential.

Protecting brand colors like these is key to maintaining corporate identity. So it is a high priority for companies to maintain these color standards.

Using Spot Colors

These proprietary colors are often defined as spot colors, and are printed conventionally by blending inks to deliver an exact match to the specified color from a library, such as the ones from PANTONE®. This custom mixing for spot colors provides a more accurate match than printers could achieve using four-color process printing – commonly referred to as CMYK for cyan, magenta, yellow and black (K) – and is used to accurately reproduce exact color matches to corporate or brand colors.

In offset printing, printers use mixed inks to produce specialty or spot colors.

Spot Color Challenges

Producing spot or specialty colors can be time-consuming and expensive for several reasons. For digital printers, which generally print using CMYK toner or inks, spot colors can be effectively matched using sophisticated algorithms in the raster image processor (RIP). Even so, there are still some colors that are difficult, or even impossible, to match using a CMYK process. Here we discuss some of the issues specific to digital printing:

- **Accuracy** – The accuracy of spot colors can vary depending on the color system used in the matching process. Some spot colors fall outside the gamut of reproducible colors by a print engine, and the output color depends on how close spot colors can be matched using sophisticated algorithms within the raster image processor (RIP).
- **Consistency across print engines** – Ensuring accurate and consistent spot colors is difficult because each printer is different. That's why profiling and calibration tools are important in the color control process.
- **Consistency across documents** – Because different document-creation applications use different color systems, you may need to substitute colors to get an accurate and consistent match.
- **Usability** – Complicated spot-color processing requires a lot of steps and increases the chance for error and the need for rework.
- **Meeting the needs of users with different skill levels** – With the growth of digital printing and the software surrounding it, many people may need to use a corporate color in a variety of applications. In this complex environment, different color interpretations can lead to inaccurate colors and bottlenecks in proofing, prepress and production workflows.

Whether a company provides services to other organizations, or produces materials in-house, a spot-color solution needs to work with all the applications and devices involved in the printing process – now and in the future. It must be fast enough, so people are not tempted to take shortcuts on deadlines, and robust enough to meet sophisticated color-matching needs.

Fiery Servers: The Best Solution for Spot and Specialty Colors

Print professionals have different requirements when it comes to color. That's why Fiery servers provide a scalable approach to color management that allows you to create the perfect color recipe, designed to meet your specific needs.

Fiery Technology Is Built on an Open Platform

Scalable Fiery servers are based on International Color Consortium (ICC) standards. This means that no matter what application you're using to create a document, or what color system that software uses, Fiery servers will decipher and understand the color submitted. So you obtain consistent results throughout documents and engines. For consistent results across engines, Fiery servers can also export color palettes to other Fiery-driven devices. This flexibility provides the highest return on investment because it enables you to leverage the work you've done throughout your enterprise documentation, and to keep up with new technology and your company's growing needs.

Multiple users use color in different ways. This can make the resulting documents look inconsistent and the color inaccurate.

Fiery technology is based on ICC color standards.

All Fiery Servers Are PANTONE Calibrated

All Fiery servers are PANTONE Calibrated. This unique feature means that all Fiery servers produce consistent, reliable color, based on the world's industry-standard color matching system. Because Fiery technology is also built on an open ICC color platform, it adapts to changes in the PANTONE® MATCHING SYSTEM®, so your color libraries are always up to date.

Fiery Servers Come with Integrated Color Management Features and Tools

All Fiery servers automatically produce great out-of-the-box color with an integrated color management technology called Fiery ColorWise®. ColorWise automatically recognizes PANTONE, HKS, Toyo and DIC, names in print jobs – for solid colors, blends, tints and even process simulations – and selects the best CMYK match for your printer.

However, there are times when you may want to adjust the default values in the spot colors libraries on a Fiery server. The customer may want to change the default match provided by the library because the color may not match what they expect. The paper stock may change the appearance, or it might just be subjective perceptions about color.

Most Fiery servers with standard configurations also come with the Fiery Spot-On feature. This gives you more control when you need to create spot colors that better match your customer's reference. It works with other Fiery color management products, including Fiery Color Profiler Suite, the EFI ES-1000 spectrophotometer and the Fiery Graphic Arts Packages. You also can buy Spot-On separately if it is not part of your original configuration.

Fiery color management features and tools ensure consistent, accurate and repeatable color every time.

The PANTONE MATCHING SYSTEM (PMS) contains the formulas for creating and reproducing more than a thousand different "spot" colors on a four-color device. This process is why spot colors are sometimes referred to as PMS colors.

Automating the Entire Color Process

Fiery servers automate the color process from job submission to output. This automation eliminates the traditional guesswork of deducing "accurate" color visually. It also allows you to create libraries of custom colors that users can re-use, and to automate substitutions between applications that use CMYK and red/green/blue (RGB) colors. Fiery dramatically cuts the time used for manual color matching and lessens the potential for error.

The Fiery Spot-On Advantage

Fiery Spot-On helps create accurate color matching for corporate and other spot colors more easily and quickly than competing color editors. Competing color editors use a trial-and-error process to edit PANTONE or HKS spot colors with manual checks for adjustments on the actual print engine. The powerful Spot-On utility takes the guesswork out of color matching because it offers an intuitive interface that makes it faster and easier to define or modify spot colors, and it eliminates the time-consuming need to look up CMYK values.

With fewer steps than other digital software applications and an integrated color management system, you can edit colors with Fiery Spot-On without having to switch back and forth from one tool to another or having to re-enter information to set up color profiles for repeatable results.

Built-In Spot and Substitute-Color Capabilities

Fiery Spot-On offers a number of sophisticated capabilities for spot color matching as it:

- Allows you to edit spot color conversions so you can adjust colors to better match a customer's preference.
- Lets you create and manage new color libraries to more easily conceptualize and communicate custom colors.
- Captures spot colors using an ES-1000 spectrophotometer if the color you want to reproduce is not included in any color-matching system.
- Gives you tools to visually select a better combination to match the desired spot color.
- Permits custom spot color libraries to be exported as named color ICC profiles for use elsewhere in the workflow.

In addition, the substitute color feature allows you to:

- Achieve spot color consistency across documents to maintain brand colors.
- Establish company-wide RGB color palettes for applications like Microsoft® Office that don't define named colors.

Taken together, Spot-On features allow you to establish an enterprise-wide color management structure that is faster to implement, easier to maintain and requires less end-user training. While you still get the repeatable, accurate color you want and need.

Make Sure You Have Spot-On

Check to see if Fiery Spot-On is included on your Fiery server. Open the Device Center tab on the Fiery Command WorkStation application; select the Resources section and check to see if the Spot Colors button is displayed. If it is not, you can purchase Spot-On and Fiery option packages online at estore.efi.com/shop or contact your Fiery vendor.

Without Fiery Spot-On

Multiple users in an enterprise can produce documents with different color definitions. When sending these documents to print to a printer that's not driven by a Fiery server, spot colors are inconsistent across documents.

With Fiery Spot-On

With a Fiery-driven printer, including the Spot-On feature, spot colors are consistent across documents, regardless of how the colors are defined from document creators.

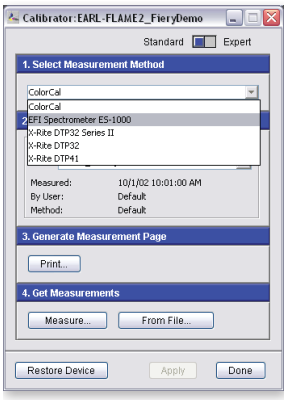
How to Use Fiery Spot-On to Produce Accurate, Repeatable Color

This section walks you through a step-by-step process to achieve consistent, accurate color using Fiery technology.

First, there are several things you can do to optimize spot-color matching with Fiery technology. Each helps improve the accuracy of spot-color processing.

Calibrate Fiery Servers Regularly

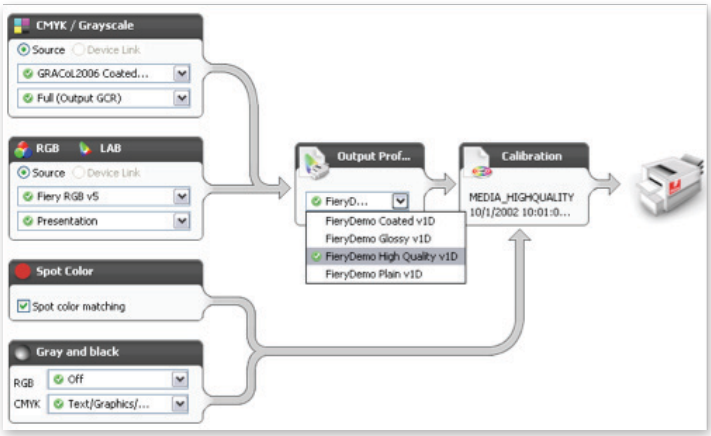
Every Fiery server includes one or more calibration methods. Calibration ensures that Fiery- driven™ print engines are reproducing color at factory default specification. Methods that use the ES-1000 spectrophotometer, a color measurement device, provide a more precise calibration.



Calibration tools offer multiple ways to check the color of Fiery-driven printers.

Select the Most Appropriate Output Profile

The output profile directly influences the specific CMYK values generated by the spot color tables. All Fiery servers include factory-standard output profiles for a variety of papers, weights and coatings. Select the profile that best matches your paper.



Select the profile that best matches your paper

Build and Use your Own Output Profiles

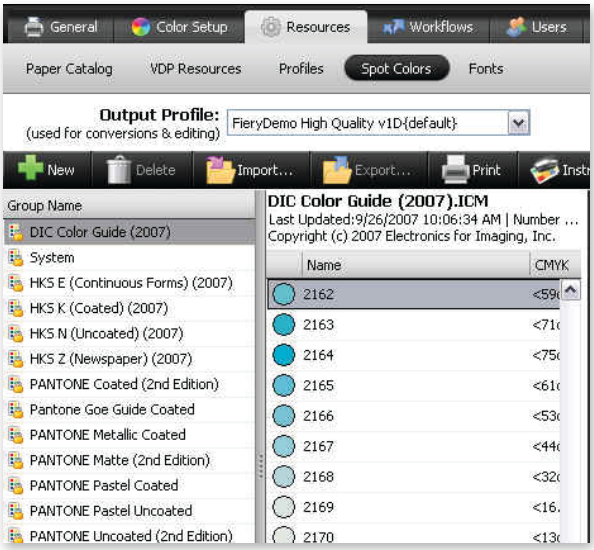
It is important to build profiles for each paper you typically because it helps characterize your exact printing conditions. Fiery Color Profiler Suite, which includes an ES-1000 spectrophotometer, is the simplest and highest-quality profiling tool on the market today. It is also tightly integrated to the Fiery server, so it is easier and more accurate to generate and install new profiles the first time.

How to Fine-Tune Spot Colors

There are several reasons you may want to adjust the default values in the spot colors libraries on a Fiery server. The customer may want to change the default match provided by the library because the color may not match with what they expect, or simply due to subjective perceptions about color.

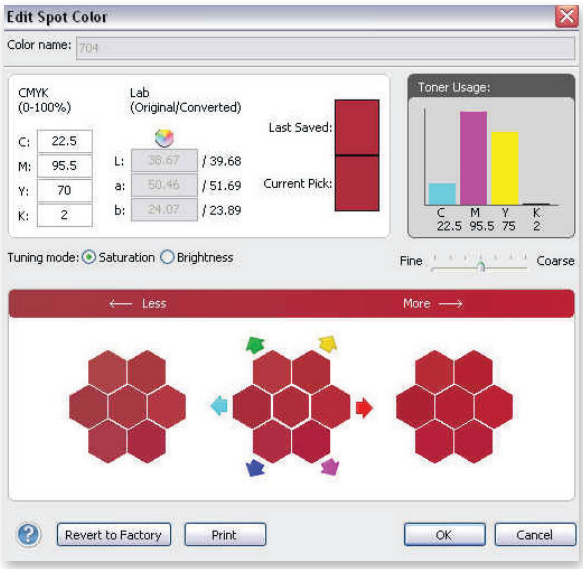
Fiery Spot-On makes fine-tuning a particular spot color faster, easier and more accurate than ever before. Just follow the steps below.

1. Open the Device Center tab at the Fiery Command Work-Station, select Spot Colors under the Resources section.
2. Locate the spot color group where the original spot color is located – for example, PANTONE Coated.



Select the spot color group where the original spot color is located.

3. Click on this group to expose the individual colors.
4. Select the output profile that best suits the paper type you plan to use. This is important because different papers generate a different color response. Have the correct paper loaded on the engine.
5. Locate the spot color and double click to bring up the Edit Spot Color window.
6. Click "Print" and follow the instructions to print the Color Search Pattern on the paper selected.



The Edit Spot Color window displays all the neighbor colors to facilitate fine-tuning of spot colors.

7. Find the closest match to the color you want, using the printed output.
8. Click on the hexagon patch at the bottom of the Edit Spot Color window that represents the best match
9. Repeat these steps until you get the best match.

A spot color search page printed using the targeted paper, gives you a faster and more accurate spot color selection.

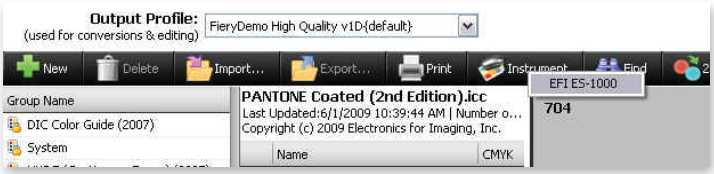
10. Click "OK" at the bottom of the search pattern window. Fiery Spot-On will now use the updated values for the specific stock and ICC profile you selected.

How to Capture Spot Colors with an ES-1000 spectrophotometer

A color measurement device, such as an ES-1000, is a critical tool in building profiles and calibrating Fiery servers. It's also a convenient way to capture spot colors from objects or hard-copy printouts – especially if the color is not part of a color matching system. To capture spot colors this way just follow the steps below.

1. Connect the ES-1000 to a USB port on the computer where Fiery Command WorkStation® is loaded. This could be the Fiery server itself with a keyboard, monitor and mouse connected, or a networked Windows PC or Mac.
2. Create a new spot color group by clicking on the green "+" symbol and selecting "Group."
3. Type in an appropriate name, such as "My Corporate Colors," then click "OK."
4. Select the correct output profile at top center. This profile will be used for current spot-color matching, so make sure to choose the most appropriate paper profile.

Select the correct output profile and add a new spot-color group.

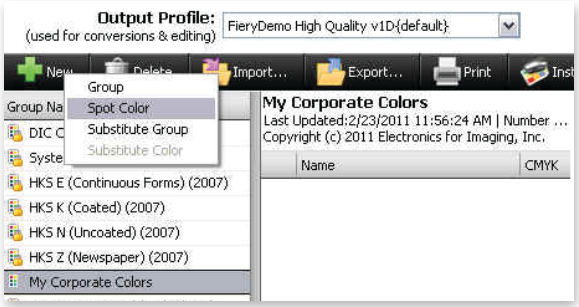


Then select the EFI ES-1000 as the instrument.

5. Click on "Instrument" and select "EFI ES-1000."
6. Make sure that the ES-1000 is squarely sitting on the calibration plate.
7. Click "Calibrate" and wait for the window to close.

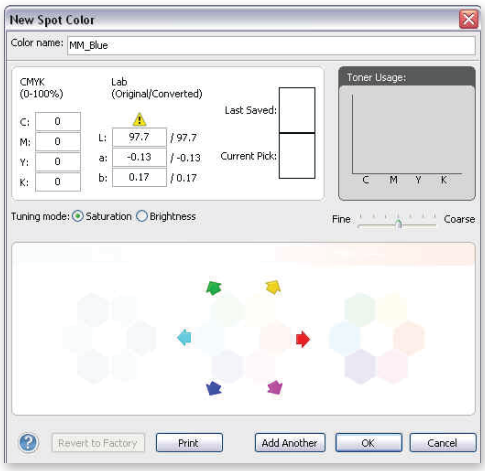
Calibrate the ES-1000.

8. Highlight the new group, click on the green "+" symbol and select "Spot Color."



Add a new spot color to the newly created group.

9. Name the new color in the New Spot Color window.



Name your new spot color.

10. Carefully position the head of the ES-1000 over the target object and click the button on the device. Click "OK" on the screen.

Read the new color with the ES-1000 and print a new sport color search to verify and define your new color.

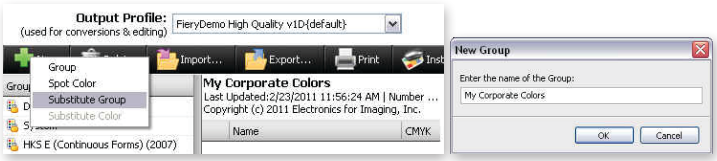
11. You have created a new spot color for Spot-On. The tool will select this new color any time you use a spot color with the exact same name in a design application.

How to Create and Use Substitute Colors

Different source applications define solid colors in different ways. Some applications are capable of using CMYK, RGB and spot color in a document. Others only allow one color model. For example, Microsoft® Office applications only use RGB and do not have the ability to create or define CMYK or spot colors, except for Microsoft Publisher 2003 and later versions.

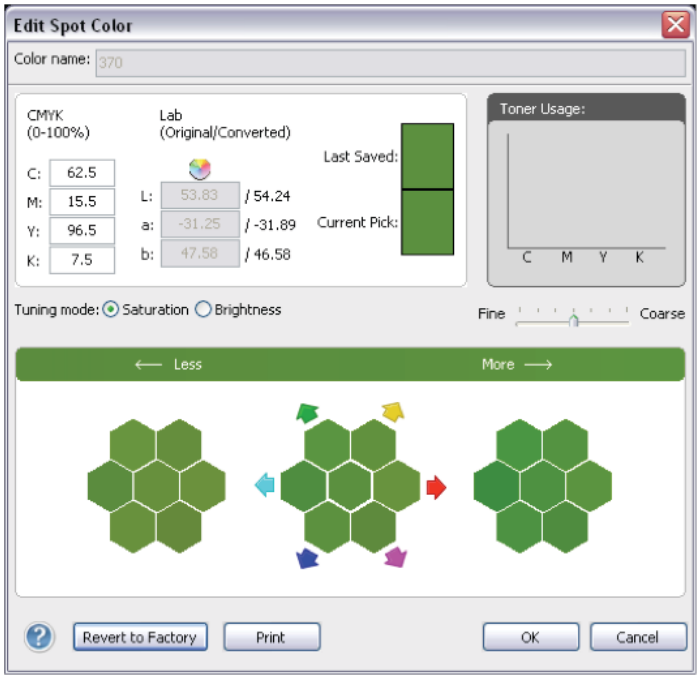
That's why it's important to have a color tool that can identify CMYK or RGB color elements in a document and replace them with another color. Fiery servers with Spot-On have this capability. Here's how to use this feature.

1. Know the color values you want to change. Each application has a different way of defining colors, so reference the application's documentation to find out how to identify the target color in a document. In this example, the objective is to match the PowerPoint type to the Pantone 370 logo color. Before adding a substitute color, you will need to understand the CMYK combination for PANTONE 370 by looking at the Edit Spot Color window in Fiery Spot-On.
2. In a Microsoft Office document, identify the colors of any object by selecting the object.
3. Select "More Fill Colors" from the color palette to display the values of the current object.
4. To create a substitute color group from the Fiery Spot-On window, click on the green "+" symbol and select "Substitute Group."
5. Type in a name, such as "My Substitute Colors," then click "OK." Select the correct output profile for a paper like the one you will print on.



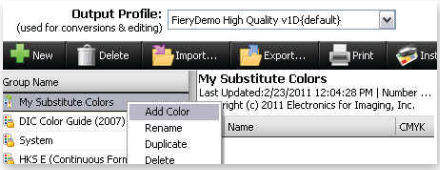
Create a new substitute color group.

You can use Spot-On Substitute Color to match these RGB values, or for a brand or other special color defined as a CMYK combination in a design application.



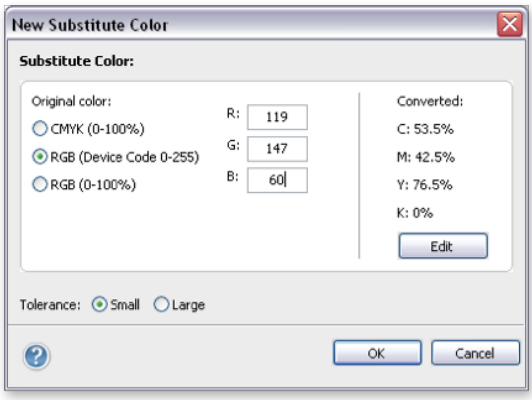
See the CMYK combination for PANTONE 370 by looking at the Edit Spot Color window.

6. Highlight the new substitute group, then click on the green "+." Select "Substitute Color."



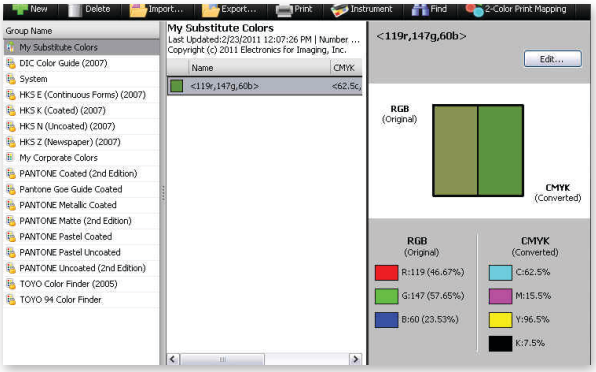
Add the new color to the substitute group.

7. Select the color space you want to target, and enter the values for the color you need to replace.
8. Click on the "Edit" button to define the new values of the substitute color.



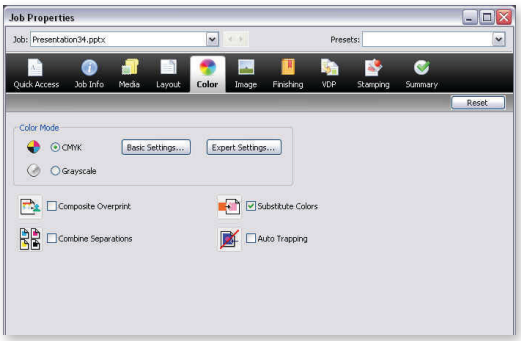
Enter the values of the substitute color.

9. Use the steps in the section "How to Fine-Tune Spot Colors" to achieve the exact right color.

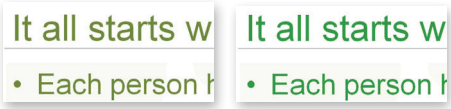


Spot-On converts your new substitute color to CMYK values to match the corporate PANTONE 370 color.

10. To use this substitute color, enable Substitute Color in the job properties of each job, or select Substitute Colors in the print driver, as shown below.
11. Print your job with and without Substitute Colors enabled to see the results.



Select Substitute Colors every time you print a document that includes corporate colors.



Print with and without substitute colors to see the difference. Other images, text and graphics are not affected by the substitution.

Conclusion

These are just a few of the things you can do with Fiery Spot-On and other EFI color management tools. Make sure you have a Fiery server with Spot-On to give you the highest level of control and accuracy for all your color work.

EFI Resources for Producing High-Quality Color

This whitepaper makes reference to Fiery Spot-On feature running on a Fiery Command WorkStation version 5 and above. Please check the following web site to see if your Fiery system supports Fiery Command WorkStation 5: efi.com/cws5.

To learn more about high-quality color reproduction in a digital environment, see these EFI resources:

- ABC's of Color at efi.com/promo/abcseries.
- Fiery eLearning courses located at training.efi.com/purchase/courses.asp.

  - Spot Color Accuracy with your Fiery Controller.
  - Optimizing Color and Consistency on Your Fiery Controller.
- Fiery How-To Guides at efi.com/how-to/sys9r2/cws5/en.

You can also get more information on Fiery servers and other EFI color management tools at:

- Fiery Servers at efi.com/fiery.
- Fiery Color Profiler Suite at efi.com/cps.
- EFI ES-1000 at efi.com/es1000.
- Fiery Graphic Arts Package, Premium Edition at efi.com/gappe.

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