



GMG ColorServer Quick Start Guide for GMG SmartProfiler

Imprint

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1. Optimize Your Colors with GMG

With the GMG ColorServer GMG SmartProfiler solution, you gain the control to achieve reliable color consistency throughout your production chain, regardless of which press is used. By optimizing your print files, you will save both ink and clicks—all while printing with the highest possible color quality.

Several applications are required to optimize the entire process. In the following paragraphs, you will get an overview of each software element, its requirements and functions. The solution offers flexibility, allowing you to install all applications on the same computer or on separate machines. The applications communicate with each other via http within your company's network.

GMG ColorServer is the **central PDF and image processing unit**. All input documents will be processed by GMG ColorServer and the final PDF or image will be sent to an output folder. You can either connect the output folder to your Digital Front End (DFE) to run the system fully automatically or manually transfer the documents to the DFE. All **color management** including **ink saving strategies** will be done solely by GMG ColorServer. Therefore, it is necessary to switch off the color management in your DFE. If you are using a third-party workflow system, you can integrate GMG ColorServer into your workflow (see "Integrate GMG ColorServer into Workflow Systems").

GMG ColorServer is built using client-server architecture. The main Server will run on a central computer (or a virtual machine) in your local network. You can access the server from multiple connected clients, for example, to create jobs or to configure color management resources.

GMG SmartProfiler is the profiling tool of GMG ColorServer and helps you to stabilize and calibrate your digital presses quickly and easily. Some steps require printing and measuring of test charts. For this, you will need a spectrophotometer connected to the computer GMG SmartProfiler is running on. GMG SmartProfiler is included in the GMG ColorServer Client application. That means that you can run GMG SmartProfiler on a separate computer connected to the spectrophotometer. The resources generated by GMG SmartProfiler such as color profiles will be stored on the central server.

In the background, GMG OpenColor will serve as a **profiling client**. Based on **spectral measurements**, GMG OpenColor's **prediction engine** gets the most out of each specific printing substrate, ink set, and printing technology. GMG OpenColor will automatically generate the resources required to profile your press such as test charts and color profiles and send them to the central server. GMG OpenColor will also calculate a spot color library and send it to the central server before the jobs will be created. When you then process a job in GMG ColorServer, color channels from the document will then be processed with the color definitions from the spot color libraries. Resources created by GMG OpenColor will be synchronized, i.e. when you update a spot color library in GMG OpenColor, all dependent resources on the central Server will be synchronized automatically. With color management resources shared over the network, you will not need to switch between computers and manually transfer profiles anymore.

If you want to print a hardcopy proof, you will also need GMG ColorProof. GMG ColorProof uses the same profiling client as GMG ColorServer, i.e. GMG OpenColor, guaranteeing that the proof will match the print as closely as possible. Using a hardcopy proof as a reference for your digital printing process is highly recommended. Simply print a proof first and compare it with a reference print sample. If it matches, you can be sure that the characterization GMG OpenColor is using to calculate printer profiles represents the print results expected by you and your customers. After profiling your digital press, you can then compare the actual print results with the proof to close the loop.

1. Optimize Your Colors with GMG

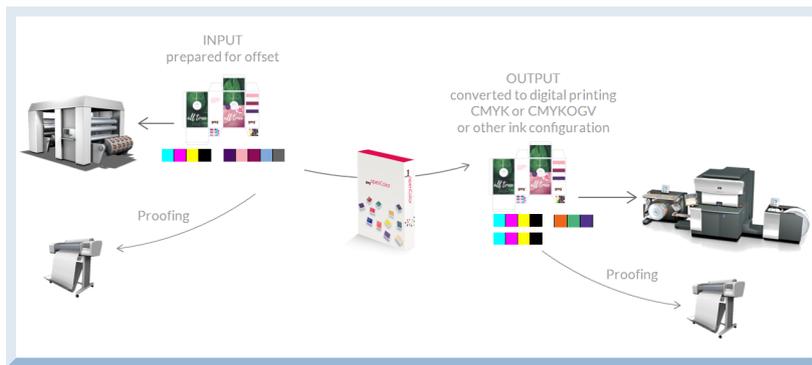


Fig. 1 The illustration shows how the input documents are optimized for the target printing process. Input colors from the document are separated to the output inks of the target press. GMG ColorServer processes the input documents and applies the color management. In the background, GMG OpenColor delivers the conversion profiles and spot color libraries for the color management and thus plays a central role in this process.

After you have finished the initial installation and configuration of all applications, make sure the central GMG ColorServer server and GMG OpenColor are running. Then you can start the GMG ColorServer client and use GMG SmartProfiler to profile the printer and to create a hotfolder you can send the input documents to. In most cases, you will not need to configure anything else in GMG ColorServer or in GMG OpenColor at this point.

2. Required Applications and Licenses

This tutorial requires the following applications and additional licenses. Please check that you have everything you need. Contact your local sales partner or the GMG order team if you have further questions or if you want to purchase an additional license.

- GMG ColorServer Multicolor or GMG ColorServer Digital Solution Bundle.
- GMG ColorProof and GMG OpenColor with "OpenColor Proofing" option, for printing a **hardcopy proof**. It is not mandatory but recommended to print a hardcopy proof, to evaluate the characterization of the input color space and to evaluate the final print on the digital press.

3. First Time Installation of GMG OpenColor

The following information refers to the installation of GMG OpenColor for the first time on a new computer.

You can download the setup and all resources as a ZIP archive and then transfer the ZIP archive to the computer on which you want to install the application. The ZIP archive can be found in the download area of the GMG support website:

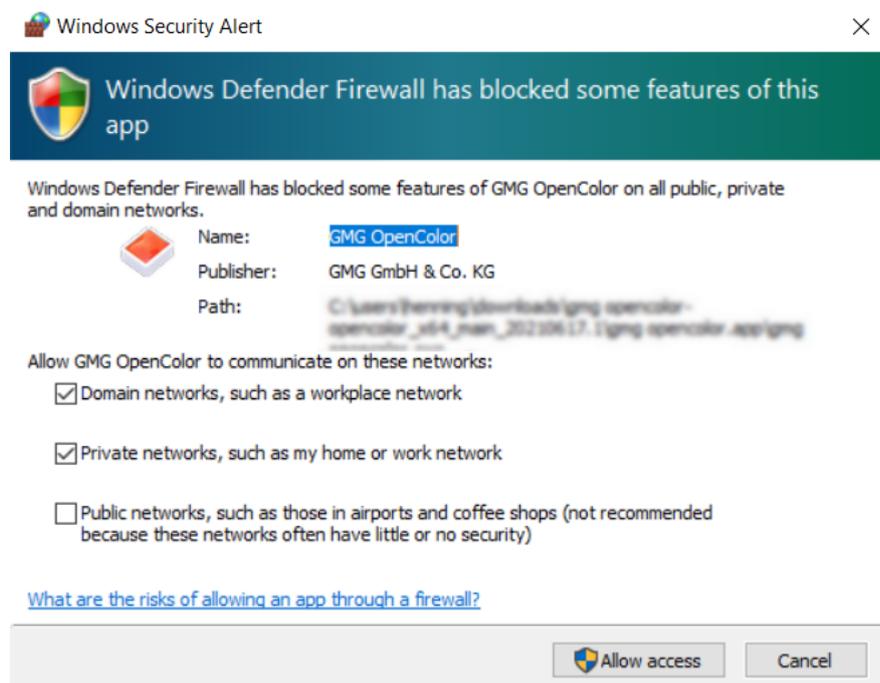
<https://gmgcolor.com/support/download/product/opencolor/>

Install the application from DVD or ZIP archive

1. Connect the license dongle to your computer.
2. If you downloaded the ZIP archive from the GMG website, copy it to a local directory and extract the compressed setup file.
3. Double-click the **GMGOpenColor_vx.x.x.xxx_x64_Setup.exe** file to start the installation.
4. Deselect the additional program feature **Techkon Device Service** if you do not plan to use a Techkon measuring device. This feature is required only if you want to measure with TECHKON SpectroDens in GMG OpenColor.
5. When the installation is complete, click the **Finish** button to close the wizard.

Configure the Windows Firewall

Depending on your configuration, Windows Firewall might ask you at the first program start of GMG OpenColor whether to **unblock** the program or not. In this case, click **Allow access**. GMG OpenColor needs the access for the communication with other applications such as GMG ColorServer.



Install GMG ColorProof

Printing a hardcopy proof is not required for using GMG OpenColor. However, using a hardcopy proof as a reference for your printing process is highly recommended.

You can install GMG ColorProof on the same or on a separate computer. In both cases, you will need to connect GMG OpenColor with GMG ColorProof.

Please follow the link for more information on the installation:

<https://gmgcolor.com/support/help/colorproof/cp-system/installation.htm>

Please follow the link for more information on the connection:

https://gmgcolor.com/support/help/opencolor/GMG_Text/OpenColor/FirstUse/OC_ConnectCP.htm

4. First Time Installation of GMG ColorServer

The following information refers to the installation of GMG OpenColor for the first time on a new computer.

You can download the setup and all resources as a ZIP archive and then transfer the ZIP archive to the computer on which you want to install the application. The ZIP archive can be found in the download area of the GMG support website:

<https://gmgcolor.com/support/download/product/colorserver/>

The default hotfolder location is "C:\Hotfolders\". You can change it after the installation.

There are many other advanced settings to adapt GMG ColorServer to your requirements. It is recommended to keep the defaults and change it only if you need to (see "Initial Configuration").

Install the application from DVD or ZIP archive

The application can be installed either to the default installation path of the operating system or to a custom folder. (If you install the client and the server application on the same computer, both applications must be installed in the same folder.)

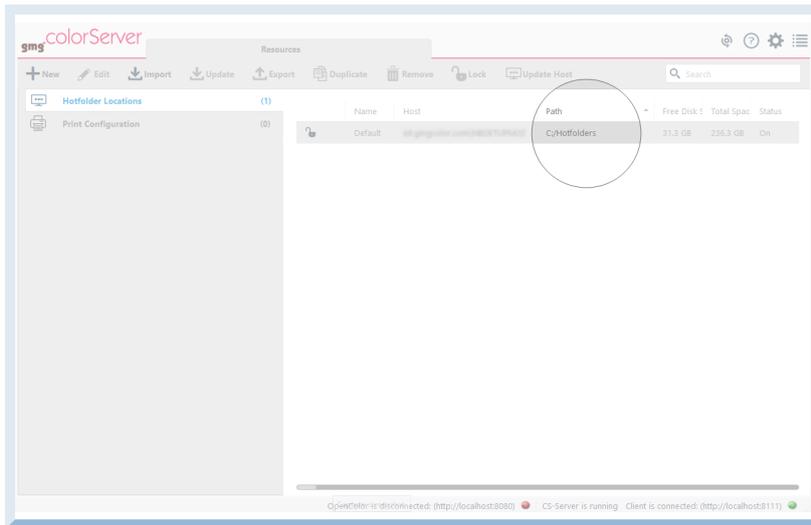
You can also select a custom location for the server **data**, i. e. resources such as color profiles and jobs.

1. If you want to install the server and client application (including GMG SmartProfiler) on separate computers, start with the server.
2. Connect the license dongle to the computer. The dongle needs to be connected to the server computer.
3. If you downloaded the ZIP archive from the GMG website, copy it to a local directory and extract all compressed files.
4. Double-click the **Setup_5.x.x.exe** file to start the installation.
5. If you want to install the application to a custom folder, add a check mark to the **Use custom destination folder** option.
6. Deselect all features you do not want to install. It is recommended to install all components on the server computer. You can easily install additional clients on other computers later.
7. When the installation is complete, click the **Finish** button to close the wizard.
8. If you did not install the client yet or if you want to install additional clients, repeat the procedure with the client on another computer, starting from step 3.

Define the hotfolder location

On the computer where the GMG ColorServer **Server** is installed: From the Windows **Start** menu, start the **Hotfolder Service Configurator**.

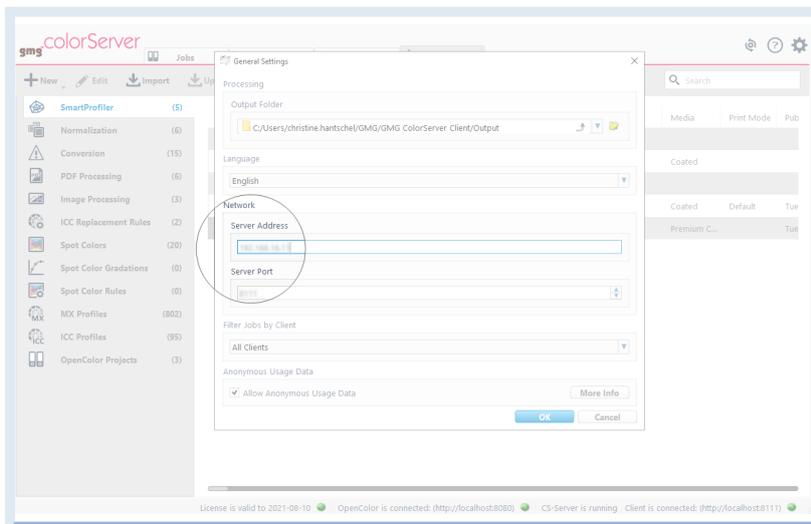
Here, you can select the root folder for your hotfolders. Input and output folders will be created as subfolders of the hotfolder. If you keep the default, the complete folder path of the input folder will be "C:\Hotfolders\\Input".



Connect the client to the server

After installing a client on a separate computer, you will need to connect the client to the server.

In the GMG ColorServer Client, click the gearwheel button on the upper right corner of the main window, and click Settings. Enter the **Server Address** and **Server Port** of the computer on which GMG ColorServer server is running.

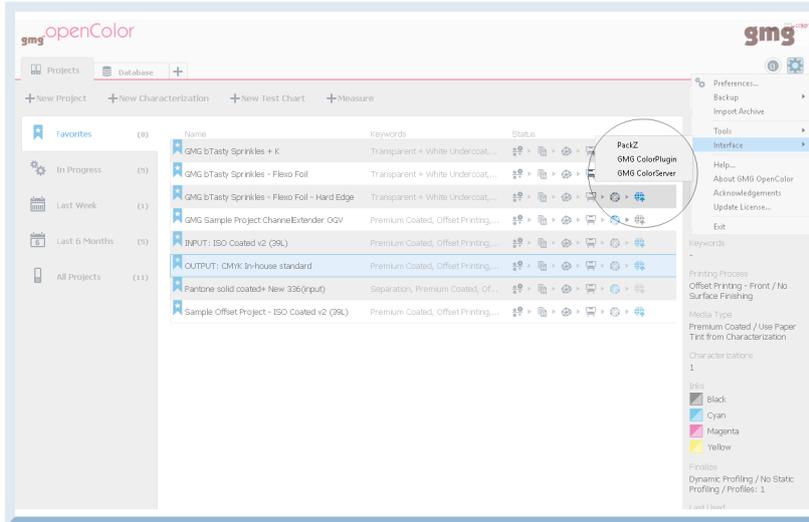


5. Connect GMG OpenColor to GMG ColorServer

Check access rights in GMG OpenColor

Expand the **Options** menu in the upper right corner, navigate to **Interface**, and click **GMG ColorServer**. A window showing you the access rights will open.

If you do not see the **GMG ColorServer** menu item, you most likely do not have a valid license for the **OpenColor Separation** option (included in GMG ColorServer Multicolor and GMG ColorServer Digital). Without this license, you will neither be able to calculate separation profiles, nor to connect to GMG ColorServer. In this case, please contact your local sales partner or the GMG order team.



Connect the server to GMG OpenColor

Next, you need to tell the GMG ColorServer server where GMG OpenColor is.

1. On the computer where the GMG ColorServer **server** is installed: From the Windows **Start** menu, start the **GMG ColorServer Configurator** application. (The **Server Configuration** tabbed page will **not** be available on a computer where only the GMG ColorServer **Client**, a separately installed GMG ColorServer **Worker** or a separately installed **Hotfolder Service** is running.)
2. On the **Server Configuration** tabbed page, scroll to the **OpenColor** group and enter the IP address and port number of the computer where GMG OpenColor is installed. If GMG OpenColor is installed on the same computer as GMG ColorServer, enter the **Host** address "http://localhost:8080".
3. Restart the **ColorServer Service**. (The application will ask you to do so now. You can also do this from the **Services** window from the operating system or from the corresponding icon in the Windows taskbar later.)

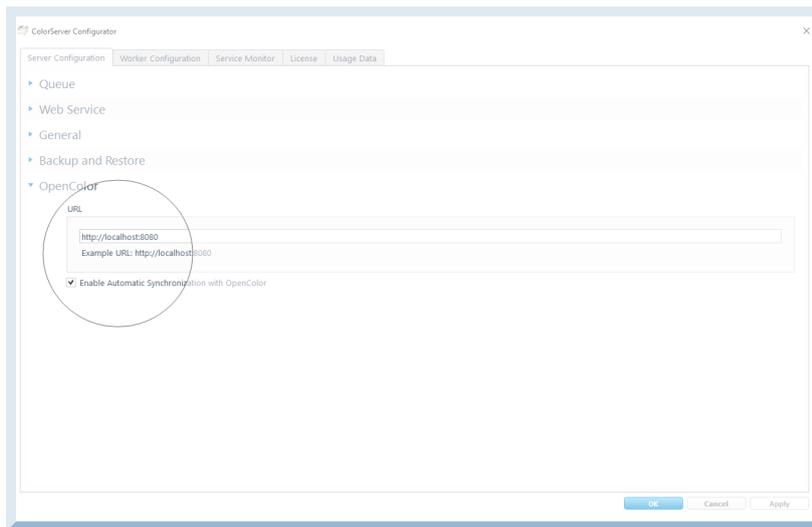


Fig. 2 Screenshot of the **GMG ColorServer Configurator**.

Check the connection

Start the GMG ColorServer **client** application. Check the status bar in the lower right corner of the main window. It should show the **OpenColor** host address with a green status indicator next to it.

6. Check the System

Before starting to work, it is recommended to check that the system is up and running.

Check the Windows service on the server

In the Windows status bar, check that the **GMG ColorServer Service Monitor** service is running, indicated by an icon with a green dot:

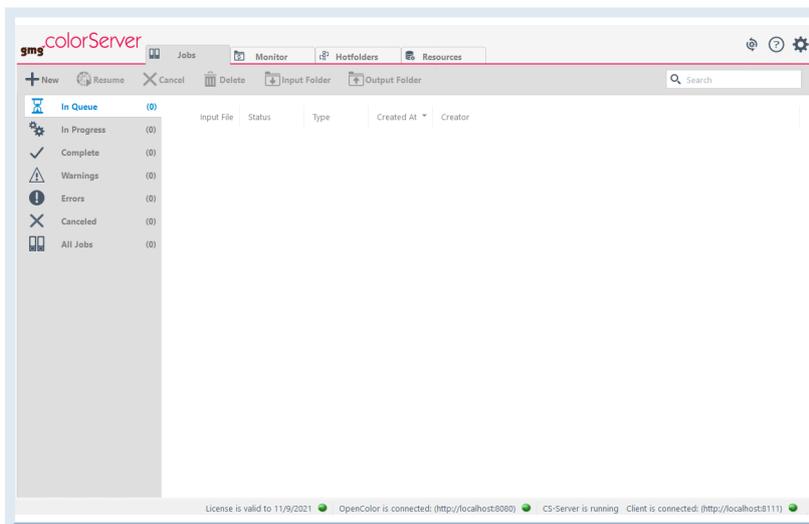


If this is not the case, click the icon with the right mouse button to open the context menu and click **Start**. If the icon is not visible in the Windows status bar, start the **GMG Service Controller** app from the Windows menu.

Check the status bar in the client

In the client application, check the status bar. It should show the following messages.

Status message	What does it mean?	See also
License is valid	The server has a valid base GMG ColorServer license. The date is the date of expiration.	
OpenColor is connected	The server is connected to GMG OpenColor. The address points to the computer GMG OpenColor is running on.	"Connect GMG OpenColor to GMG ColorServer" on page 11
CS-Server is running	The GMG ColorServer server is running.	
Client is connected	The client is connected to the server. The address points to the computer the server is running on.	"First Time Installation of GMG ColorServer" on page 9



7. Offset Print Sample

In this tutorial, we are using a print sample that has been prepared for offset printing. The PDF has the output intent ISO Coated v2 (39L). You will need to select the document color space as **Input Color Space** in GMG SmartProfiler later (see "Color Management" on page 21).

GMG ColorServer supports almost any document color spaces, including custom standards. If you are using a custom standard for the input documents, you will need to create a **characterization** and a corresponding **input project** in GMG OpenColor before you can start the profiling process in GMG SmartProfiler (see "What if I cannot find the right input color space on the list?" on page 21).

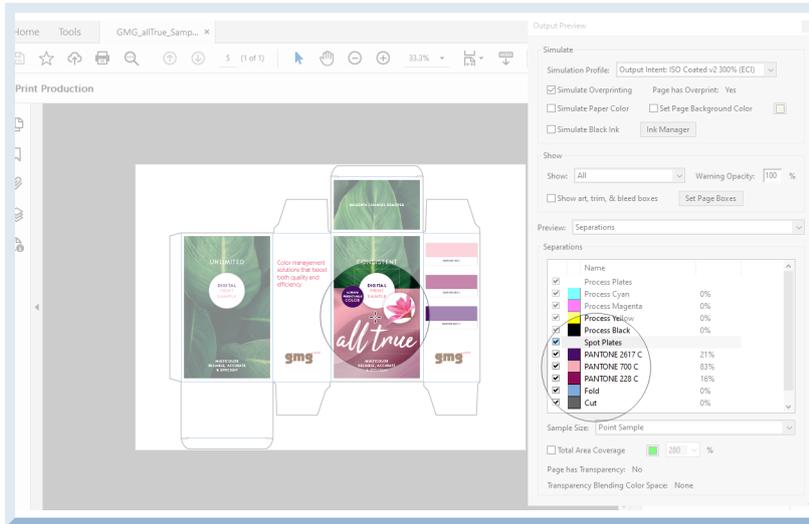


Fig. 3 The screenshot shows the PDF opened in Adobe Acrobat. The image elements with green leaves are CMYK images. The violet areas use overprinting spot colors.

8. Target Color Space

In this tutorial, we are using a digital press with the ink set CMYKOGV as an example. That means the output color space is extended by the additional inks Orange, Green, and Violet.

However, GMG SmartProfiler supports almost any output device and ink configuration. For a target color space with additional inks, you will need the "OpenColor MultiColor Conversion" license, included in GMG ColorServer Multicolor. You will not need this license if your digital press uses only CMYK or if you want to print only with CMYK.

9. Profile Your Press with GMG SmartProfiler

GMG SmartProfiler helps you to create printer calibrations and color profiles for digital and large format printers. This optional feature extends GMG ColorServer with profiling functionality. Thanks to the step-by-step structure, any user can calibrate, recalibrate, and profile their digital and large format printing systems without expertise in color management.

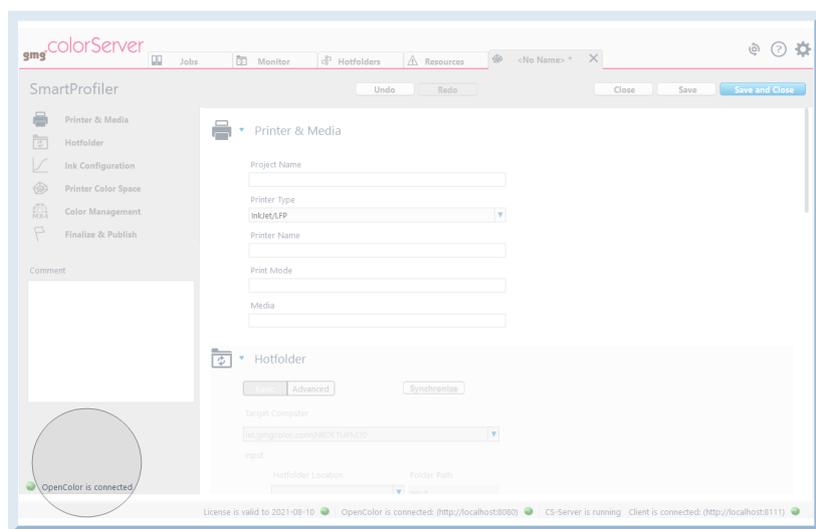
Generally, you start with creating a new **printer–medium combination**, which will be saved as a **SmartProfiler** resource on the server. This resource holds all information required to calculate a profile such as measurement data and printer-medium definition you provide. From this **SmartProfiler** resource, the system automatically publishes a **hotfolder** and corresponding color profiles within GMG ColorServer. You can then drop input documents into the hotfolder and GMG ColorServer will automatically optimize them for the profiled printer–medium combination.

GMG SmartProfiler will guide you through this process. Some steps require printing and measuring of test charts.

In GMG ColorServer, go to the **Resources** tabbed page > **SmartProfiler**, and click **New** to create a new printer–medium combination. Follow the procedure in the GMG SmartProfiler form step-by-step. (If **SmartProfiler** is not visible, check the connection from the client to the server and to GMG OpenColor.)

Check the connection to GMG OpenColor

A green status icon on the bottom left indicates that the **client** has established a direct connection to GMG OpenColor.



If this is not the case, check the network connection between the computer the client is running on and the computer GMG OpenColor is running on. If it is fine, check the connection settings on the server (see "Connect GMG OpenColor to GMG ColorServer" on page 11).

Prepare your press

Make sure the press is loaded with the print medium, print mode, and any other hardware configuration that you want to use in **production**. The profiles and resources you are going to create in the following are optimal **only** for this configuration. If you change settings on the press later, the press will show different characteristics and you will need to repeat the process to update the resources accordingly.

Make sure the press has all the **maintenance** it needs and produces **stable** print results. If the printing process itself is not stable, the best profiles won't do any good. Printing test images and test charts is a best practice to evaluate the printer stability.

Likewise, the **measuring device** should also be clean and produce stable measurement results.

Deactivate color management in the DFE

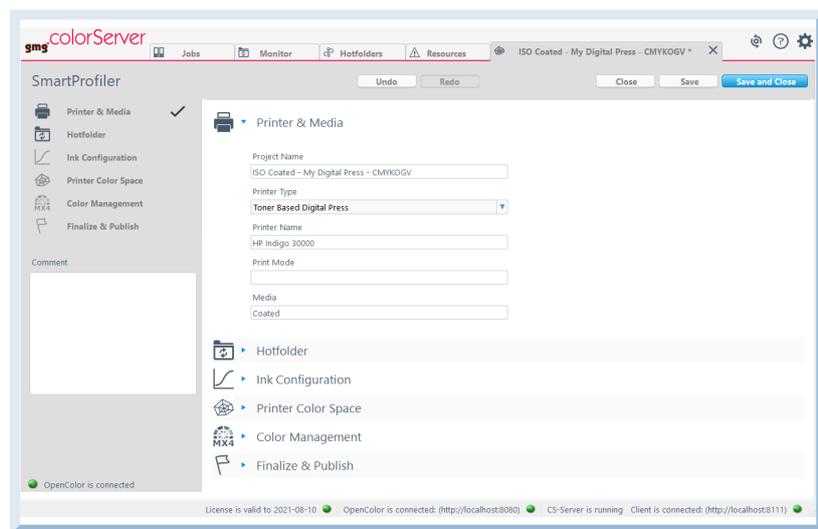
Deactivate all color management settings in your Digital Front End (DFE). The color management will be done by GMG ColorServer. If you have two systems for color management in place at the same time, you will most likely not be getting ideal results. To check that the color management is switched off, print a gray color using only CMY channels. Check that no Black was used. Print Black and check that no CMY was used.

Define Printer & Media

In the first step, you will enter information on the characteristics of your press. At the end of the entire process, GMG SmartProfiler will create profiles and other resources for the specific **printer**, **print mode**, and **media type** you have used during the process. We call this the **printer-medium combination**. So enter a **Project Name** properly describing this particular printer-medium combination. This name will be used for naming all dependent resources. Therefore, a proper name will be important for you to find those resources later.

Select the **Printer Type** that best fits your digital press: Select **Toner Based Digital Press** for xerography, laser printers, and printers with liquid toner such as the HP Indigo. Select **Inkjet/LFP** for Large Format Printers (LFP) and inkjet systems such as UV and solvent. GMG SmartProfiler will use this information to select the ideal profiling settings for this type of printers.

The information you enter in the **Printer Name**, **Print Mode**, and **Media** boxes will not be used by GMG SmartProfiler. The information will be helpful for you to remember for which printer-medium combination the profile was created.



Hotfolder

In this step, you define the input and output folders. From the two **Hotfolder Location** lists, select **Default**. (If the lists are empty, you will first need to configure the **Hotfolder Locations** in the **Hotfolder Service Configurator** (see "Define the hotfolder location" on page 9)).

The **output folder** will be created as a subfolder of your main hotfolders folder. You can see the computer host and folder location in the **Hotfolder Service Configurator**. If you kept the default settings, it will be "C:\Hotfolders\" on the local machine. So the complete folder path will be "C:\Hotfolders\ISO Coated - My Digital Press - CMYKOGV\Output" in this tutorial.

During the profiling process, all test charts that you need to print on your press will be sent to the **output folder**. Please make sure that this folder is used as an **input folder** for your DFE. Of course, you can also manually copy the files from this folder to your DFE.

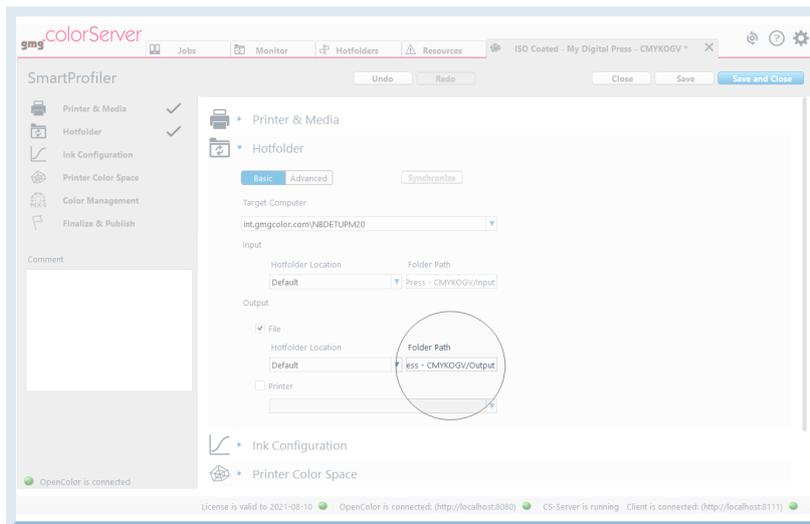


Fig. 4 Screenshot of typical **Hotfolder** settings. The output folder is highlighted.

Ink Configuration

In this step, you will define the current ink configuration of your press. CMYK is always used. If you have a "SmartProfiler Multicolor" license, you can add up to three further inks. You can select from typically used inks such as **Blue, Green, Orange, Red, and Violet**. In this tutorial, we are using Orange, Green, and Violet. Another typical example would be Red, Green, Blue. You can select any other combination matching your ink configuration, for example, Orange, Green, Blue.

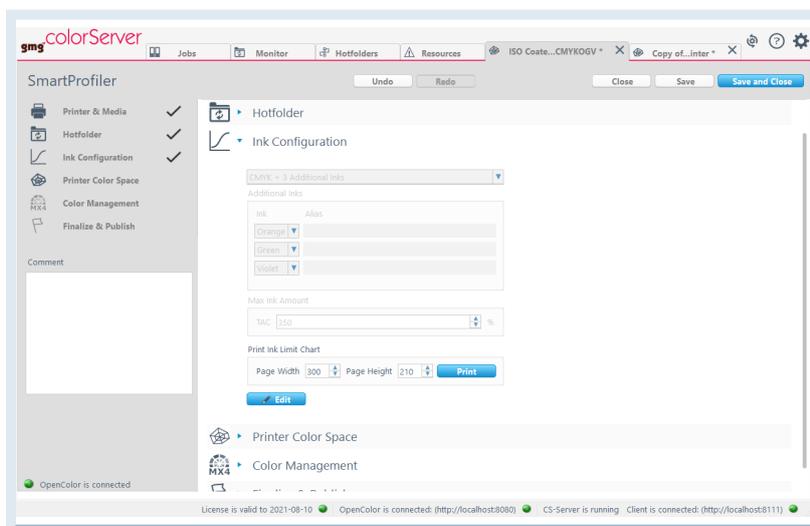


Fig. 5 Finished ink configuration. The settings are locked. If you need to change them, you can click the **Edit** button.

What if the inks have a different name in the DFE?

For each ink, you can enter the name used by the DFE into the **Alias** box. Make sure the names are exact matches. The application will use the ink names as **color channel names** in the output PDF and in the profiles and resources. If you leave the box empty, the **Ink** name will be used directly, for example, "Orange".

Find the ink limit

If you don't know the ink limit for sure, you will need to print a test chart to determine it. A **visual** check of the printed test chart allows confirming or modifying the calculated total ink limit (**TAC**). If you see any effects of too much ink such as bleeding or gloss banding on the test chart, reduce the ink limit.

Click the **Print** button. GMG SmartProfiler will create a test chart PDF and send it to the output folder. Print the PDF on your digital press. (If the test chart does not show up in the output folder, check that the **GMG ColorServer Service Monitor** is running (see "Check the System" on page 13).)

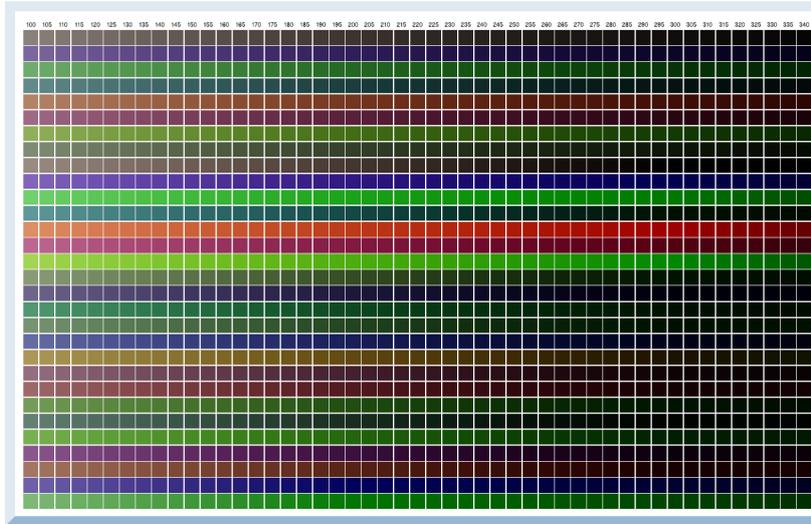


Fig. 6 Evaluating the total ink limit. The image shows a part of the test chart. The number on top of a column shows the total area coverage (TAC) of the column.

Examine the patches on the printed test chart. Enter the **highest** value not showing overinking effects into the **TAC** box to keep the printer color space as large as possible.

Tip You can scale the TAC test chart for printing in your DFE to increase the patch size for visual evaluation.

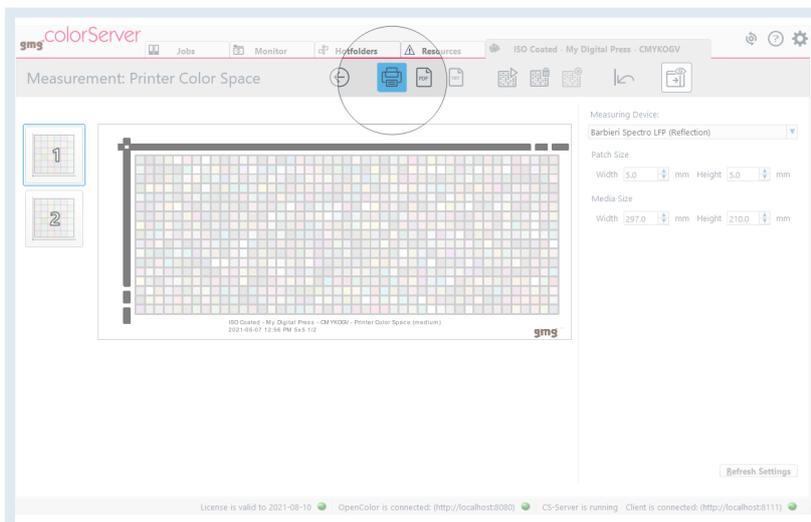
When you click the **Save** button, GMG SmartProfiler will create a test chart PDF to characterize the printer color space of your digital press in the next step.

Printer Color Space

In this step, you need to print and measure a test chart to characterize the printer-medium combination.

Click the **Print & Measure** button. GMG SmartProfiler will switch to **Measurement: Printer Color Space** inside the same tabbed page.

Select the **Measuring Device** you want to use from the drop-down list on the right. Check and correct the test chart and patch size if needed. Make sure the test chart will fit on your media size. Then click the highlighted printer icon button shown below. GMG SmartProfiler will generate the test chart and put it into the output folder.



Print the test chart. Depending on the test chart size and the media width of your press, the test chart might have several pages. If the press has been standing for a few minutes, it is recommended to print multiple copies of this chart to warm the press back up again.

Let the test chart dry properly. If you are using a non-sheet fed measuring device, mount the test chart. Then click the button that is highlighted next (**Add single measurement**) and measure the test chart. Please follow the link for more information: [Printing and Measuring Test Charts](#)

When you are done with the measurements for all pages, click the arrow button on the left side of the upper toolbar to return to the SmartProfiler document.

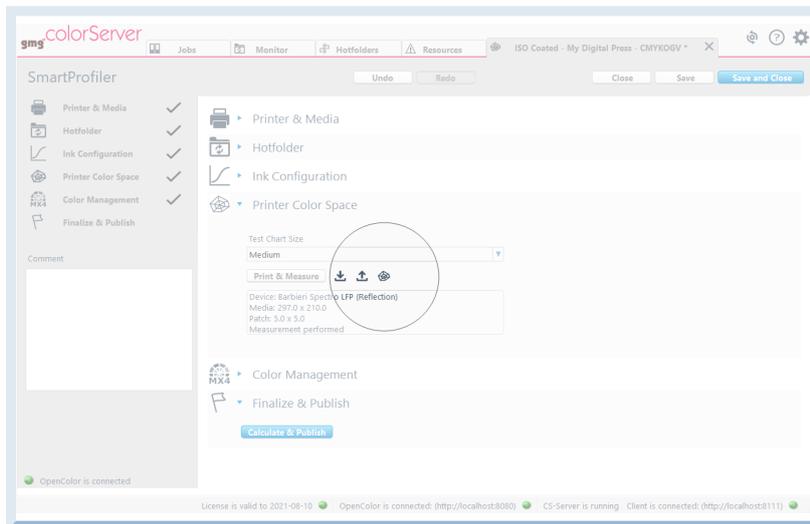
Alternatively, you can also import measurement data.

Check the printer color space (gamut)

At this point, it is a good idea to have a look at the printer color space (gamut) to see whether the printer-medium combination fits your needs. You can check the gamut against the reference color space, which is ISO Coated v2 (39L) in this tutorial. You can also check for specific spot colors whether they can be reproduced with this printer-medium combination or whether there are out-of-gamut colors.

If the gamut is not sufficient, you might want to consider swapping the medium or even use a different press for a particular job.

Click the button **Show gamut in GamutViewer**.



GMG GamutViewer will show the measurement data as dots in a 3d Lab color space. You can turn it around with the mouse to view it from all angles. You can load a reference color space and/or enter Lab target values for a couple of spot colors. For example, you can look up the Lab values in one of the spot color libraries in GMG OpenColor.

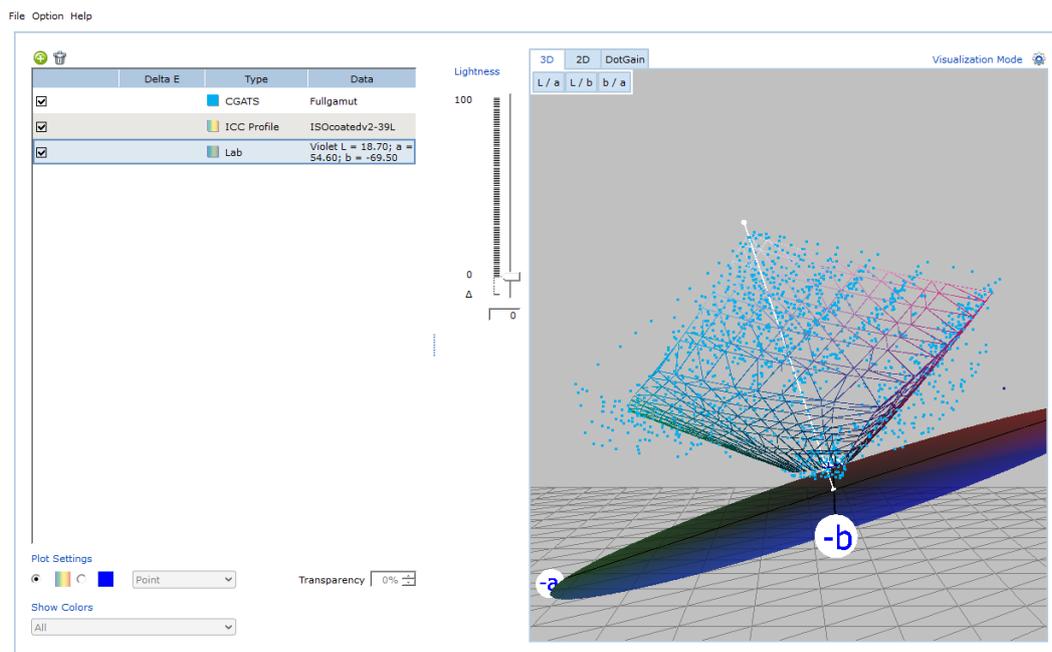


Fig. 7 In the screenshot, the reference color space ISO Coated v2 (39L) is depicted as colored lines. The printer color space is plotted as blue dots. A violet spot color is also shown on the right side. As you can see, the printer color space is larger than the reference color space. So we should not expect any problems when printing CMYK data. The violet spot color is clearly out of gamut. If this color is printed, there will be a visible difference between the intended color and the printed color.

Color Management

In this step, the most important choice you will need to make is the **Input Color Space**. This is the **reference color space** for your print jobs. If a job was already printed on a different machine, for example, on an offset press, or if there is a reference hardcopy proof, the print standard that was used with this offset press or that was simulated in the proof will now be the reference for your digital press. A GMG OpenColor project will need to be present for the described reference space in order to use it as the **Input Color Space** for your GMG SmartProfiler process. The **input documents** should be in this color space and have a matching output intent. RGB objects are directly converted to the printer color space, without normalization. You can choose from a couple of preinstalled input color spaces, for example, ISO Coated v2 (39L) - PANTONE® Solid Coated V4. All color spaces listed here are stored as **projects** in the GMG OpenColor database. In this tutorial, ISO Coated v2 (39L) is the input color space (see "Offset Print Sample" on page 14).

Select the **Separation Preset** that best fits the **purpose** of your printing process. For standard print production on a toner based device, select **Production. No Black** uses only CMY and might save toner on a toner based device with a click-based license. For inkjet systems, you can choose one of the **EcoSave** options to reduce the ink usage and save costs.

All other settings are advanced settings and you don't need to worry about them right now. You can come back to them later if you have any problems with the print results.

What if I cannot find the right input color space on the list?

If you cannot find the right color space or if you are using a custom standard, you will need to create a **characterization** and a corresponding **input project** in GMG OpenColor first.

The input project needs to define CMYK and all spot colors you might encounter in the input documents. GMG OpenColor will calculate **Separation Rules**, which are basically a lookup table of **input colors** (spot colors) from the document and define how the input colors should be separated into the **output inks** of the digital press. These **Separation Rules** will be sent to GMG ColorServer and be stored as a spot color library under **Resources > Spot Colors**. GMG ColorServer uses it when processing jobs from the hotfolder that will be created by GMG SmartProfiler.

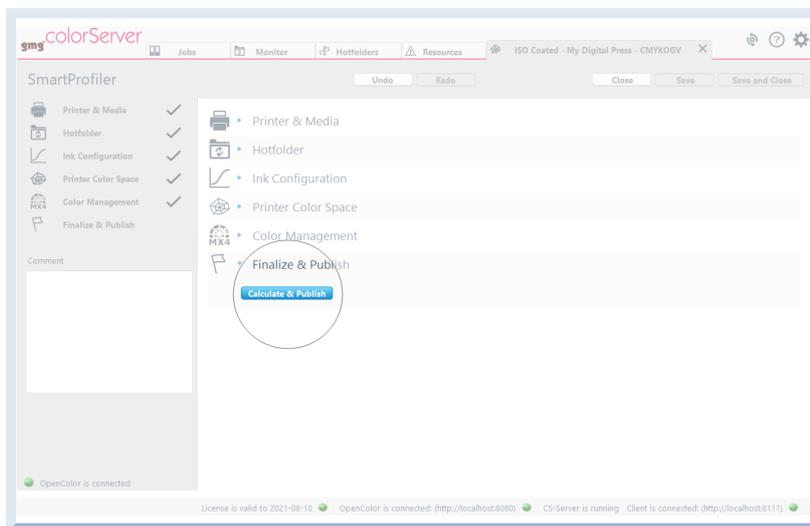
Please refer to the GMG OpenColor user manual for more information:

<https://gmgcolor.com/support/help/opencolor/tutorials.htm>

Finalize & Publish

You are almost done now. GMG SmartProfiler has all the information it needs to profile your press. Just click the **Calculate & Publish** button.

GMG SmartProfiler will process the information and send it to GMG OpenColor. GMG OpenColor will calculate all required profiles and send them back to GMG ColorServer. Also, GMG SmartProfiler creates a hotfolder that uses all those profiles. All this is done fully automatically by the applications. This process usually takes several minutes and the client is locked during this time.



GMG SmartProfiler will show you a list of all created resources. All resources will be named after the name of the GMG SmartProfiler document. Please follow the links for detailed information on the resources and what you will need them for:

- "Resources Created in GMG ColorServer" on page 26
- "Resources Created in GMG OpenColor" on page 27

10. Print Your First Job

GMG SmartProfiler creates a hotfolder which will be immediately available for automated job processing. Following the **Finalize & Publish** step, simply copy PDFs into the newly generated **Input Folder**, and the files will be automatically optimized for your digital press!

Fig. 8

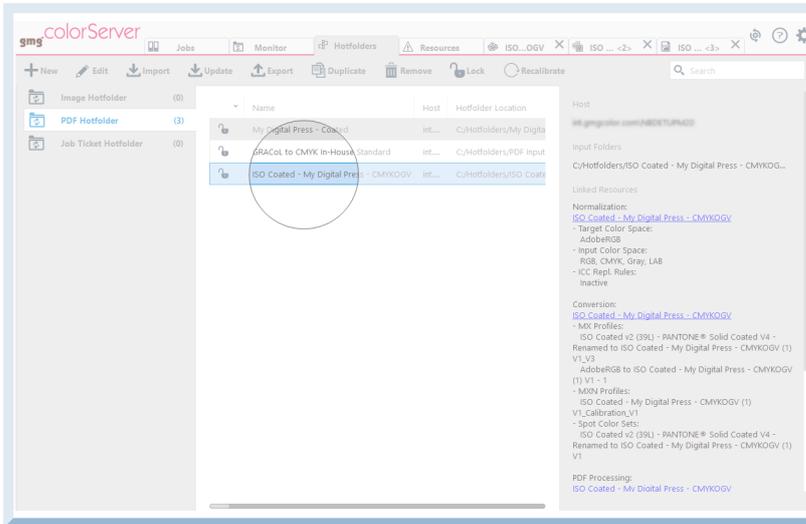
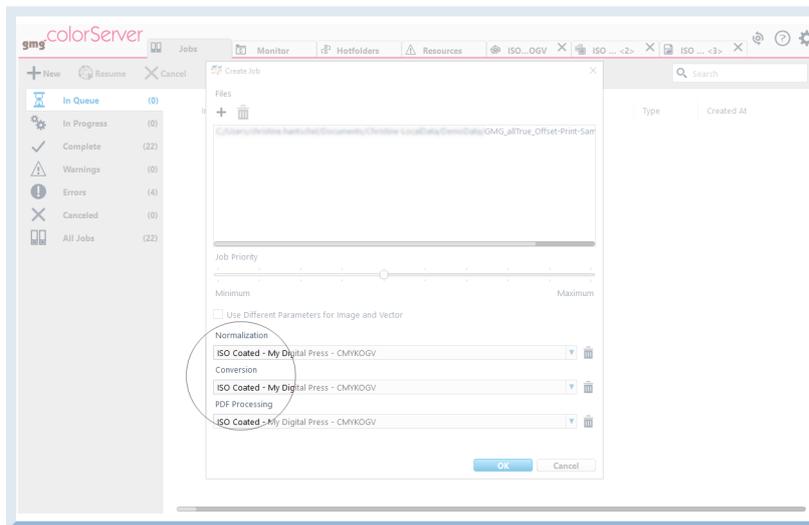


Fig. 9 Hotfolder created by GMG SmartProfiler. The info pane on the right side displays information about the input folder and all linked resources.

Create a manual job

On the **Jobs** page, click **New** to create a manual job. Select the **Normalization**, **Conversion**, and **PDF Processing** templates created by GMG SmartProfiler (see "Resources Created in GMG ColorServer" on page 26)



10.0.1 Recalibrate the Press

As varying environment conditions such as temperature and humidity cause undesired printer deviations, for **digital printing**, we recommend calibrating your digital presses on a regular basis. A recalibration ensures that the printer will print within the tolerances defined by the print standard.

A recalibration means printing and measuring test charts, and then evaluating the results and adjusting the printer calibration file. This cycle is repeated until the results are satisfying. The aim is to match the target values as closely as possible, within the tolerances defined in the **Quality Criteria**.

You can repeat the cycle until the values are either within the defined tolerances or until you decide to end the cycle by accepting the results.

Start the recalibration

1. In GMG ColorServer, go to the **Resources** tabbed page > **SmartProfiler**, and select the printer-medium combination you want to recalibrate.
2. Click the **Recalibrate** button.
GMG SmartProfiler opens a new tabbed page.
3. Click the **Optimize** button to start the recalibration cycle.
GMG SmartProfiler will switch to **Measurement: Calibration** inside the same tabbed page.
4. Proceed with printing and measuring (see "Printing and Measuring Test Charts") and evaluate your results.
5. If you are not satisfied with the results, click the **Optimize** button to start the next cycle of printing and measuring.
6. When you are satisfied with the results, click the **Publish** button to accept the results.
The profile under **Resources > MX profiles** will be updated. That update carries through to the hot-folder using this printer calibration.

Quality criteria

The defined **Quality Criteria** need to be reached for a successful printer calibration. Use higher values if you want to speed up the calibration process (fewer steps), but be aware that this may sacrifice color accuracy.

Delta E is the distance between output and target color. The higher Delta E, the stronger is the deviation from the target color.

Delta L refers to the luminescence, that is, to the Black (K) channel. The higher Delta L, the stronger is the deviation of the luminescence from the target color.

Calibration results

You can find the results of your last optimization cycle in the **Last Results** overview. The results of the ongoing recalibration are listed under **Current Calibration**.

You can import or export the calibration data by clicking the corresponding button. To gain more detailed information about your calibration you can view the calibration data in GMG GamutViewer.

Clicking the **Show details** button next to a cycle brings up a table with all measured and target values for all patches. This can give you a hint on where to look for the problem if the printer cannot be calibrated. For example, if the highest delta E values appear correlated to a specific color channel (sort columns by delta E and view input ink builds), you might need to replace the ink or clean the print heads. If the paper tint values (0, 0, 0, 0) are out of tolerances, you may have loaded the wrong media type into the printer.

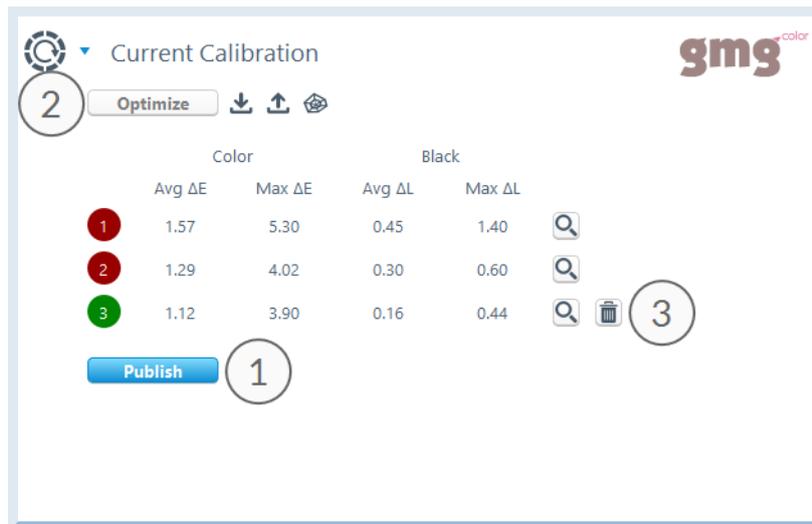


Fig. 10 Results of the current calibration.

Each calibration cycle of printing and measuring is shown as a row in a table. A status lamp shows whether or not the **Quality Criteria** have been fulfilled—in the screen shot, the defined tolerances are met after running 3 cycles.

Optimizing the results

If the quality criteria have not been reached, this will be indicated by a red status lamp. You can click the **Optimize** button (2) to further optimize the print results: The test chart will be printed again with adjusted output values and measured.

You can click the **Remove last optimization cycle** button (3) to delete the last optimization cycle, for example, if you have accidentally inserted the wrong test chart.

Accepting the results

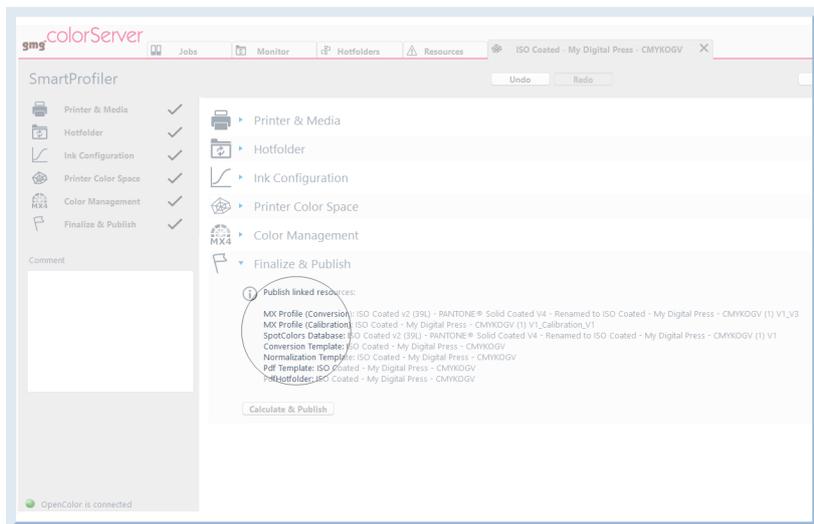
When you are satisfied with the calibration results, you can click the **Publish** button (1) to accept the results. The status lamp will show green if the **Quality Criteria** have been fulfilled.

The calibration file under **Resources > MX profiles** will be updated. That update carries through to the hot-folder using this printer calibration.

11. Resources Created in GMG ColorServer

The hotfolder created by GMG SmartProfiler uses resources such as color profiles and a spot color library for the color management. These resources are separate from the hotfolder and can also be used for other purposes, for example, for manual jobs or in other hotfolders. You can find them on the **Resources** tabbed page.

In the **Finalize & Publish** step, GMG SmartProfiler shows you a list of all resources that have been added or changed. All resources are named after the GMG SmartProfiler document.



Published resources overview

<i>Where to find in GMG ColorServer</i>	<i>Where to find in GMG OpenColor</i>	<i>Purpose</i>
MX Profiles	Output project > Separation > Profiles	Printer calibration file, required for recalibration Profile for the separation of AdobeRGB Profile for the separation of CMYK
Spot Colors	Output project > Separation > Separation Rules	Spot color library
Conversion		Conversion template. Defines, which color profiles and spot color library will be used.
Normalization		Normalization template. Normalizes RGB and Lab objects.
PDF Processing		PDF processing template. Defines flattening and image processing settings.

Color profiles and the spot color library are created by the profiling client GMG OpenColor, You cannot edit them in GMG ColorServer but if needed, you can edit them in GMG OpenColor (see "Resources Created in GMG OpenColor" on page 27).

12. Resources Created in GMG OpenColor

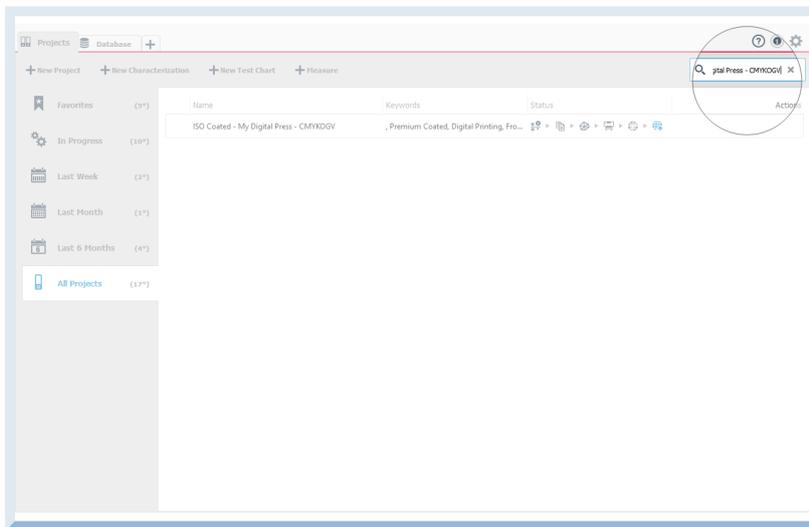
As the profiling client running in the background, GMG OpenColor generated the resources required to profile your press, such as separation profiles and a printer calibration file, and sent them to the central server during the profiling process. GMG OpenColor also calculated a spot color library specifically for the printer-medium combination. All these resources were added to the GMG OpenColor database.

Each of these GMG OpenColor resources has a matching resource in the **Resources** library in GMG ColorServer, which will be used for PDF and image processing, both manual and automated (hotfolder). These matching pairs will be synchronized automatically in the background. If you edit one of them in GMG OpenColor, your changes will almost immediately show up in GMG ColorServer.

In most cases, you won't need to worry about the GMG OpenColor right away. You might want to edit or use them later as explained below. For example, you will need to edit them if an input document has other spot colors that are not in the linked spot color library.

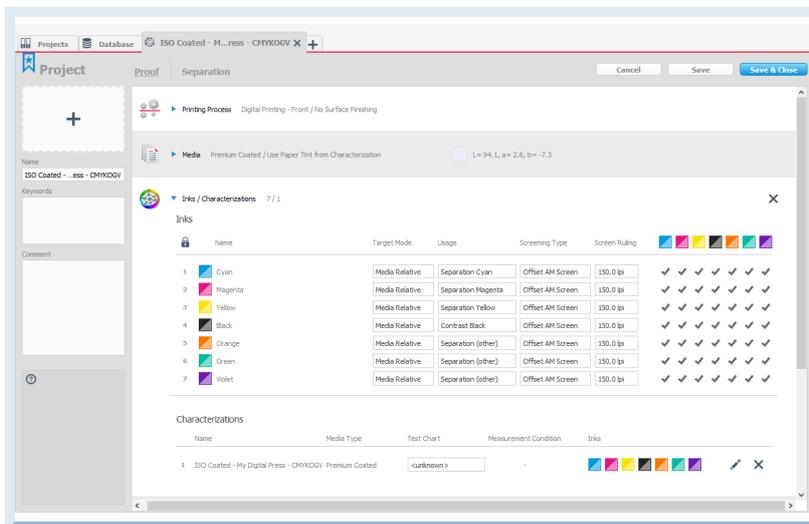
Find the project in GMG OpenColor

In GMG OpenColor, enter the name of the GMG SmartProfiler document into the search bar to quickly find the created project.

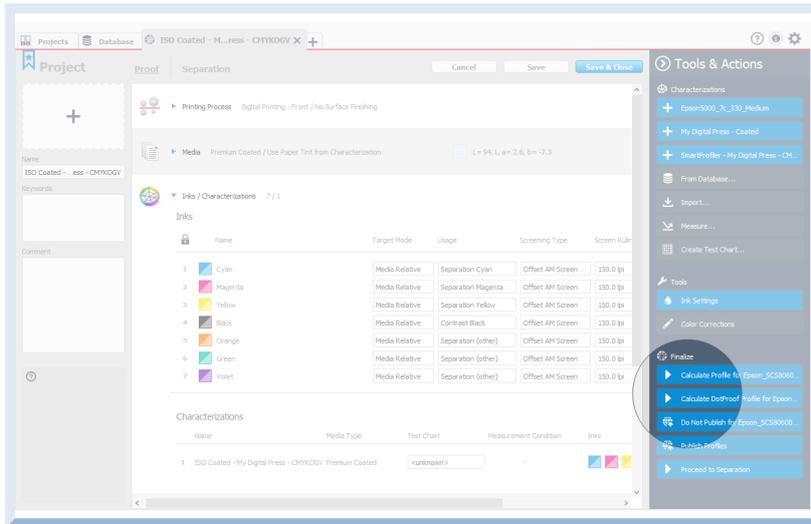


Output color space and characterization

This project defines the output color space, i.e. the **printer color space**. Under **Inks / Characterizations**, you will find the **output inks** and the **characterization** for this specific printer-medium combination.



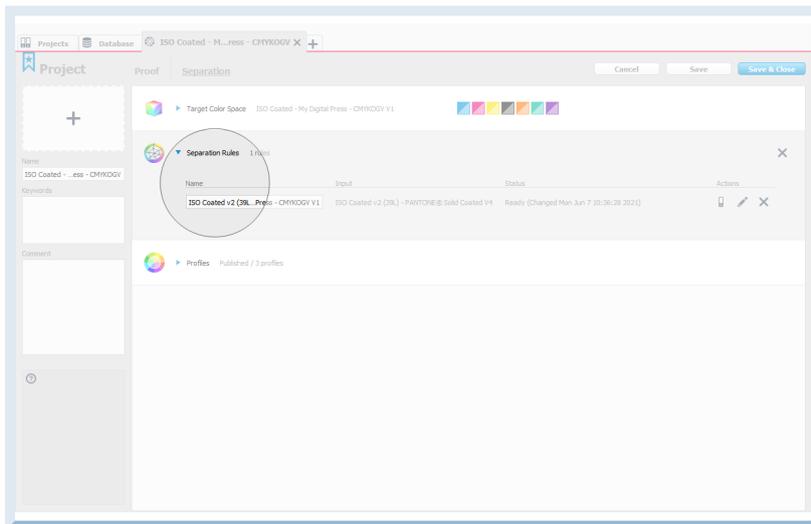
Calculate a proof profile



From the **Tools & Actions** pane on the right side, you can calculate a proof profile.

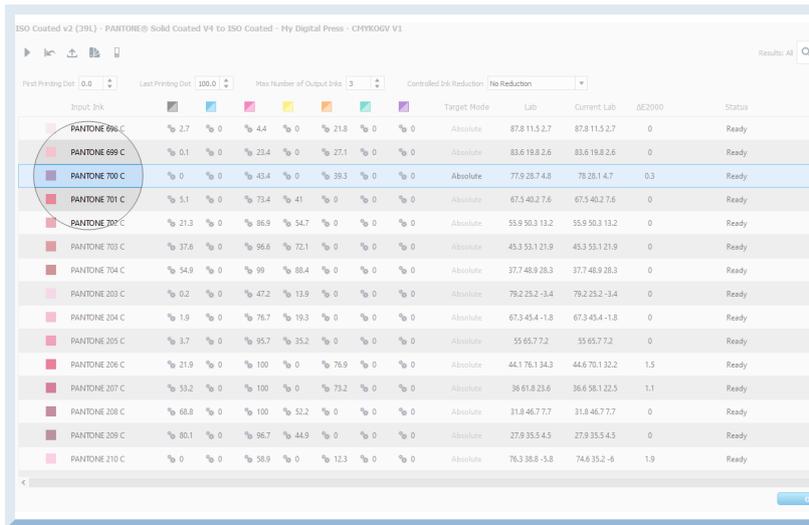
Spot color library

On the **Separation** tabbed page, you will find the **Separation Rules**, from which the spot color library used by the hotfolder in GMG ColorServer is derived.



You can click the **Edit** button to show the color definitions. Here, you can create **ink variants** or **edit** the values if you need to.

12. Resources Created in GMG OpenColor



Input Ink	CMYK	Target Mode	Lab	Current Lab	ΔE2000	Status
PANTONE 696 C	2.7 0 0 0	Absolute	87.8 11.5 2.7	87.8 11.5 2.7	0	Ready
PANTONE 699 C	0.1 0 0 23.4	Absolute	83.6 19.8 2.6	83.6 19.8 2.6	0	Ready
PANTONE 700 C	0 0 43.4 0	Absolute	77.9 28.7 4.8	78.281 4.7	0.3	Ready
PANTONE 701 C	5.1 0 0 73.4	Absolute	67.5 40.2 7.6	67.5 40.2 7.6	0	Ready
PANTONE 702 C	21.3 0 0 86.9	Absolute	55.9 50.3 13.2	55.9 50.3 13.2	0	Ready
PANTONE 703 C	37.6 0 0 96.6	Absolute	45.3 53.1 21.9	45.3 53.1 21.9	0	Ready
PANTONE 704 C	54.9 0 0 99	Absolute	37.7 48.9 28.3	37.7 48.9 28.3	0	Ready
PANTONE 203 C	0.2 0 0 47.2	Absolute	79.2 25.2 -3.4	79.2 25.2 -3.4	0	Ready
PANTONE 204 C	1.9 0 0 76.7	Absolute	67.3 45.4 -1.8	67.3 45.4 -1.8	0	Ready
PANTONE 205 C	3.7 0 0 95.7	Absolute	55 65.7 7.2	55 65.7 7.2	0	Ready
PANTONE 206 C	21.9 0 0 100	Absolute	44.1 76.1 34.3	44.6 70.1 32.2	1.5	Ready
PANTONE 207 C	53.2 0 0 100	Absolute	36 61.8 23.6	36.6 58.1 22.5	1.1	Ready
PANTONE 208 C	68.8 0 0 100	Absolute	31.8 46.7 7.7	31.8 46.7 7.7	0	Ready
PANTONE 209 C	80.1 0 0 96.7	Absolute	27.9 35.5 4.5	27.9 35.5 4.5	0	Ready
PANTONE 210 C	0 0 0 58.9	Absolute	76.3 38.8 -5.8	74.6 35.2 -6	1.9	Ready

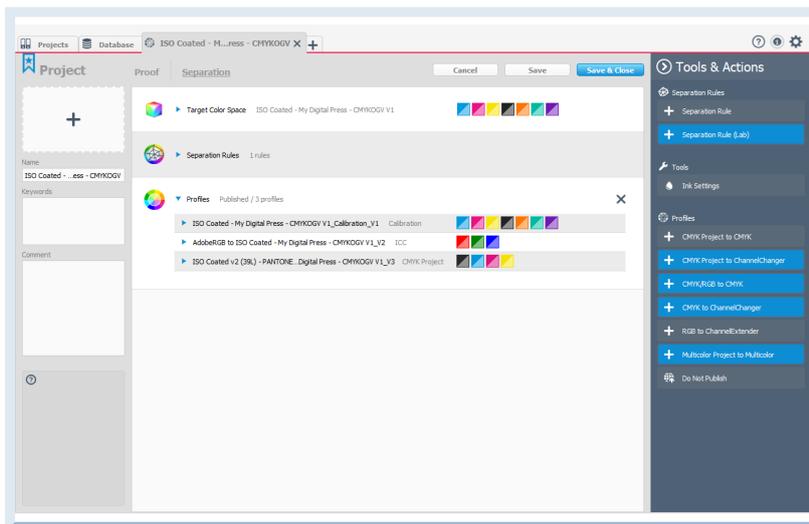
Fig. 11 You see one of the spot colors from the input document, PANTONE 700 C. Its reproduction using Magenta and Orange shows a predicted delta E of 0.3 and will thus be very close to the original color.

If you want to add **new** colors, you will need to go the project describing the **input color space**, which is ISO Coated v2 (39L) - PANTONE® Solid Coated V4 in this tutorial, and add them under **Inks / Characterizations**. You can switch to the input project by clicking the **Save rule and switch to input project** button on the toolbar. After you added new colors, you will need to recalculate the **Separation Rules** or add a new set of **Separation Rules**.

Separation profiles

On the **Separation** tabbed page, under **Profiles**, you will find the devicelink separation profiles:

- ▶ **Printer calibration file:** It keeps the printer in a calibrated state, to provide reproducible print results. It will be updated by GMG SmartProfiler when you recalibrate the printer.
- ▶ Profile for the separation of **Adobe RGB** to the **output color space** (CMYKOGV)
- ▶ Profile for the separation of the **CMYK input color space** (ISO Coated v2 (39L)) to the **output color space** (CMYKOGV)



From the **Tools & Actions** pane on the right side, you can **calculate additional profiles**, for example, if you need a further RGB input color space. If you do so, you will need to import the new profiles into GMG ColorServer.