

Alwan ColorHub V5-

1. Optimization Tutorial

Purpose

This Solution Tutorial will lead the participant through the configuration of an Alwan ColorHub queue which will “optimize” the file by replacing unnecessary CMY with Black without changing the visual appearance. By replacing excess CMY with Black, the file will exhibit faster make ready times, more stability on press, faster drying, and less ink usage. Be sure to provide your press operators with the “How To Operate the Press with Optimized files” to help the operator understand the differences in optimized files.

Benefits

The benefits of this queue are different for different audiences. See the chart below:

- Sheet Fed Printing- Make Ready, Stability, Drying time, Better match to proof, Large volume or UV Ink- Ink Savings
- Web Press- Ink Savings, Make Ready, Stability, Drying time, TAC limits, Better match to proof
- Screen Press- Ink Savings, Make Ready, Stability, Drying time, TAC limits, Better match to proof
- Flexography Press- Ink Savings, Make Ready, Stability, Drying time, TAC limits, Better match to proof
- Digital Press (Non Click Charge)- Ink Saving, TAC, Better Match, more Stability, Color Normalization, Spot conversions
- Digital Press (Click Charge)- more Stability, TAC, Better Match, Spot conversions
- Large Format- Ink Savings, color normalization, spot color conversion

* On benefits covered in different tutorials

Goal

This tutorial will walk the user through creating a new queue which will be used to minimize drying time, minimize make ready time and Reduce TAC (Total Area Coverage) to an acceptable range, and reduce amount of ink required to produce the file with an improvement to quality. This Queue will be built based on the GRACoL2006 M0 profile as the printing aim, this printing aim is suggested for Printing on #1 or #2 substrate for commercial printing. This profile can easily be exchanged for another profile if GRACoL is not relevant to your Printing Aim. See the associated white paper regarding Printing Aims for more information. If you do not know your printing aim, please see the white paper labeled “Determining Your Printing Aim Condition.”

Launch Alwan ColorHub

Enter the activation code if necessary to run ColorHub in Trial Mode (no loss of functionality)

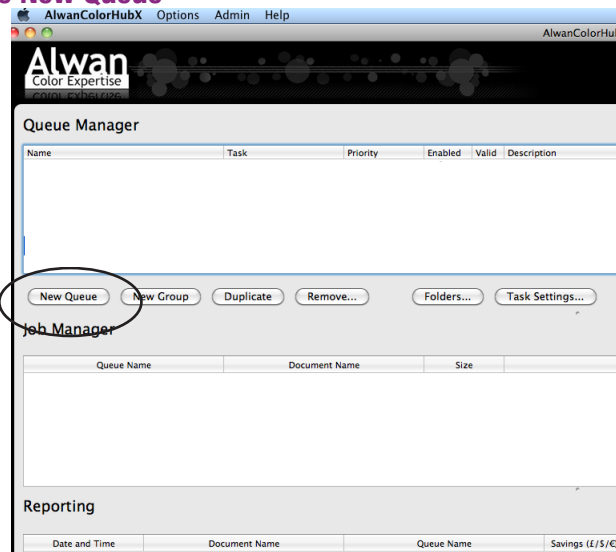
Go to Admin pull down menu

Choose “Enter Demo License”

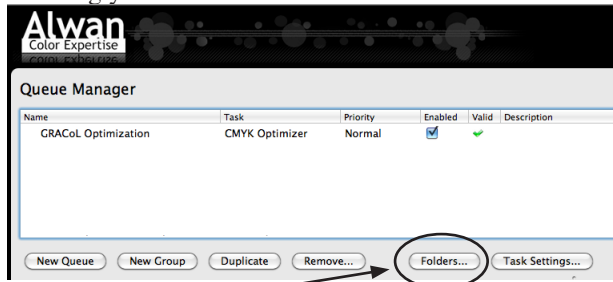
Copy and paste license code into this dialog. License codes are date stamped, they are only good for a short period of time 1-4 weeks.

And the code only works for a maximum of 60 days once the software is activated, only activate when you know that you will have time to test.

Click on “Create New Queue”



Double click on the name in the Queue window and rename it to GRACoL Optimization (assuming your Printing Aim is GRACoL, if not substitute accordingly).



Next Click on the button called “Folders,” for testing purposes make a folder on Desktop called GRACoL Input, and choose to include all other folders inside your main input folder. You can always change the folder structure later to accommodate your workflow.

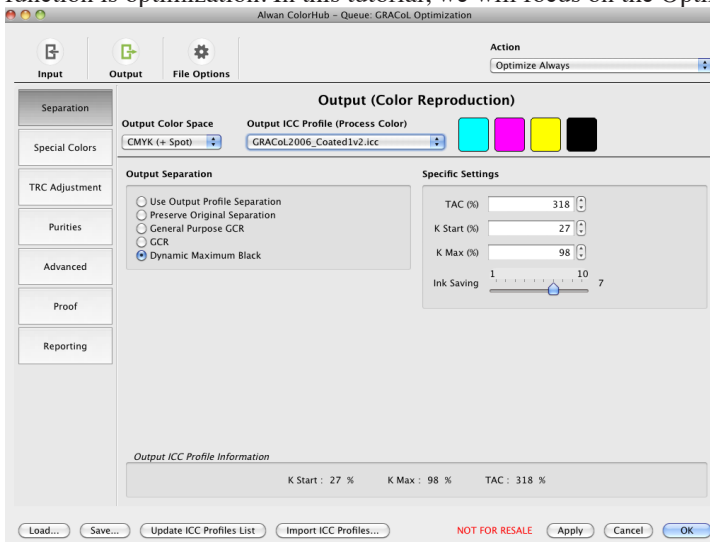
Click the check box next to the Original Folder, this will automatically make a copy of your file, so you do not need to worry about overwriting original file while testing.

Load Preset Task Setting for GRACoL Optimization

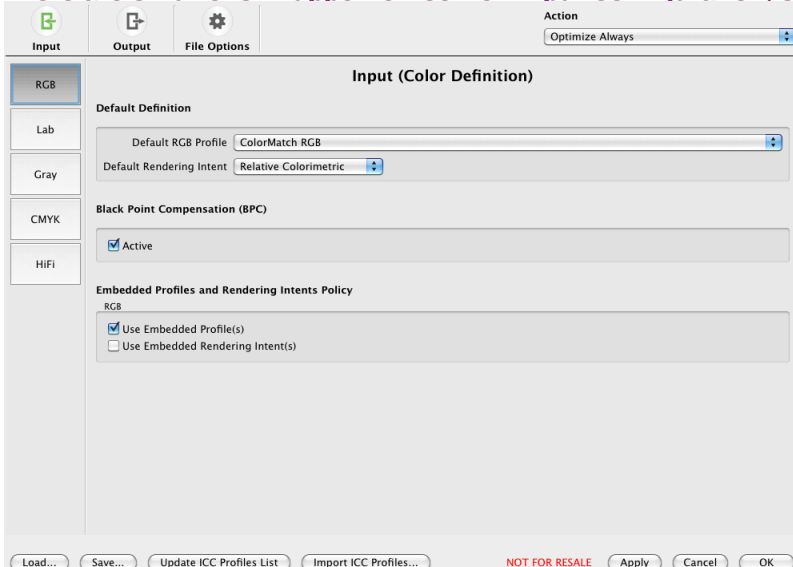
Click on Task Settings, and go to bottom of screen and click on “Load Settings,” and import setting called GRACoL Optimization. You are finished, to customize the setting, please read on to refine any of the parameters.

Click on “Task Settings” button-

This opens the heart of the ColorHub Interface. ColorHub performs two main functions, first Color Conversion and the second function is optimization. In this tutorial, we will focus on the Optimization of ColorHub settings.



There are 3 Buttons in upper left corner: Input Configuration, Output Configuration and File Options



Input Configuration -RGB

Provides for options for handling RGB objects within a PDF File, if an element within the PDF is in RGB Color space you can honor the embedded profile/rendering intent (recommended) and ensure BPC is Active (recommended) and choose what profile to assign objects with no embedded profiles.

Input Configuration -Lab

Provides for options for handling Lab objects within a PDF File, if an element within the PDF is in Lab Color space you can honor the embedded profile/rendering intent (recommended) and ensure BPC is Active (recommended) and choose what profile to assign objects with no embedded profiles.

Input Configuration -Gray

Provides for options for handling Gray objects within a PDF File, if an element within the PDF is in Gray Color space you Process as K only (recommended) OR you can honor the embedded profile/rendering intent (recommended) and ensure BPC is Active (recommended) and choose what profile to assign objects with no embedded profiles.

Input Configuration -CMYK

Provides for options for handling CMYK Objects within a PDF File, if an element within the PDF is in CMYK Color space you can honor the embedded profile/rendering intent (recommended) and ensure BPC is Active (recommended) and choose what profile to assign objects with no embedded profiles. If you are printing to a GRACoL color space, choose GRACoL as the Default CMYK Profile.

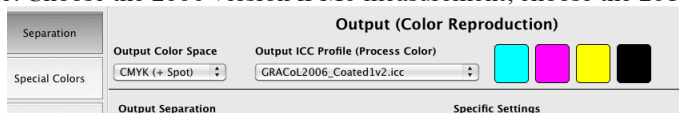
Input Configuration -Hi Fi

Provides for options for handling Hi Fi Objects within a PDF File, if an element within the PDF is in Hi Fi Color space you can honor the embedded profile/rendering intent (recommended) and ensure BPC is Active (recommended) and choose what profile to assign objects with no embedded profiles.

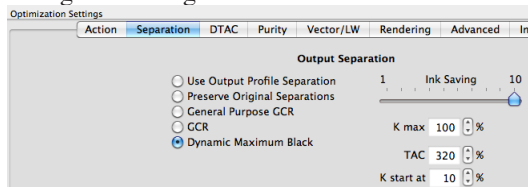
Output Section

Click on the Separation Tab

This tab determines the color build of the processed files. You can choose what color space you are outputting to, RGB, Lab, Gray, CMYK, Hi Fi. Ideally this output profile represents the actual output condition of the device. If you do not have a profile of your device, then choose a profile that represents how your device is calibrated, ie G7 methodology on coated stock refers to GRACoL profile. Choose the 2006 version if M0 measurement, choose the 2013 version if M1 measurements.

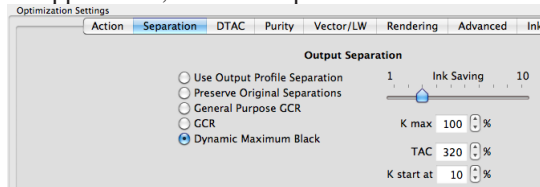


Next, define the “Output Separation” mode. For maximum Optimization choose “Dynamic Maximum Black.” If the output device always printed as the profile definition, then you would always use “Level 10,” because you would *not* see any visual difference in the result of these numeric settings. But output devices do not always print as expected (dependent on level of process control), so customizing this setting can create a file which is much more forgiving in a print environment with a lot of variation.



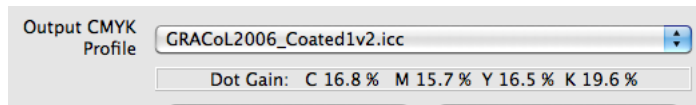
Confident in Printing to a “Known, Predefined (ICC Profiled), Traceable Condition” (Same as Output Profile)

If you are printing to a known, and completely controlled device (i.e.- Using Alwan Print Standardizer to ensure every print is matching the printing aim, then choose “Dynamic Max Black” and move the slider to the right and maximize at 10. This will provide the most efficient file which will use the least amount of ink and not change the visual appearance, which will provide faster make ready, faster drying, more stability and significantly less ink.



Fairly Confident that you are Printing to a Known condition (ICC Profiled)

If you think you are printing to a known condition, I recommend that you run through the “Qualifying Your Print Process” Tutorial to determine how well your device is hitting the targeted printing aim. Minimally make sure that your Black TVI (Dot Gain) of this device is +/-5% of the selected output profile (You can see what the output Profiles Black TVI is by looking at the rounded corner box at bottom of dialog box. Example 14.6% to 24.6%)

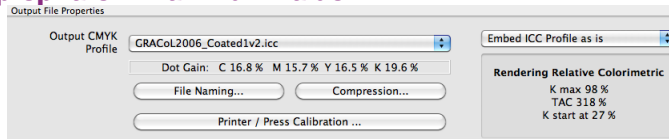


If your device has excessive Black dot gain, the separation will not look pleasing due to more black being utilized in the build of the graphic. In the mean time, choose Dynamic Maximum Black and slide the slider to the 3rd (out of 10) position. You can experiment from 1-5 to experience the different levels of aggressiveness of the Black replacement of CMY. You can choose the GCR Radial Button to back off the aggressiveness of the Black channel more if you want to, but a vast majority of our users run using Dynamic Max Black on all files with great success.

Not Confident in the output devices color condition-

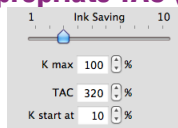
Use the “Qualifying Your Print Process” Tutorial to determine the condition before you attempt to us ColorHub to Optimize the file.

Choose the appropriate K Maximum value-



You can see what the “built in” K Maximum is in the profile by reading the data in the square in the bottom right section of the “output settings.” Many times though, the person building the profile did not know what to put here, so the value may be wrong. You can verify if you have a printed ramp of Black, use a Spectrophotometer or Densitometer to measure the 100% Black first, then the next lowest tint, and continue until you are at the 90% tint. Determine the lowest value L* or the highest Density and correlate to the Tint actual tint percentage of that patch. This represents the darkest black and should be entered in the K Maximum value.

Choose the appropriate TAC (Total Area Coverage) value-



This represents the maximum amount of ink covers by the process inks being used, in four color process, the maximum TAC is 400 (100 Cyan+100 Magenta +100 Yellow+ 100 Black). Often, a device cannot print 400 total ink without problems, a digital press will cause the ink to “pick” and it can flake off the page, a conventional press can cause “set off” issues which case the ink to transfer the previous page causing smearing and bad quality. A web press with too much TAC can cause web breaks, were the paper is weakened and physically tears apart causing the press to immediately stop and creating downtime while the operators fix the issue. ColorHub can change the TAC value to an appropriate value for your process.

See the suggested list below:

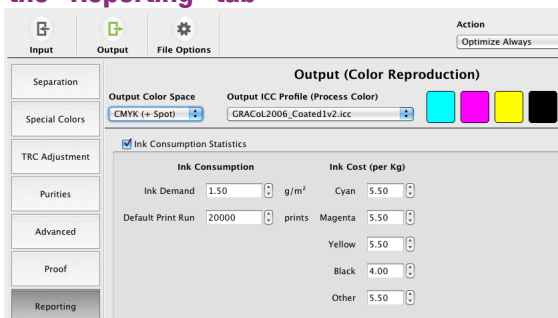
- Coldset= 240
- Heatset= 270
- Uncoated= 290
- SuperCalendered= 290
- Large Format device- dependent on substrate
- Swop #5= 300
- GRACoL #1-2 Paper= 320
- Digital Press- Indigo= 290
- Igen Press= 290

Choose the Black Start

This choice determines at what point black is allowed to enter into a color build. Some output devices have a very course black dot, and when applied in highlights or 1/4 tone area (light areas of an image) this can cause the file to appear as if pepper has been spilled on the image, and can cause images of men and women to appear that they have razor stubble on their skin tones, face, arms and legs. Using a higher black start will help eliminate this condition on images. If you do not care about the quality of skin tone reproduction, you can run a lower black start. Some print processes are worse then others in this regard. Web presses generally have this issue, therefore, a queue for a Web press should have a black start from 30-40. Some large format technologies with only one black ink also can exhibit this condition and should be run with a higher black start (30-50) .

Skip Special Colors, TRC Adjustment, Purities, Advanced and Proof tabs- leave as default, reference ACH Normalize for more info.

Choose the “Reporting” tab



Click on the Check box to turn on ink consumption statistics. This will slow the program down slightly, but will provide great information related to amount of ink saved and dollar amounts if filled out appropriately. Once the program has proven its worth, you can turn off this setting to speed up throughput.

Determine amount of Ink Demand based on the substrate and process in use. This value is based on Grams per Square Meter (g/m^2) which represents how much ink coverage is typical in one square meter. Obviously a page with only text on coated paper will have a small value, but a newsprint page with a lot of images will have a very high number. If you do not know your typical ink coverage, you can be conservative and choose a lower number, and know that the results will exceed your expectations.

Here are some suggestions:

- | | |
|--|---|
| Printing on Coated Paper- 25% coverage of images= 1.3 | Printing on Uncoated Paper- 25% coverage of images= 2.5 |
| Printing on Coated Paper- 50% coverage of images= 1.5 | Printing on Uncoated Paper- 50% coverage of images= 3 |
| Printing on Coated Paper- 90% coverage of images= 1.7 | Printing on Uncoated Paper- 90% coverage of images= 3.4 |
| Printing on Newsprint paper- 25% coverage of images= 4 | Printing on Matte Paper- 25% coverage of images= 1.7 |
| Printing on Newsprint Paper- 50% coverage of images= 5 | Printing on Matte Paper- 50% coverage of images= 2 |
| Printing on Newsprint Paper- 90% coverage of images= 6 | Printing on Matte Paper- 90% coverage of images= 2.3 |

Enter the average or normal run length for jobs in the queue

Perform a dollar/pound conversion to dollar/kilogram to enter in CMYK fields, $1 \text{ kg} = 2.2 \text{ lbs}$; so if you have a price of $\$3/\text{pound} = 3 * 2.2 = \$6.6/\text{kg}$

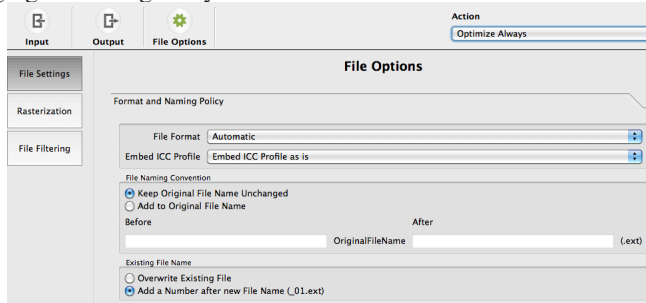
In the reporting section of the main ColorHub menu you will see a column called % Gain- which means the percentage of ink saved on that PDF, and you will see a “Dollar Savings” which will calculate the cost savings due to the reduction in CMY ink plus the increase of the Black ink to provide a total savings number.

Reporting From 1/5/14 To 5/13/14 < Today >


Date and Time	Document Name	Queue Name	Savings (E/\$/€)	Gain (%)	PrintRun (nbr)	Status
4/14/14 3:25 PM	MNDHS_17x22FH.Alone.pdf	GRACoL Optimization	59.08	54.7	20000	Success
4/14/14 3:12 PM	84x67_NE_E85Omaha_Bbk.pdf	GRACoL Optimization	56.30	11.4	20000	Success

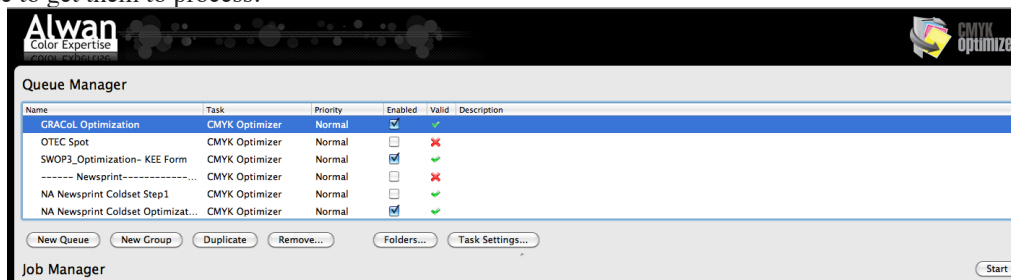
Click “File Options” on top of Dialog box

Default Naming convention is to put an _01 on the end of the file. This allows you the ability to process the same file multiple times, changing the setting every time and the software will add 1 to the counter every time (_02, _03 etc) so you can track the results easily.



Click OK to exit the Task Settings Dialog.

Make sure you have a green check mark  next to your queue showing you that it is valid, then click on the ON button on the far right side of the Job manager to start processing files that go into the job folder. You can also drag and drop PDFs on to the Queue to get them to process.



Evaluate the Results:

After a file has been processed, Alwan ColorHub will show you the Ink savings statistics in the Report section of the main interface. If the “Gain %” value is close to 0, the file probably has transparencies in the file and cannot be Optimized without allowing Alwan to flatten the file. If this is the case, please refer to the PDF Flattening tutorial.

Also, Please open the Report Folder (inside the Input folder that you configures for your queue. You will find a PDF and Text report of what Alwan did to the file. This is great to trace what is happening your files.