

Xeikon Color Services



XeikonColorControl - XCC & X-800

Practical Color Management - Digital Production.

Basic User Manual, CMYK, RGB, and Spot.



XeikonColorControl - XCC

Practical Color Management - Digital Production.



Xeikon is an innovator in digital printing technology. The company designs, develops and delivers web-fed digital color presses for labels and packaging applications, document printing, as well as commercial printing. These presses utilize LED-array-based dry toner electrophotography, open workflow software and application-specific toners. The toners include wide gamut CMYK, extended gamut fifth colors, spot colors and special-purpose security materials.

All the Xeikon solutions are designed with the over arching principles of profitability, quality, flexibility and sustainability in mind. With these guiding principles and a deep, intimate knowledge of its customers, Xeikon continues to be one of the industry's leading innovators of products and solutions.

For more information, visit www.xeikon.com

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Practical Color Management - Digital Production Color.

There are many manuals and internet resources explaining and discussing the theory around color & ICC color management. However what is often left out is the practical in field use of this technology.

The world of color management can be confusing, especially around its language, and what is the appropriate application.

This manual is designed and written for those entering this world. The concept of this document is therefore to drive you to success using your Xeikon Color Control solution, and embed some fundamental concepts.

Why Color Manage Print?

The ultimate answer has to be control. Lets remember print is a manufacturing process. The printed product has a value and part of that value is the color. To be able to A:) Know what you can manufacture and B:) reproduce this again and again, is not only a commercial benefit but a necessity, in many print applications.

This kind of controlled production allows printers to set a color expectation up front and deliver time and again.

Also many print companies have not just different media / paper, but different technologies some may be analogue some digital. Again it is of commercial advantage to control these devices and processes and have some form factory alignment on color.

These kind of scenarios can only be controlled by having a color management strategy.

An ICC World .

ICC Profiles are now used in creation of movies, are embedded in your smart phones, and pretty much appear where ever images do in our digital world. This document is about the correct use of icc technology in a Xeikon Production Print environment and because digital printing processes all follow the similar rules , it can also be used as a jumping off point when dealing with third party digital printing machines.

ICC Profile(s).

An ICC profile is a digital file. They are designed to communicate color. In digital print we find these files been used in 2 ways. 1st is intent, this is when a profile is used to express what we would like to see on the paper, eg I would like my Xeikon to print so that it looks like offset, this is a common request. These intents are often industry standards, allowing printers and print buyers to communicate what color they will print, by expressing this in terms of these intents. Eg: Please print to FOGRA39, or GraCol. The second type or use of a ICC profile in a digital print workflow is an OUTPUT profile. This is a file created by measuring output from your Xeikon. This is unique to the machine and stock and toner. The Job of this profile is to translate the color set by the intent to the unique condition of the Xeikon. This means CMYK and RGB are reproduced as near as possible to the intents set, and that Pantone and Brand Colours are 100% optimized for that condition.

Quote Fogra.

In the 2014 PSD (Process Standard Digital), the motto is "Printing the Expected."

(Download the PSD Handbook from the Fogra Web Site.)

Fundamentals. 1 .Color.

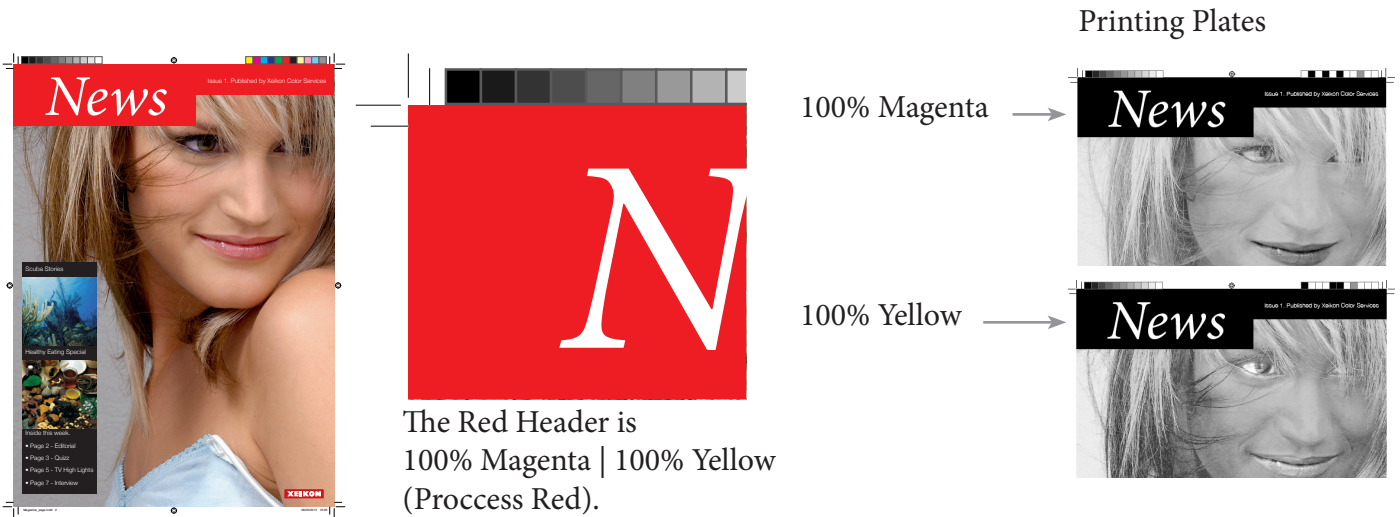
The human visual system reacts to light stimulus, and we perceive color. Colorimetry is “the science and technology used to quantify and describe physically the human color perception.”

To help understand this human experience, CIEXYZ or CIELAB color models are used.

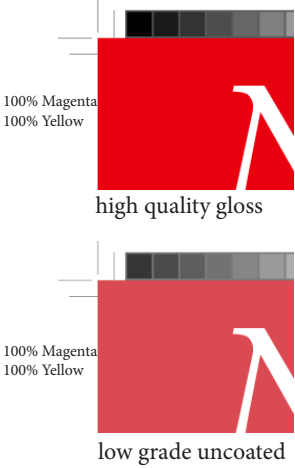
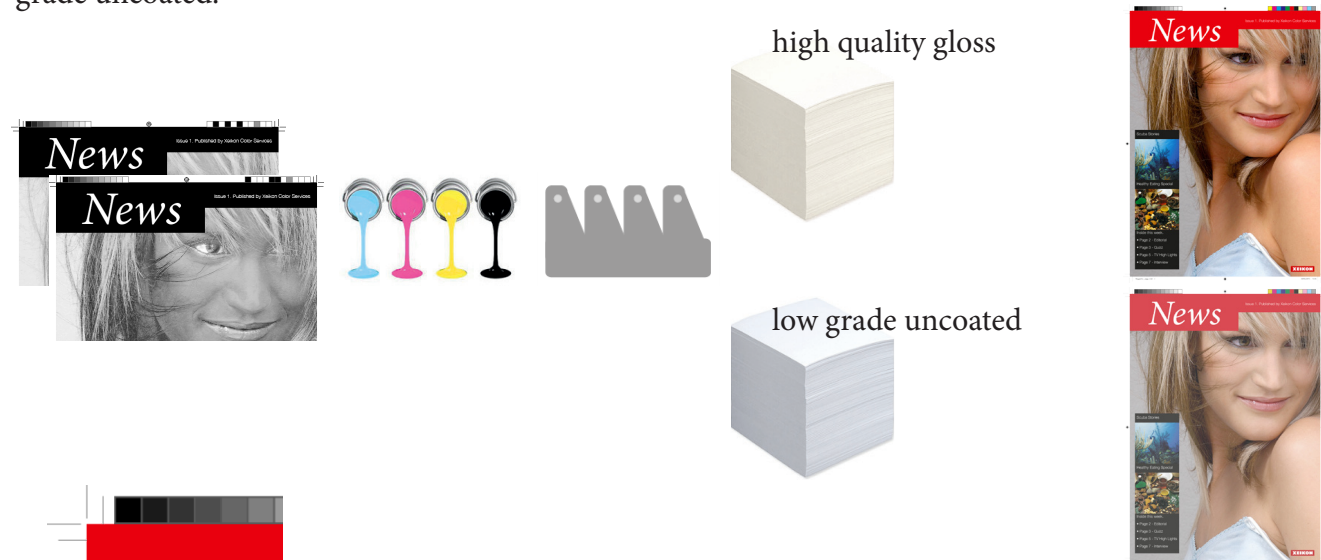
These models help us tame this very complicate subject by firstly working on the idea that color is finite, in that for every color we see (perceive), there is a single value.

Fundamentals. 2 .CMYK is not color.

In Print we have for years described color in terms of CMYK inks and percentages. But this does not help to communicate color. Here is a very simple example to help understand.



Print using the same plates, same ink, same press, use two types paper a high quality gloss coated and a low grade uncoated.



We perceive 2 very different colors.

Key Note 1.0

The lesson here is that CMYK does not discribe the color we see.

The color we perceive in print is a product of the “condition” it is manufactured in. In this example the paper change makes the change. But regardless of the variables, it is the color we finially see, that is of interest for color management.

Fundamentals. 3 .Each Color we see has a Value.

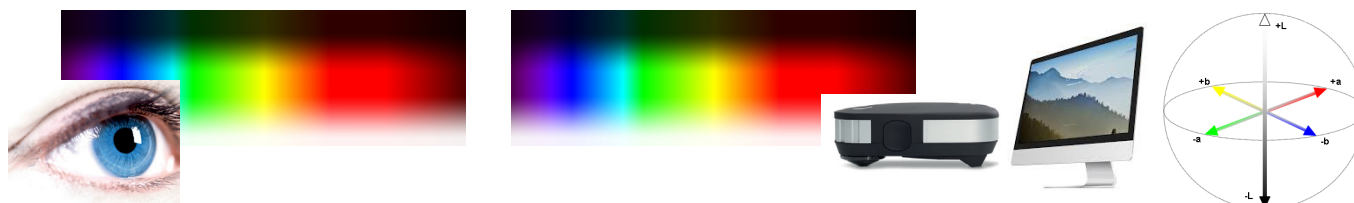
In the example 100 m + 100 y , results in two very different visual colors. So we can not communicate a color as a human perception using CMYK. The answer is found in the CIELAB colour model.

A spectrophotometer is a device for reading color. When a color is measured using a spectro, it reads a unique spectral response. You could equate this unique response to the way we see unique colors.

The unique spectral response is converted into a measurement system, know a CIELAB. In this “model” each color is given unique value. (A 3D coordinate). Colors modelled in CIELAB have a logical relationship with one another.



We perceive color as a human experience, using L A B color model, we can communicate that experience digitally



Key Note 2.0

Think of LAB as a universal color language. Humans use “models” all the time to express an desire.

Simple Example of a Model:-

You Order 1 meter of wood, from 2 suppliers. Within a tolerance, you’d expect the same length of wood. The meter is a model of length/distance, and you can check it with a ruler.

Now lets translate that to printing, You order your RED Logo to be LAB - L = 53 A = 57 B = 28, from several printing suppliers, you’d expect back, within tolerance a logo with perceived visual conformity.

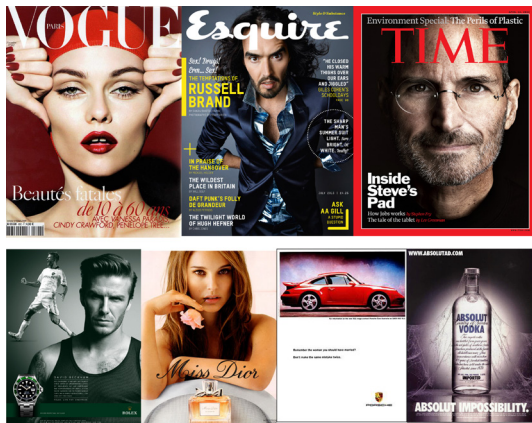
The lesson here is that by communicating in LAB you already know what to expect. You are in very basic language saying I want my print to look like L = 53 A = 57 B = 28.

And like the example of the 1 meter of wood, which you can check with a ruler, you can measure your print using your spectro, and if you have a sample of previous work, you can compare them.

“But we don’t print LAB !” - Don’t worry, digital printing is designed to allow expectations or LAB to be set, and within tolerance deliver them repeatable and predictable, and this is color management.

Fundamentals. 4 A Brief History of Visual Aims. - Offset.

Now putting digital print to one side for a moment, there was a time when traditional printers would deliver whatever colour they could, however in the 90's with an explosion of technology; Computer To Plate and electronic pages to name a few, and pressure from Brand owners to drive quality and consistency over their \$ Millions spent on print advertising, it became more important for printers to work towards standards of colour consistency and quality.



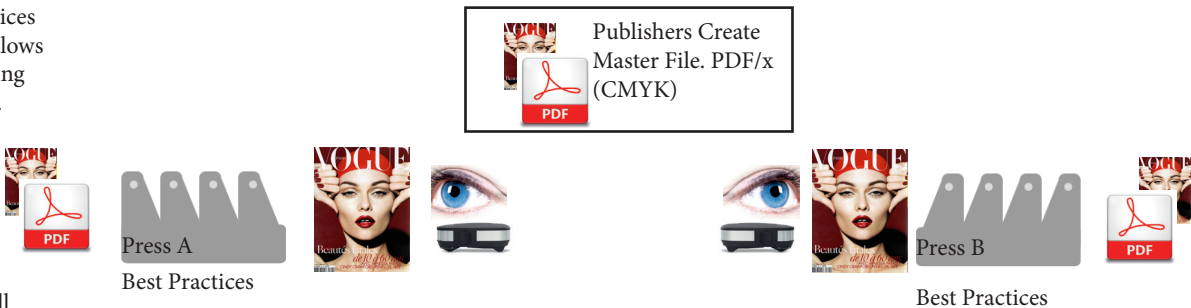
High Value Publications, become global.
Only Quality will drive the brand owners to spend their advertising budgets
Brands Demand Global consistency and highest quality.

Keeping this simple to follow, Industry Committees, developed “Best Manufacturing Practices”, when followed not only was the print high quality, it could be reproduced (in tolerance) by others following those same practices.

With the advent of CTP, the only way to see what the colour on press was going to be like was to load the plates and print. Off course this is nonsense due to the hugh expense. Digital Proofer were developed, using technology which would reproduce the same look as the offset printer, but it was produced directly from the electronic file.

For this to be made possible, the CMYK data in the electronic file was of little help, as discussed on page 6, the color we see is a product of the process. So we needed to know what LAB values we associated with the process. Again at an high level, work was done to give us visual AIMS associated with a process. Today we think think of these as GRACOL2006coated1V2, SWOP2006coated3V2, FOGRA39, in the X-800 RIP these are the Emulation Profile. = “What I want to see”

1. Best Practices Adoption, allows Manufacturing Compliance.



2. Each Small Patch is a Known CMYK Value.



2. By Measuring these Patches, a Table is made.
The input values, coupled with the color result on the printed page.

Target	Cyan	Magenta	Yellow	Black	L	a	b
	100	0	0	0	54.38	-29.19	-48.75
	70	0	0	0	66.59	-21.93	-37.27
	40	0	0	0	79.37	-12.59	-22.69
	20	0	0	0	87.98	-6.07	-12.70
	10	0	0	0	91.60	-2.40	-6.65
	0	100	0	0	49.03	66.78	0.75
	0	70	0	0	60.97	48.63	-5.33
	0	40	0	0	76.21	25.46	-6.32
	0	20	0	0	85.46	11.42	-5.29
	0	10	0	0	90.60	5.70	-4.45
	0	0	100	0	90.96	-8.04	90.69
	0	0	70	0	89.58	-6.90	65.22
	0	0	40	0	92.09	-6.16	34.15
	0	0	20	0	92.62	-2.04	14.12
	0	0	10	0	94.08	-1.28	5.36
	0	0	0	10	88.47	-0.04	-2.29

Fundamentals. 5 ICC Profiles. Practical Basics For Digital Production.

Without a solid grasp of the fundamentals, then some of the more exotic icc techniques become hard to understand. Also the ICC workflow is full of choice. You need to understand these choices to control your digital production.

The simplest and with 100% control is to let the RIP (X-800) take control over color output. Known technically as late binding, regardless how the file is put together, the final color is driven by the RIP setting. Many digital printers who use color management correctly work this way. WHY? It means they can set expectations, by communicating to their customers what to expect. It removes risks from badly constructed files, and means there can be a cross color communication over different technologies.

For Example in Europe.

The printer will state that CMYK will be printed in alignment to ISO_Coated_v2 (Fogra39). & RGB Images will be aligned to sRGB.

For Example in USA.

The printer will state that CMYK will be printed in alignment to GRACOL2006coated1V2. & RGB Images will be aligned to Adobe 98.

ISO_Coated_V2, GRACOL2006coated1V2, sRGB, and Adobe 98 are ICC Profiles. And in the context they are mentioned here they are as **SOURCE/Emulation** Profiles. And like the discussion on page 7, they represent a visual perception or color aim.

For your Xeikon to print on the paper these aims, another profile is needed. An **OUTPUT** profile. One of the main jobs of **Xeikon Color Control** is to create output profiles. These are unique to a machine and stock. Their job is to convert the requested LAB value to a CMYK recipe, which when printed using your Xeikon Toners will visually look like or be as near as possible to the requested aim/emulation.

Fundamentals. 6 CMYK Source Profiles.

Printing the expected, is the goal, but what do we expect? It is the job of the **SOURCE** Profile, to set the expectation. These are sometimes called **REFERENCE** or in the X-800 **Emulation** profiles, and they set the visual desire/wish. i.e. this is LAB I'd like to see.

Source profiles, are often created by industry committees. For example ISO_Coated_V2.icc is based on the color output when printing on an offset press working to ISO 12647 standards. Therefore if you set ISO_Coated_V2.icc as your Emulation profile on your X-800, and I have a good output profile, then the Xeikon will print as near as possible to an offset press working in ISO 12647 condition.

There are today several global standards, all freely available. CMYK Industry Source Profiles. Due to the changes made in this area year by year, please take advice from your Xeikon Color Specialist who will guide you through what is best for your environment.

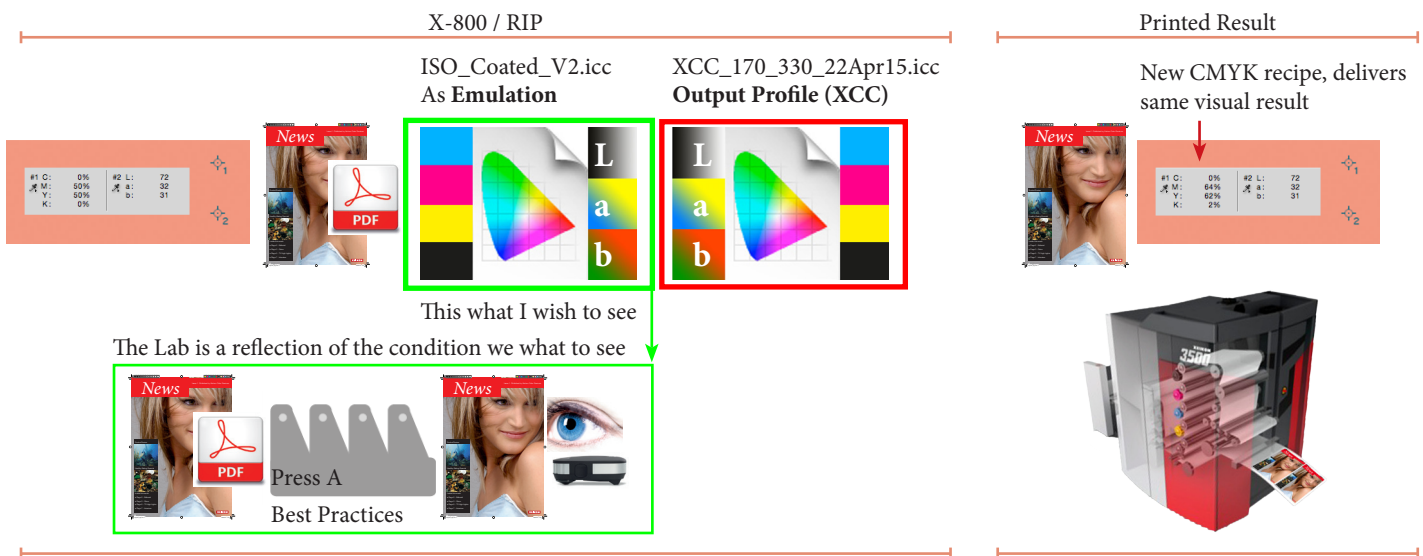
Because ALL digital printing is driven by a RIP, and ALL RIPs have this architecture, where you choose a SOURCE/Emulation profile and create a unique OUTPUT, to print as near as possible the look of the source/emulation, it means that devices with wildly different technologies, can be aligned to print CMYK which has the same look and feel.

And alignment is very much on the road to printing the expected.

Some Clients want tailor made Source/Emulation profiles. With Xeikon Color Control you can make your own. EG: You have a flexo press which you want to match. In this case you create the profile using your own equipment. Again request information from your Xeikon Color Expert, on doing this.

Fundamentals. 7. CMYK Controlled Digital Print.

There are still many considerations to take into account. And though this guide explanations and advice will be given, on such subjects as rendering intent, and what happen when you can not reproduce a color, but for now it is of up most importance that at the heart of color control (CMYK) for a digital environment, the following workflow is understood.

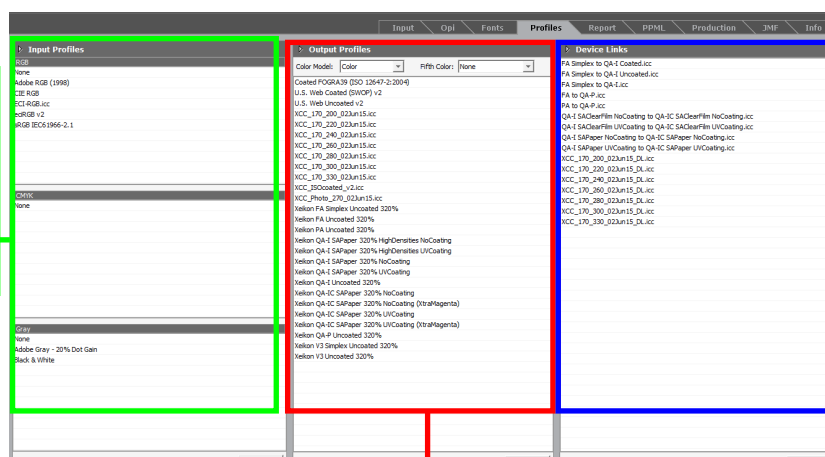


Fundamentals. 7. CMYK Controlled Digital Print - Relating this to your X - 800

System Manager/Profiles

CREATION DEVICE
INPUT Profiles

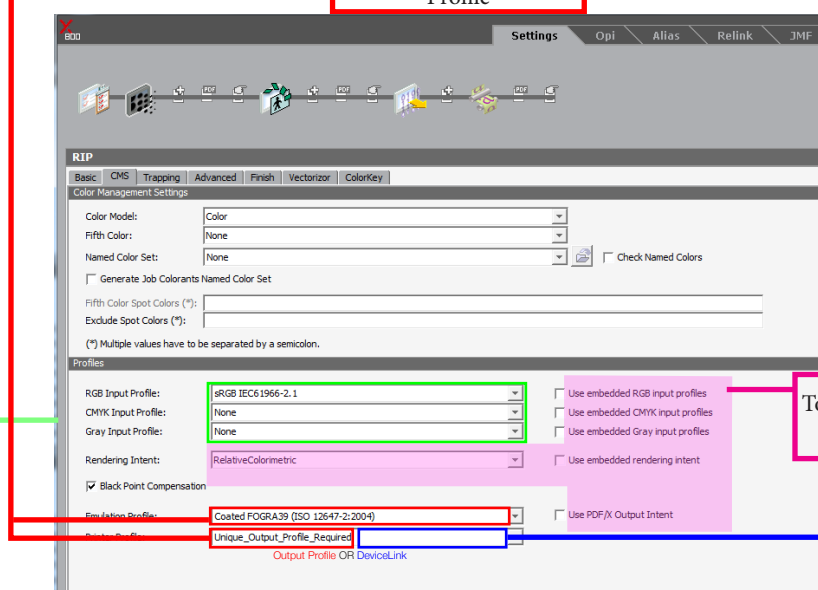
Profiles.
RGB
CMYK
Grey Scale



DEVICE LINK
Profiles.

These will be
discussed later.

OUTPUT PROFILE.
Created In XCC. +
CMYK - Emulation
Profile



To be discussed
later.

Fundamentals. 8. CMYK Separations are not colour.

For many printers it might feel counter intuitive that in this color management world we are not overly concerned about CMYK separations. Later you will learn about “Device Link” profiles which have a more comfortable fit for the CMYK reprographics minded, and also let us do some tricks to help with color reproduction. But for now let us stay in the world of Lab Color as we have been discussing over the last few pages.

Small Factoid:

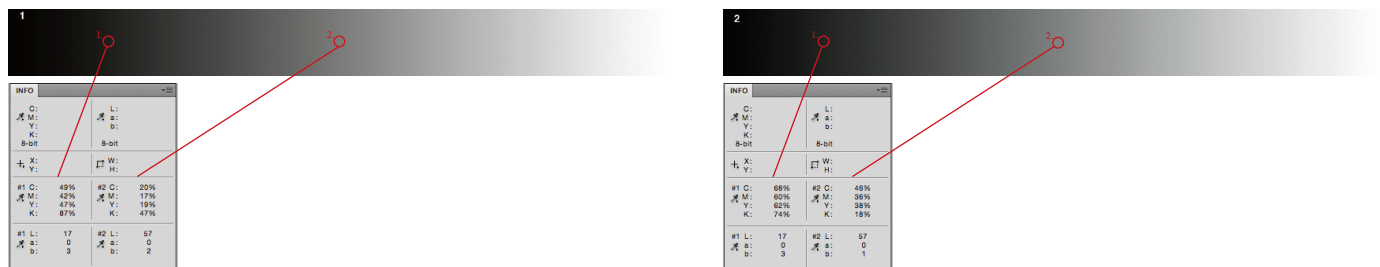
For example a mid grey, CIELAB=50,0,0 [D50/2°/wb], can be reproduced with more than 500 different CMYK combination that all correspond to that colour within a $\Delta E^*_{ab} \leq 1$

Here a small experiment to illustrate this.

First. we start with a with RGB grey scale.

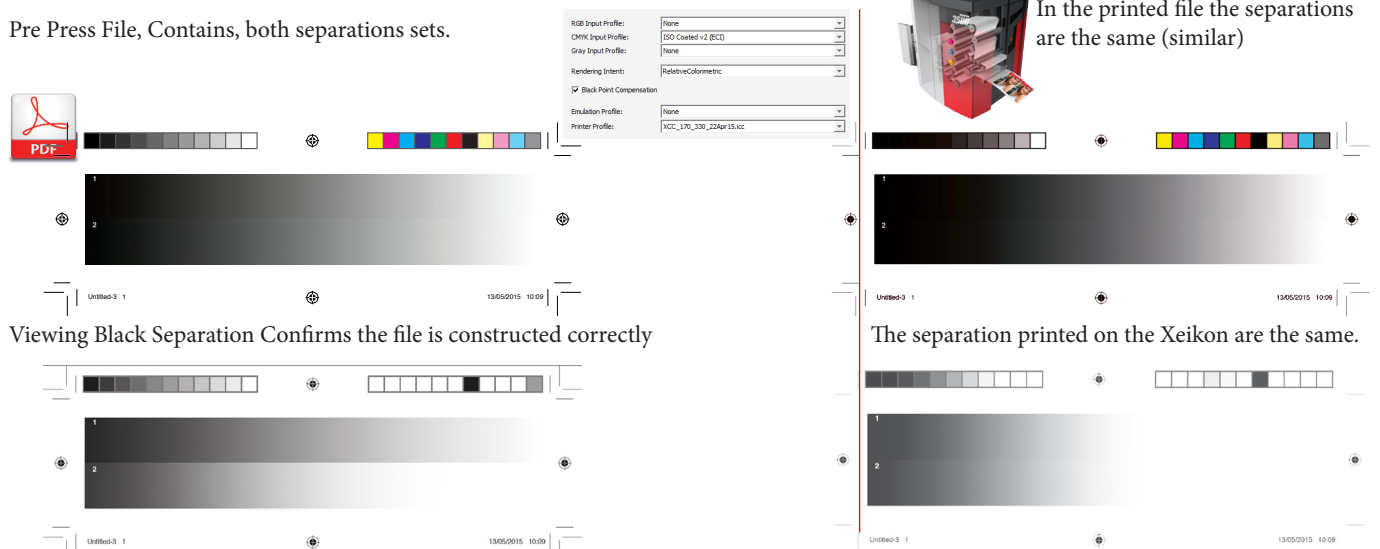


Next we using 2 different separation tables to convert this to CMYK.



Next a pre press file is made using both files. Insuring that the separations are respected in the the file. Requesting all CMYK move to source. The output gives the same separation and the same color.

Pre Press File, Contains, both separations sets.



Key Note 3.0

The lesson here is that in a color managed workflow, the OUTPUT profile controls the separations.

But the color is driven by source. Although the CMYK values are different entering the RIP, these have the same LAB. Therefore get reproduced on the paper in the same way.

Therefore the big choice is “What do you wish to see?”

Understanding this is important when moving into a ICC workflow.

CMYK Separations are not colour.

sRGB Original



CTP Separations - sRGB-> SWOP



CTP Separations - sRGB-> XCC_ISO_Coated

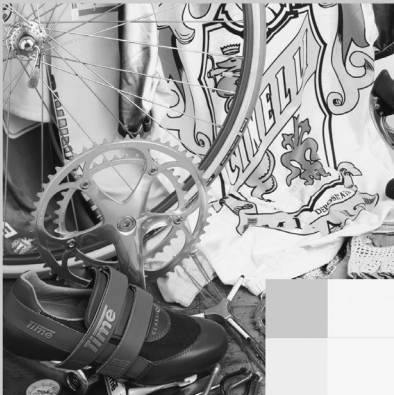


Before RIPPING

CMYK values are different.

No profiles are imbedded.

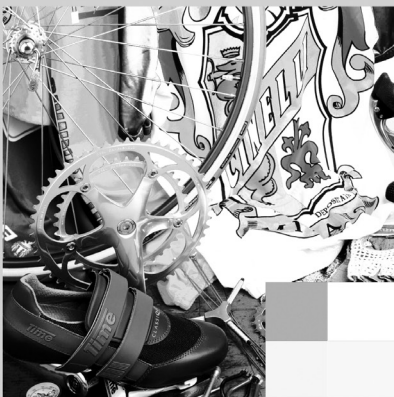
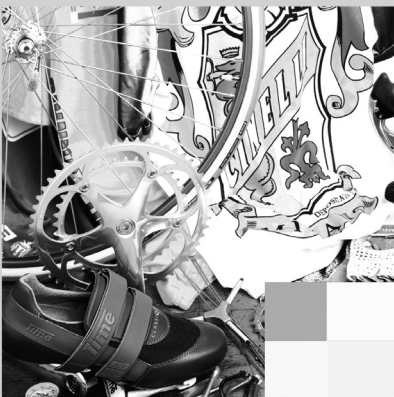
Illustrated here by the black sep.



Afer RIPPING, with CM on.

CMYK values are very similar.

Illustrated here by the black sep.



Fundamentals. 9 RGB Source Profiles.

Depending on your industry segment you will either have to take care about RGB images / pages, or it will be of no relevance.

Because RGB can NOT be printed in a offset environment, many of the PDF/x / PPA specs dictate that RGBs are converted at the print ready pdf stage. Meaning long before the file gets to your Xeikon, there are no RGB data. Also many printing companies who are offset / digital driven only except CMYK. (plus spot) .pdfs complying to PDF/x specs.

If this is the case for your workflow you can simply refer to the CMYK source driven workflow.

Now before disappearing into a intellectual discussion about RGB v CMYK, please pick up a expensive glossy magazine and remember what you are looking at is CMYK print. And probably that print is made to ISO 12647 (which you can reproduce digitally.)

However we have to understand the place of keeping RGB images in our workflow.

In High Quality Commercial print it is unlikely you will have RGB images. Why? These workflows tend to be PDF/x (CTP) based workflows. Printers simply see RGB as a hassle, and so remove them early, and demand that suppliers do the same.

However you may be faced with badly constructed files, and need a strategy you can communicate to your customers what you will do with them.

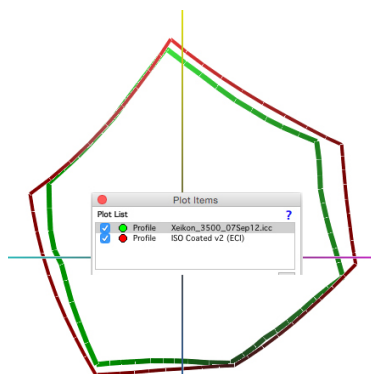
In packaging and labels, images tend to go through a lot of retouching. By using a CMYK predictable space to do this means that pre press and proof can work predictably, to the final production.

However we do see RGB being used in the following sections.

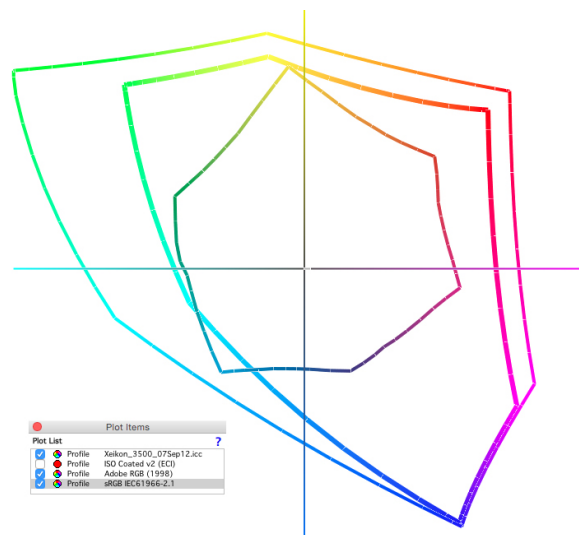
- POD print on demand. (Files from any source. eg: Microsoft Office)
- PhotoBooks. (Files constructed from RGB images)
- Fine Art / Photography. (Only RGB data)
- Future versions of PDF/x aimed at digital print will encourage RGB data in the file.(yet to be adopted)

Now here comes a big difference between our CMYK workflow. The Color Space of Xeikon and an Offset are very similar. Therefore its not hard to imagine that through the process of profiling that one can look the other. But RGB is much bigger.

The Graph, Below shows the Color Space ISO Coated and that of a Xeikon.
Although not the same, they are similar.
There will be little difference between CMYK offset prints and the Xeikon,



The Graph, below shows the space, Adobe 98 (the largest), sRGB the next, and the Xeikon. Therefore RGB files in the pre-press stream will have to be compressed, and some colors expressed in RGB will be impossible. This needs to be related, to customers. However XCC has some answers to this, and that lies in photo - profiles, to be addressed later.

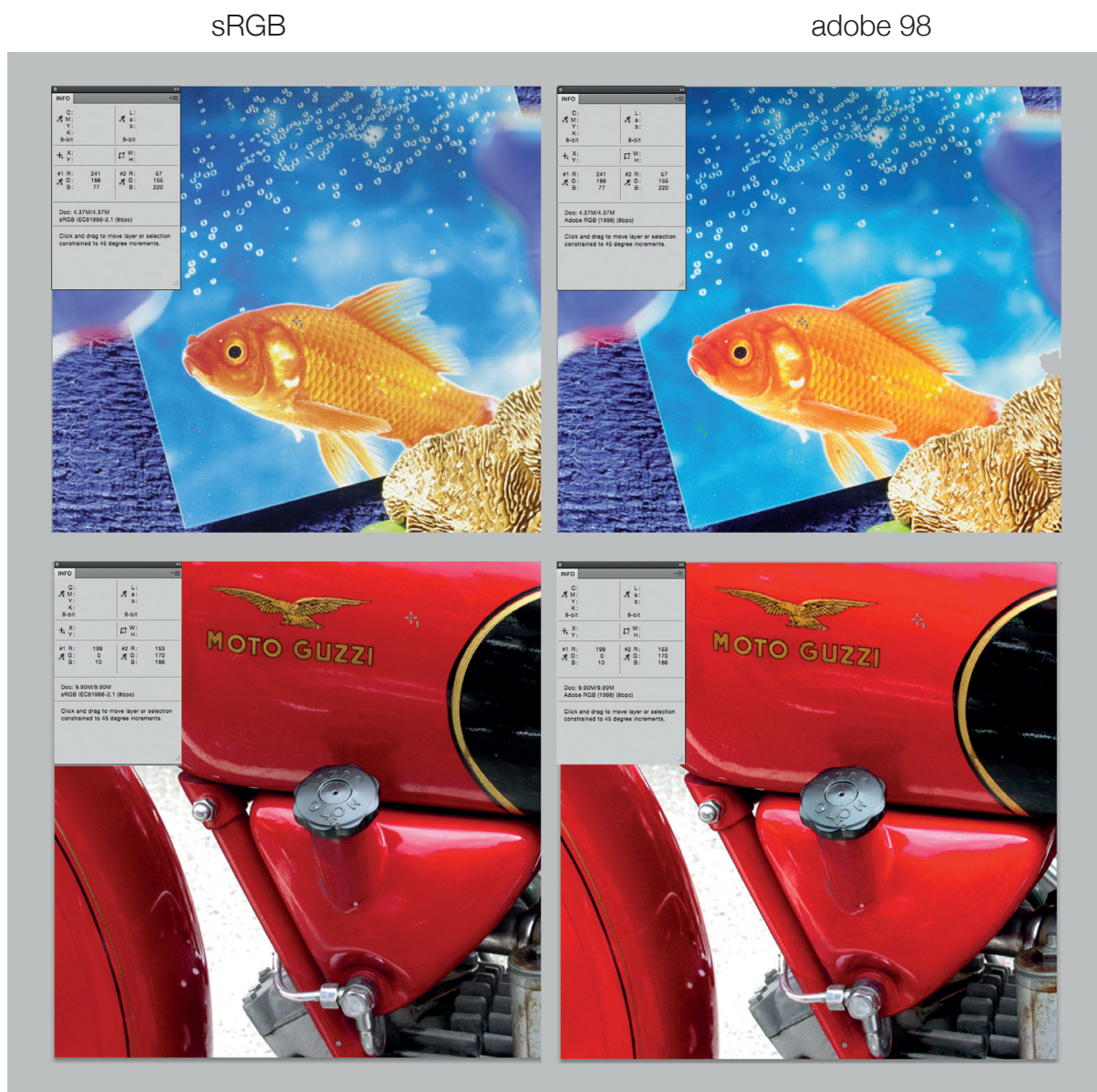


Fundamentals. 10 sRGB - Adobe 98 - Source Profiles.

Very much like with CMYK not been a communicator of color RGB values have the same place.

If you look to the example below the sample images have the same RGB values, but the profile has a different lab value. The bottom line here is choice. Neither is wrong or right. Industry committees edge towards sRGB, because it is easier to reproduce in a CMYK offset space, many designers and photographers like adobe 98, because of its on screen visual appearance, taking little thought about the production later.

In fact the sample here, is an illustration of the differences, as it is CMYK. To see the real difference you need to view on a monitor.



Key Note 4.0

This must be a open discussion point in the quest for predictable output. And really is dependant on the work which is being printed. Again you can lock this decision at the X-800 by pushing all RGB to either sRGB or Adobe, and gives 100% predictability. As long as the RIPPING choice, is communicated.

Also its should clear now why commercial printers only want CMYK. pdfs, - If RGB is left in they may make a digital proof, which they can not ever print.

Digital Photobook printers, will have a preference usually, and want this applied to all images in a book.

The reason the RGB images in photobooks, are coming from all form of sources, from professional to smart phones. If we then use the same rgb source all the skin tones will be the same, for example.

Fundamentals. 11. CMYK / RGB / GREY Controlled Digital Print.

Relating this to your X - 800. Basic Suggested Setting.

System Manager/Profiles



Warning

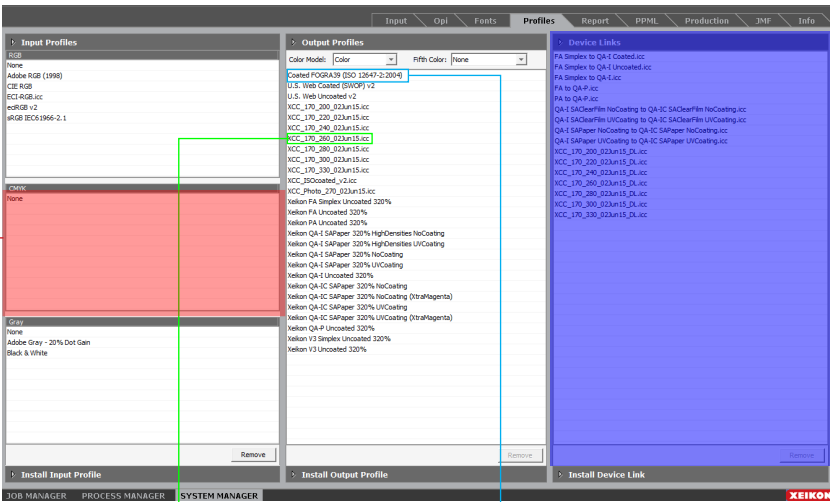
DO NOT
Build a CMYK input
workflow.

You will experience
RIPing Issues.
Especially around
Transparency.

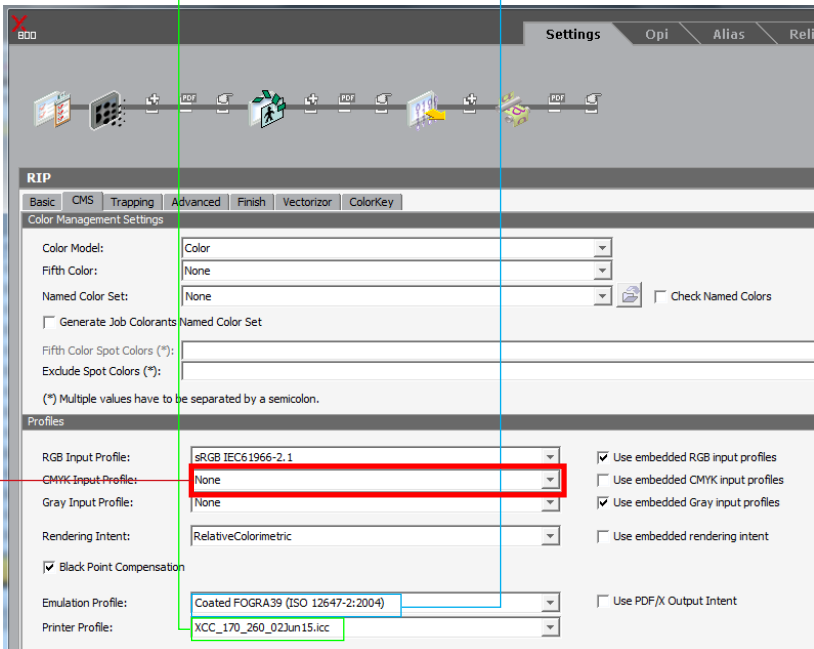
INPUT refers creation
device, not intended
visual look.

This is Emulation

Creating / Editing &
Working With Device
Links will be cover in
the Advanced Xeikon
Colour Control
Section.



None is correct



The Basic 1st Lesson Before Moving Forward.

1. Color Control is about printing the expected.

2. What I want to see is my choice.:

= The Emulation

These are freely available and respected industry SOURCE/Emulation Profiles.

(You can build your own.)

3. Only by Creating a tailor made OUTPUT Profile
will you be able to print as near as possible your SOURCE.
(This is the job of Xeikon Color Control)

Creating a OUTPUT Profile. X-800

Before you start.

1. Set Up Xeikon Colour Control.
2. Set Up i1Profiler / ColorPort.

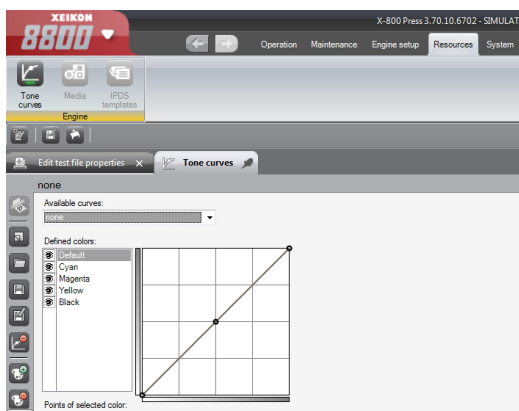
All resources available. www.xeikoncolorcontrol.com



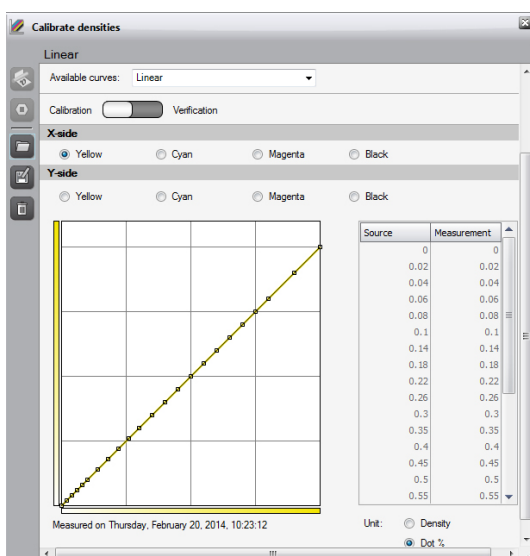
Configure MyPress.

- Make Sure you have only Linear Curves Set.

1) Check Resources - Tone Curves Make sure this is Linear



2) Calibrate Densities (the target should be a linear curve not one used in the past for color edits)



My Press Check List.

- 1- make sure the press is in a good printing condition.
- 2- make sure the right script is used and the right target densities are specified.
- 3- print universal for registration and check for uniformity and possible Image artefact.
- 4- Check if the Target densities are reached and all is stable.
- 5- Create the calibration curve, and above all do not forget to verify with a verification sheet.
- 6- If all goes well one can create an ICC output profile.



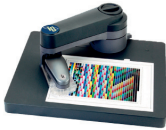




Densities

C 1.4 M 1.4 Y 1.4 K 1.8 (offline) -std. | C 1.6 M 1.6 Y 1.6 K 2.0 (offline) -High.

Configure X-800 to make a Output Profile.

First get prepared.

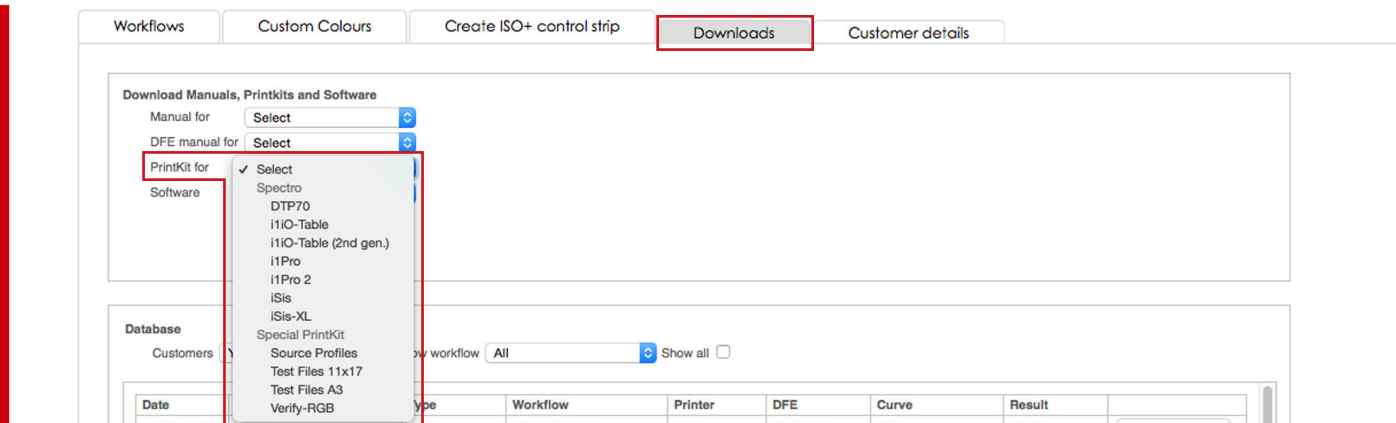
- 1.) Make sure spectro is working.
- 2.) Make sure you have the profile targets pdfs. Know as the Optimize.pdf.
- 3.) These are downloadable from xeikoncolorcontrol.com

						
DTP 70	i1Pro (gen1)	i1i0 (gen2)	i1Pro (gen 2)	i1i0 (gen 2)	i1 isis - A4	i1 isisXL - A3
Downloads are spectro specific. Choose your device and download the print kit, which contains all the the files you will need.						

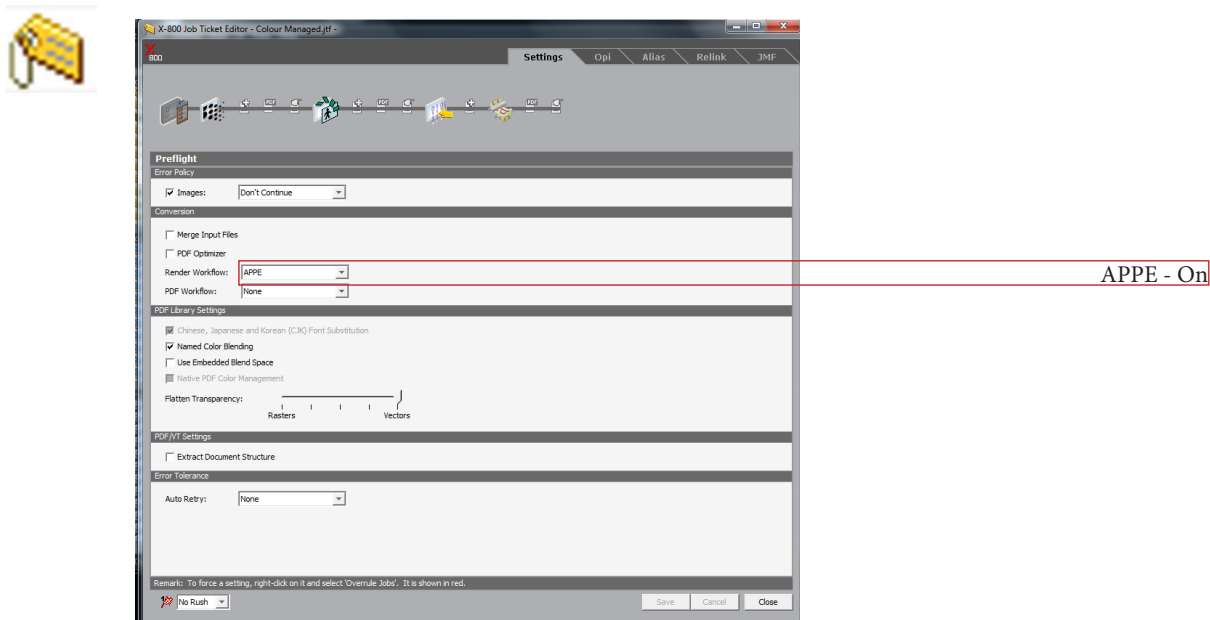


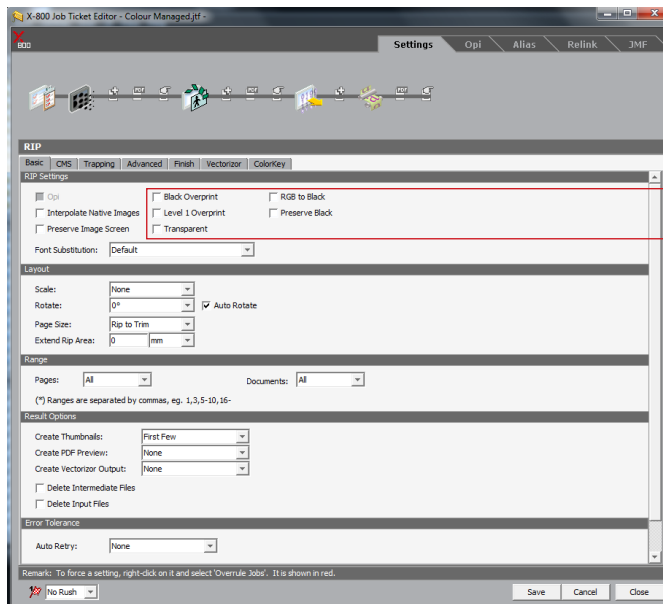
XeikonColorCont

Bruce Drans

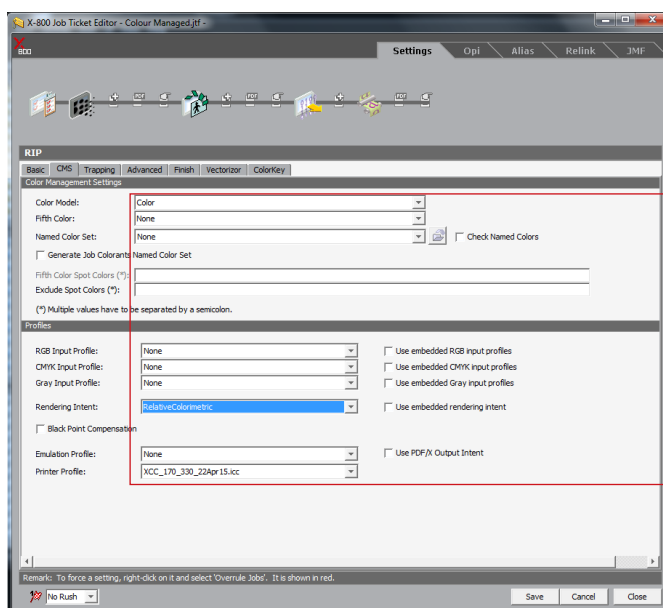


Guide to Job Ticket Setting to Make a Profile.





Black Generation- Off



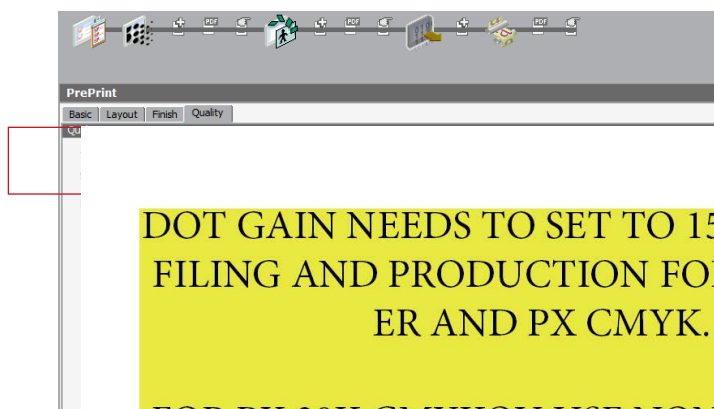
This is the setting for CMYK.

NOTE!

Rendering Intent - has no effect.

NOTE!

The Printer Profile has no effect, choose any.



≥ - 0%.

DOT GAIN NEEDS TO SET TO 15% FOR PROFILING AND PRODUCTION FOR DRY TONER AND PX CMYK.

FOR PX 30K CMYKOV USE NONE FOR PROFILING AND PRODUCTION.



These four setting under pin the setting which need to be followed to make a OUTPUT profile. However the Xeikon System has quite a lot of production variations. To Help this pre - configured Job Files are supplied to make this an easier process.

Print Profile / Optimize Files ON X-800.

For every Spectro, there are set variables. eg: Simplex, Duplex, with Xeikon White, with a Xeikon 5th Color.


In an attempt to reduce, the risk of setting being incorrectly set, included in the [Print Files] package downloaded from the XCC website, are a set of pre configured “JOB FILES” these are .zip files which contain the print file and the instructions on how to print them.

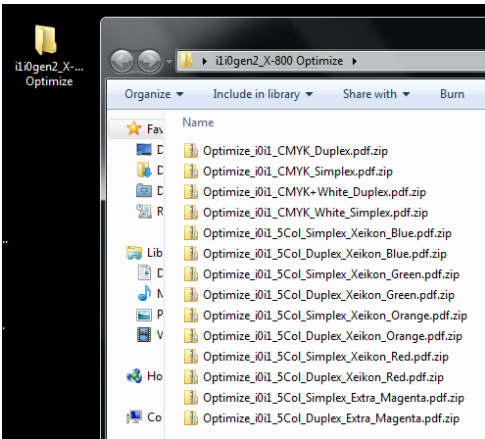
They are in the folder [“Spectro”_X-800 Optimize]

Drag and Drop the appropriate .zip file to any hot folder on the X-800 and the job will be configured correctly.

As a customer there will be several of these files which are not relevant to your Xeikon printer.

Example - i1i0 - Generation 2

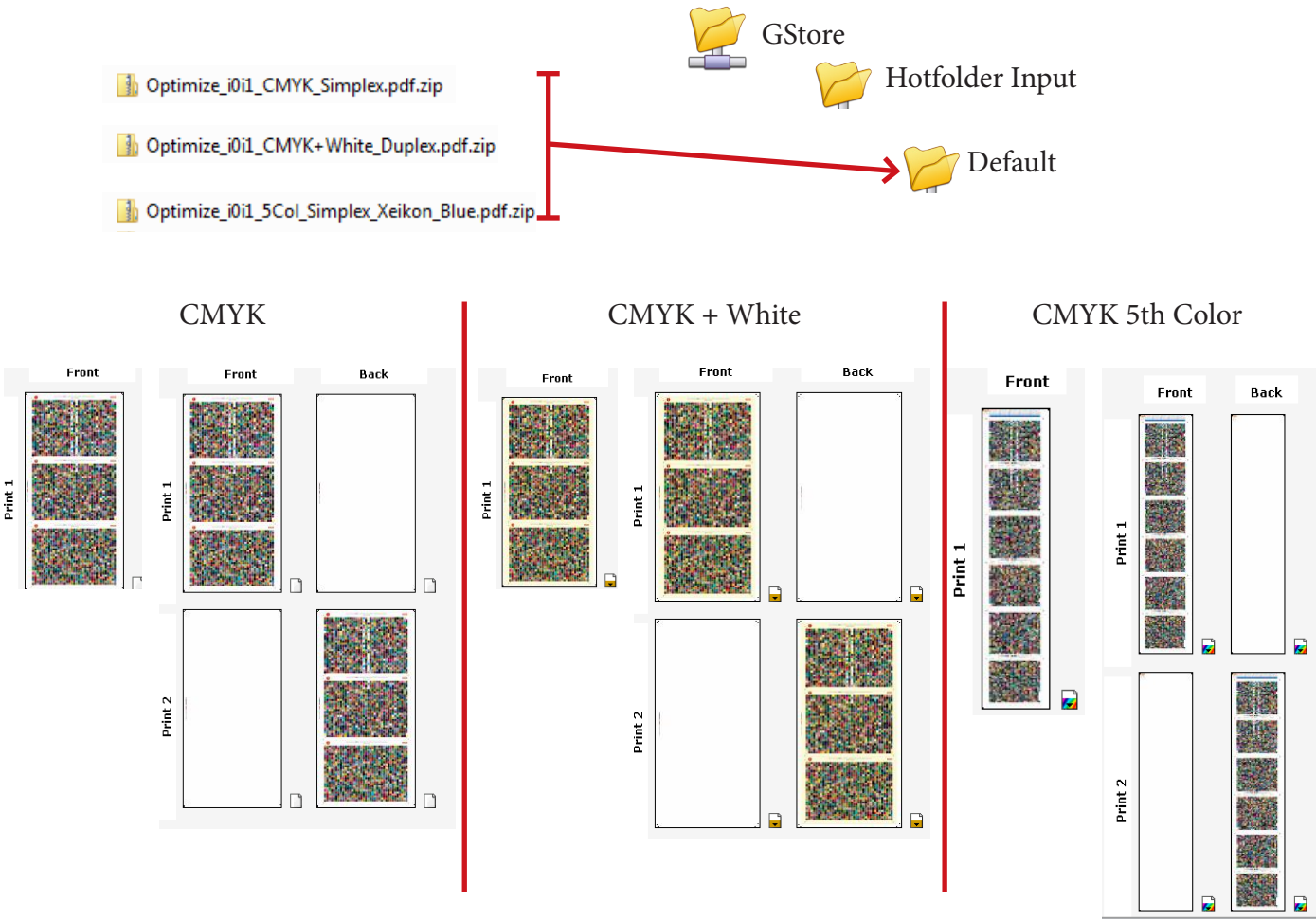




Content:

- CMYK - Simplex & Duplex
- CMYK+White - Simplex & Duplex
- 5 Color - Simplex & Duplex.

Drag and Drop the .zip and all colour management setting will be applied for making a profile.



Print Your Optimize Target.

CHECK LIST.

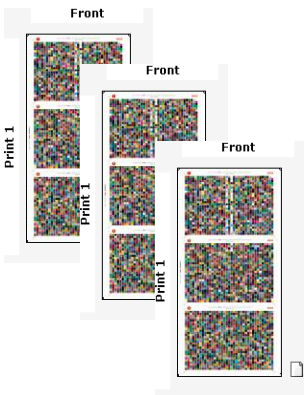
NO TONE CURVES ON MY PRESS

DENSITIES CORRECT

CALIBRATE

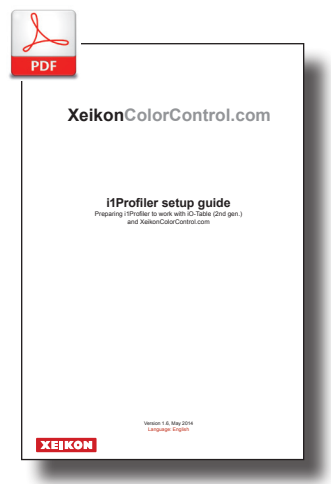
DRAG and DROP the OPTIMIZE.zip

PRINT!



Measure the Print.

For every Spectro, There is a user guide, follow the instructions, the result will be a .TXT file.
Once you have your “My_Profile.Txt” File. You are Ready to make a Output Profile.



Xeikon Color Control. Fundamentals 1.0 - Color Workflow.

You need to make sure you have a XCC account.

website : www.xeikoncolorcontrol.com

login: (email).....

password:.....

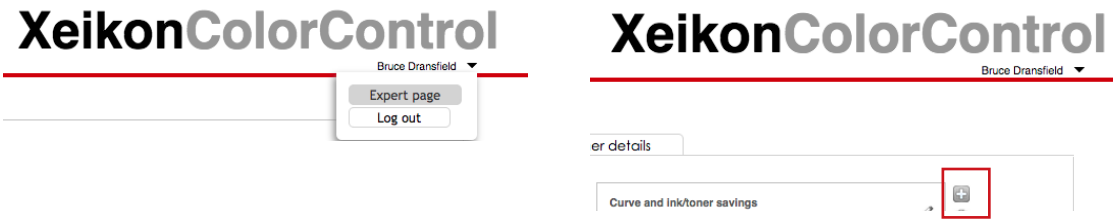
Once you are logged in, then the first thing is to make / edit a color workflow. As far as XCC is concerned a color workflow, is a set of preferences to create your output profile.

Xeikon Color Control. Fundamentals 2.0 - ~Create a Simple Workflow.

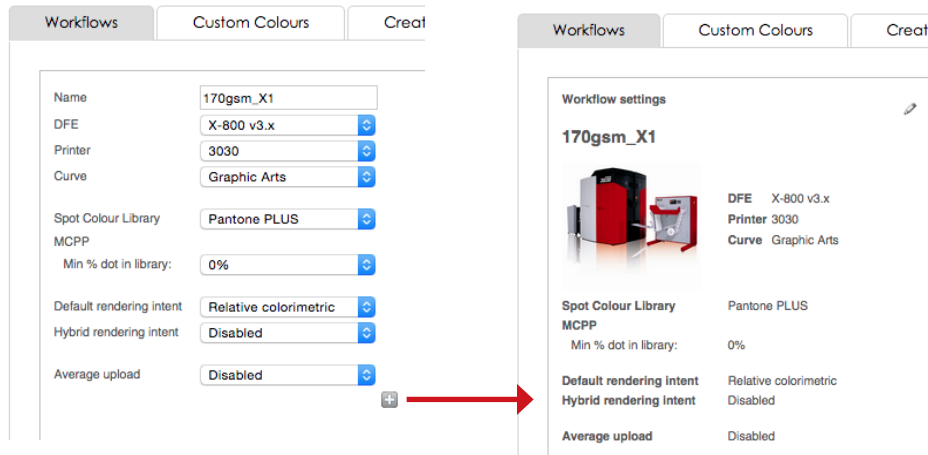
1. Log On. www.xeikoncolorcontrol.com



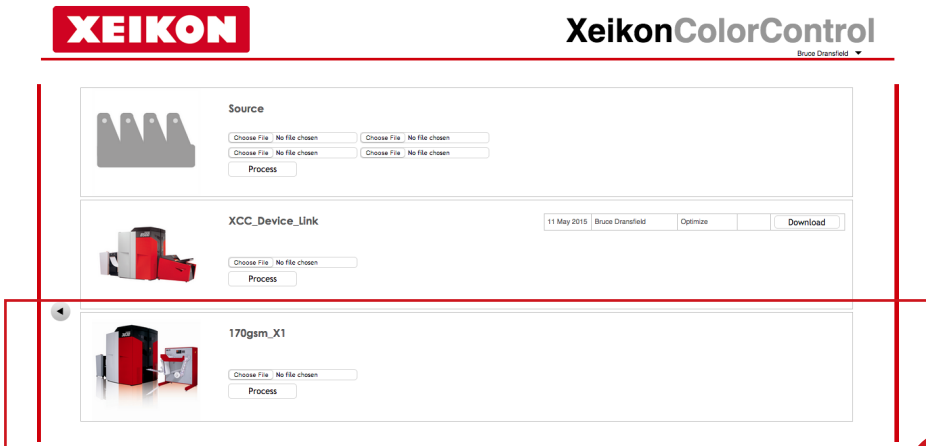
2. Where your name appears in the top right, click [Expert page] and then click the plus [+]



3. Keeping it simple to start, just follow the setting as below, giving your workflow a Name that makes sense to you. In the printer section choose your machine. Click the plus [+] button to confirm.

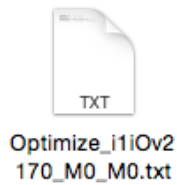


5. Your Workflow will appear in the online interface.

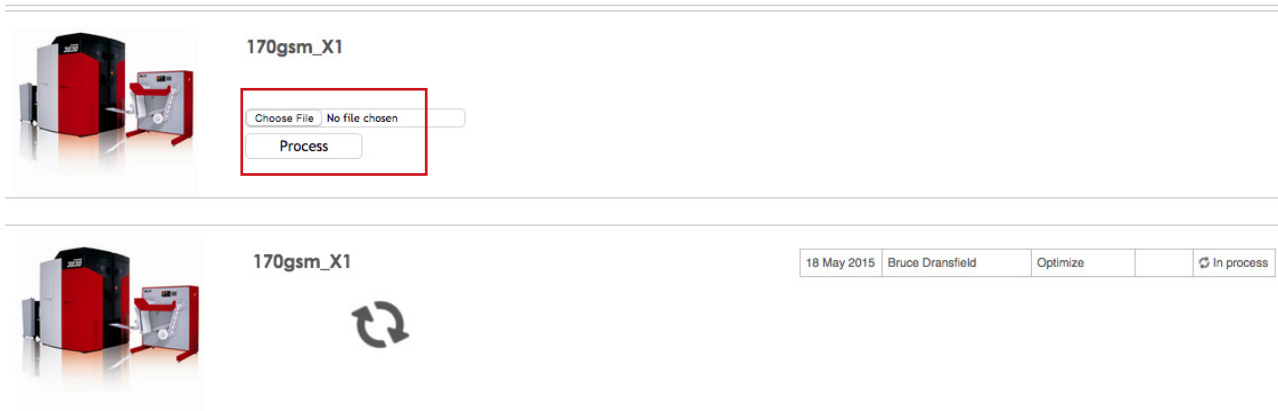


Xeikon Color Control. Fundamentals 3.0 - Create a Profile + Pantone Table.

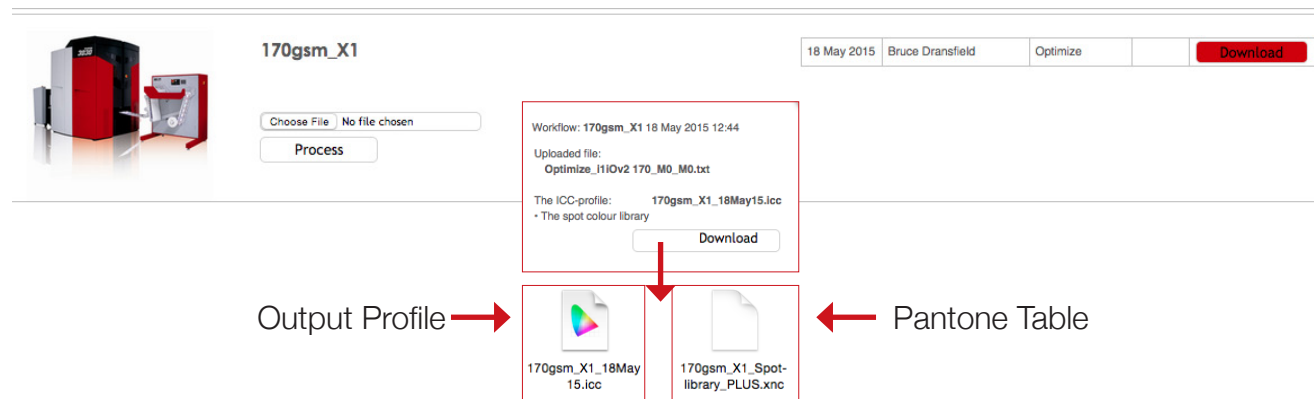
1. Make your measurements from the OPTMIZE file you have printed.



2. Click [Choose] Browse to where you have stored the measurement file and select. Press [Process] and your file will be uploaded to the cloud color server.



3. In 5 mins you will see a a RED download button. Click and download your new profile and optimized pantone library.



4. Your New Output Profile and your new pantone table will be downloaded, to your download folder.

Note On Pantones:

"By the nature of the DFE or RIP the PANTONE® Libraries on it have default values. But because printer variations also have influence on the quality of PANTONE® simulation, the need to colour manage this library should have the same priority as for images and vector data. To reach the highest accuracy in print of these PANTONE® colours will take a lot of time when using a trial and error method.

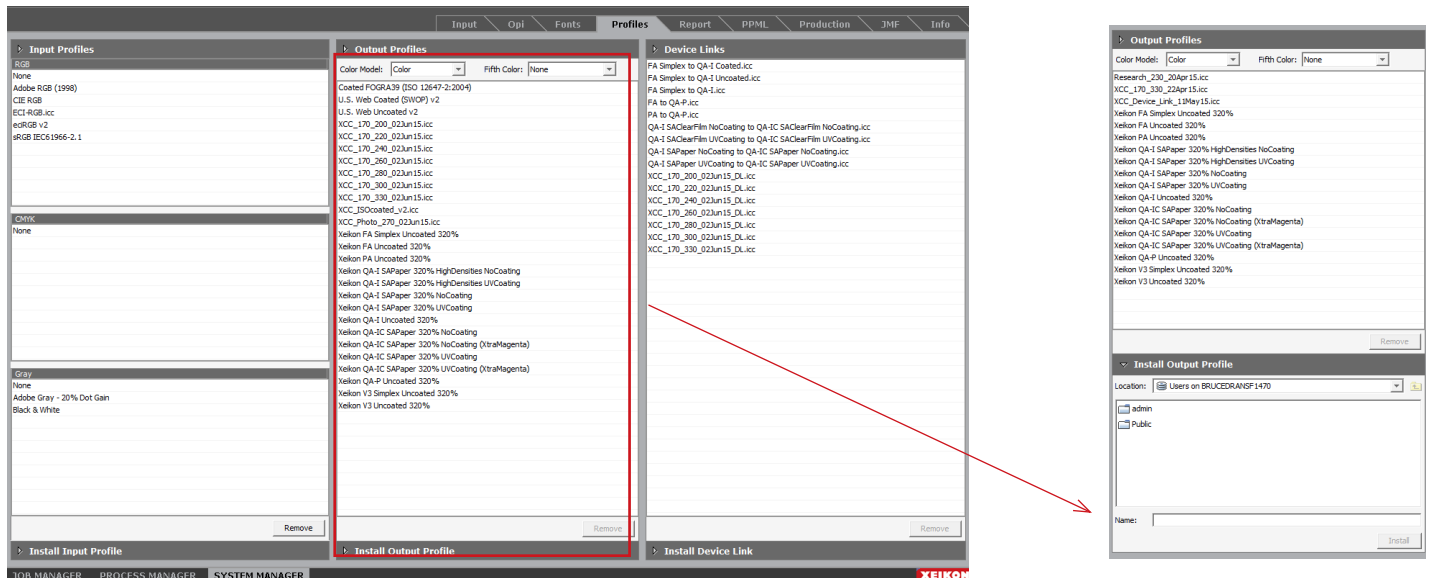
The XeikonColorControl.com workflow we use gives our operator the possibility to colour manage the PANTONE® and custom spotcolour libraries following the latest ICC profile.

For all colour workflows one thing is common. The output quality must be high, stable and similar to previous jobs. This can only be reached when all systems are completely optimized.

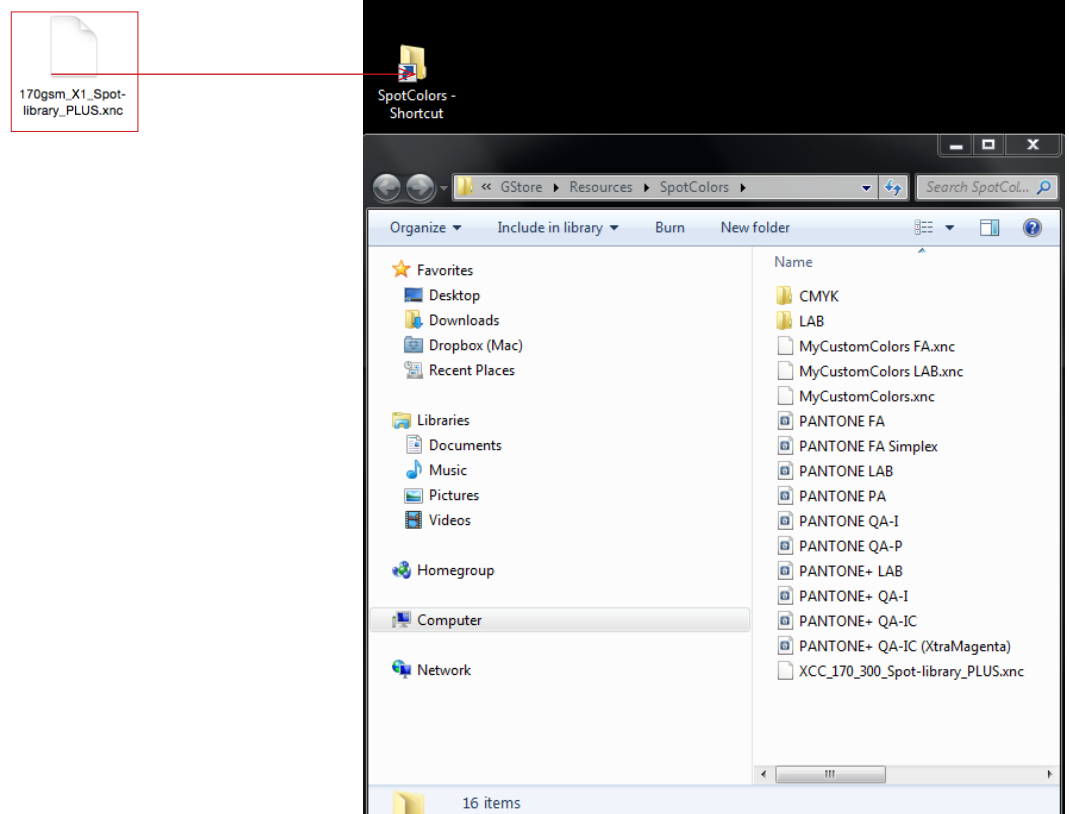
XeikonColorControl.com makes this possible."

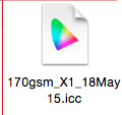
Xeikon Color Control. Fundamentals 4.0 - Loading Your Profile and Pantone table.

1. OUTPUT profile. Click on the the system interface on the X-800, and click the profile tab. Browse to your profile and add to OUTPUT.



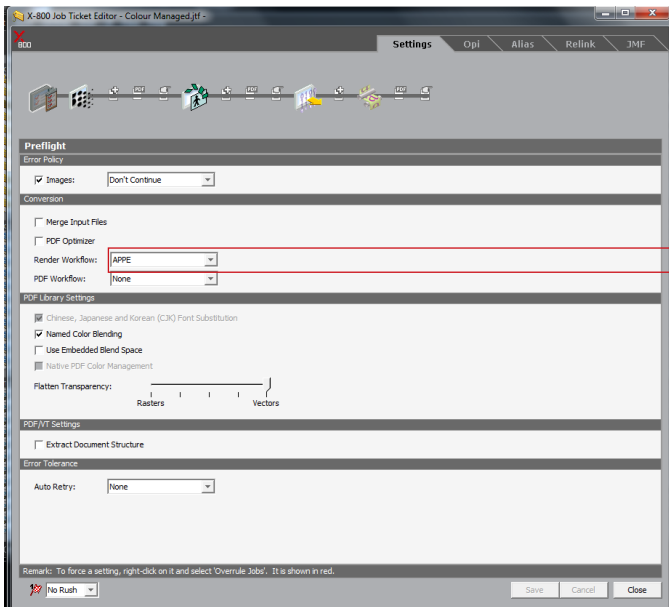
2. On the desktop you of your X-800 there will be a shortcut (please add if training). to the spot color folder. Drag and Drop the spot color table into the short cut.



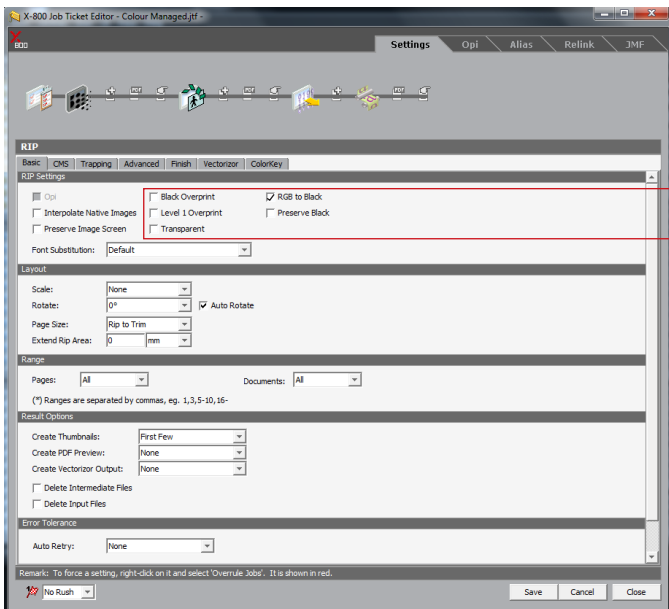


Xeikon Color Control. Fundamentals 5.0 - Creating Your Color Workflow.

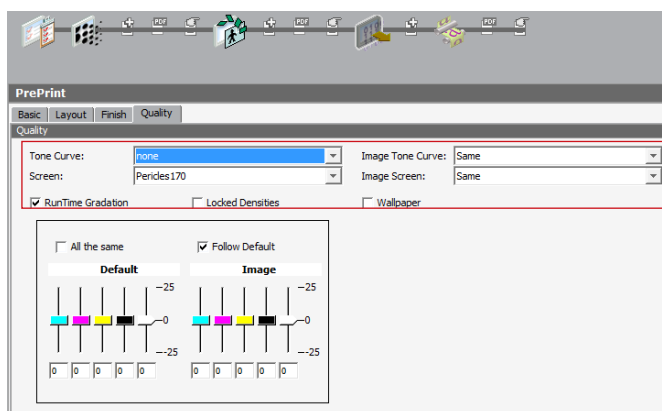
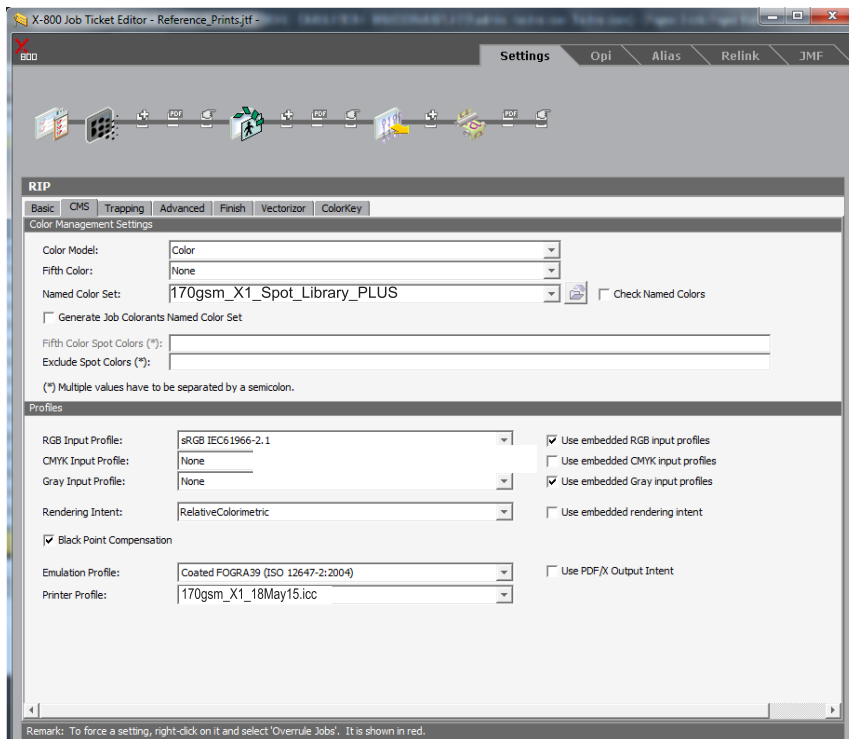
You have created a output profile. You now need a production queue which will use that profile. Create a Job Ticket or Edit an existing one. For now we will force all colour to one Source Profile. Your Job Ticket should look like this.



APPE - On



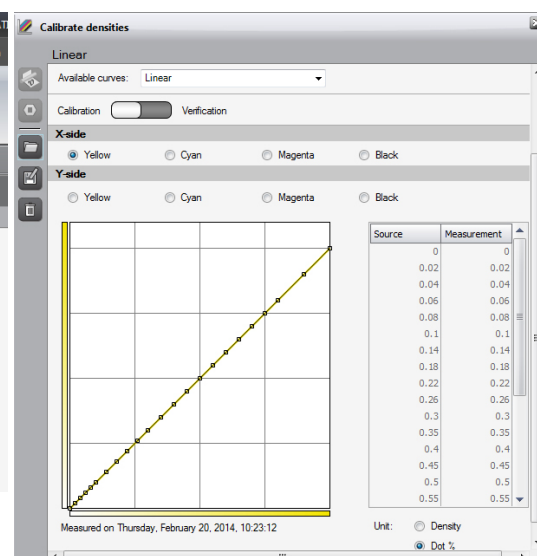
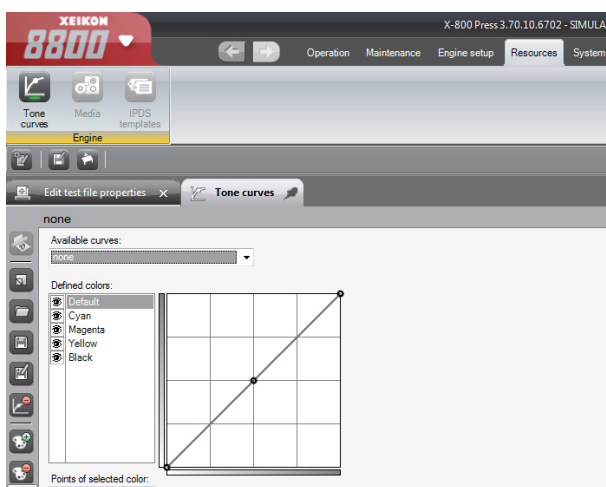
RGB to Black is very useful the rest is choice.



The Tone Default Profiling Curve - 0%.

The DEFAULT, profiling Job, "Optimize" is set to none.

See Page 37 for indepth discussion.

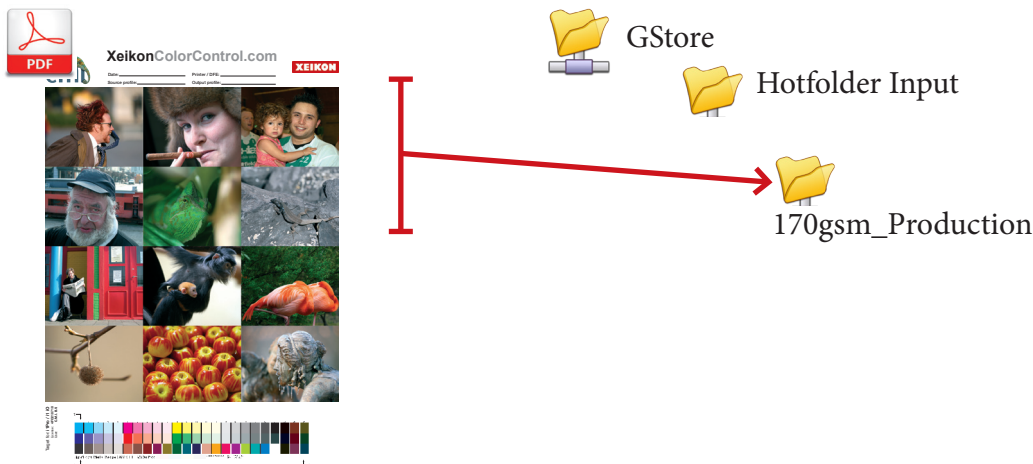


As when we made the profile, the MYPESS needs to be in the same condition.

Xeikon Color Control. Fundamentals 6.0 - Checking Your Color Workflow.

Quality Control. *using FOGRA v3 Wedge.

In your “Print Kit” you will have a Verify.PDF This is used to firstly check your workflow is correct and the color management is working as expected. And if this proves to be good will then be used as a daily check to see if color is changing over time.



Print the file using the Production Queue, you have made. Print several copies ensuring the press is in good shape.

Using the **verify** setting in i1Profiler Measure the control strip.

The Result will be another text file.



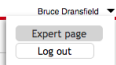
Verify_Fogra-
v3_i1iOv2_M0.txt

Log On to Xeikon Color Control and again move to the expert page.

Locate your workflow and click the “pencil” icon in the Quality

Control setting to edit. Give the name setting a Name and Base it on Fogra39.

XeikonColorControl



Quality control setting		
Setting name	Fogra39 - Production	
Source profile	ISOcoated_v2_eci.icc	
Method	Theoretical	
Rendering intent	Absolute colorimetric	
Strip	Fogra Media Wedge v3	
DeltaE method	DeltaE ab	
Norm	Production (ISO 12647-2)	
Tolerances	Production (ISO 12647-2)	
	ΔE	ΔH
Primaries	5.0	-
Average	4.0	-
Maximum	10.0	-
Paper	3.0	-
Grays	-	-

Quality control setting	
Setting name	170gsm
Based on	<input checked="" type="checkbox"/>
Source profile	Default
Method	Fogra39 - Production
Rendering intent	GRACoLCoated1 - Production
Strip	s-RGB - Production
DeltaE method	Custom
Norm	

Complete the setting copying the production setting in the X-800.

DE 2000 is recommended in this example as it will report how visually near you are to your goal. Press the “disk” icon to save.

Return to the Operator Page

Quality control setting

Setting name170gsm

Based on

Source profileISOcoated_v2_eci.icc

MethodIn Gamut

Rendering intentRelative colorimetric

StripFogra Media Wedge

DeltaE methodDeltaE 2000

NormValidation (ISO 12647-8)

Destination Profile170gsm_X1_18May15.icc

Quality control setting

Setting name170gsm

Source profileISOcoated_v2_eci.icc

MethodIn Gamut

Rendering intentRelative colorimetric

StripFogra Media Wedge v3

DeltaE methodDeltaE 2000

NormValidation (ISO 12647-8)

Destination Profile170gsm_X1_18May15.icc

XeikonColorControl

Bruce Dransfield

Operator page

Log out

er details

XEIKON

XeikonColorControl

Source

XCC_Device_Link

170gsm_X1

NOTE:

ISOcoated_v2_eci.icc and Fogra39 are the same.

Also All Emulation Workflows are Relative. See Device Links to change this.

Quality control setting

Setting name170gsm

Source profileISOcoated_v2_eci.icc

MethodIn Gamut

Rendering intentRelative colorimetric

StripFogra Media Wedge v3

DeltaE methodDeltaE 2000

NormValidation (ISO 12647-8)

Destination Profile170gsm_X1_18May15.icc

X-800 Job Ticket Editor - Reference_Prints.jtf

Settings

Opi

Alias

Relink

JMF

RIP

Basic

CMS

Trapping

Advanced

Finish

Vectorizer

ColorKey

Color Management Settings

Color Model:Color

Fifth Color:None

Named Color Set:170gsm_X1_Spot_Library_PLUS

Generate Job Colorants Named Color Set

Fifth Color Spot Colors (*):

Exclude Spot Colors (*):

Profiles

RGB Input Profile:sRGB IEC61966-2.1

CMYK Input Profile:None

Gray Input Profile:None

Rendering Intent:Relative

Black Point Compensation

Emulation Profile:Coated FOGRA39 (ISO 12647-2:2004)

Printer Profile:XCC_170_260_02Jun15.icc

Click [Choose] Browse to where you have stored the verify measurement file and select.

Press [Process] and your file will be uploaded to the cloud color server.

170gsm_X1

Choose File


No file chosen

Process

TXT

Verify_Fogra-v3_i1iOv2_M0.txt

Once uploaded, the measurement file is processed and compared to the QC settings. Again you will see a RED download button. Press this for a on screen summary and if needed you can download your full report.



170gsm_X1

Choose File

No file chosen

Process

18 May 2015	Bruce Dransfield	Verify	Passed	Download
18 May 2015	Bruce Dransfield	Verify	Passed	Download
18 May 2015	Bruce Dransfield	Optimize		Download

Workflow: 170gsm_X1 18 May 2015 16:21

Setting: 170gsm

Source profile: ISOcoated_v2_eci.icc

Method: In Gamut

Rendering intent: Relative colorimetric

Strip: Fogra Media Wedge v3

DeltaE method: DeltaE 2000

Norm: Validation (ISO 12647-8)

Destination Profile: 170gsm_X1_18May15.icc

Uploaded file: Verify_Fogra-v3_11IOv2_M0 (1).txt

	ΔE Max.	ΔE	Result	ΔH Max.	ΔH	Result
Cyan	8	0.52	Passed	4	0.78	Passed
Magenta	8	1.30	Passed	4	0.59	Passed
Yellow	8	0.52	Passed	4	0.06	Passed
Black	8	4.39	Passed	4	3.33	Passed
Average	3	1.55	Passed			
Maximum	8	4.99	Passed			
Paper	3	0.16	Passed			

ΔH Max. ΔH Result


Gray Bal. (Avg.) 1.5 1.12 Passed

ISO

Validation (ISO 12647-8) 100.0%

Production (ISO 12647-2) 100.0%

Download full report



170gsm_X1

Passed

	ΔE Max.	ΔE	Result	ΔH Max.	ΔH	Result
Cyan	8	0.52	Passed	4	0.78	Passed
Magenta	8	1.30	Passed	4	0.59	Passed
Yellow	8	0.52	Passed	4	0.06	Passed
Black	8	4.39	Passed	4	3.33	Passed
Average	3	1.55	Passed			
Maximum	8	4.99	Passed			
Paper	3	0.16	Passed			

ΔH Max. ΔH Result

Gray Bal. (Avg.) 1.5 1.12 Passed

ISO

Validation (ISO 12647-8) 100.0%

Production (ISO 12647-2) 100.0%

Verify report

170gsm_X1

	ΔE Max.	ΔE	Result	ΔH Max.	ΔH	Result
Cyan	8	0.52	Passed	4	0.78	Passed
Magenta	8	1.30	Passed	4	0.59	Passed
Yellow	8	0.52	Passed	4	0.06	Passed
Black	8	4.39	Passed	4	3.33	Passed
Average	3	1.55	Passed			
Maximum	8	4.99	Passed			
Paper	3	0.16	Passed			


ΔH Max. ΔH Result

Gray Bal. (Avg.) 1.5 1.12 Passed

ISO

Validation (ISO 12647-8) 100.0%

Production (ISO 12647-2) 100.0%



Advice on reading these reports will be given in the advanced section.

Xeikon Color Control. Fundamentals 7.0 - Quality Control - Predictability

What is happening when we QC with this method.



Quality control setting	
Setting name	170gsm
Source profile	ISOcoated_v2_eci.icc
Method	In Gamut
Rendering intent	Relative colorimetric
Strip	Fogra Media Wedge v3
DeltaE method	DeltaE 2000
Norm	Validation (ISO 12647-8)
Destination Profile	170gsm_X1_18May15.icc

The Cloud service calculates the what should be printed.

It sets these values as Predicted aims. If the real world system is working then these aims should be met.

The real world Journey the File moves through the colour workflow, the print engine, finishing, and the real result is measured. The measurements are compared to the predicted ones.



If you have a fail, check the setting.

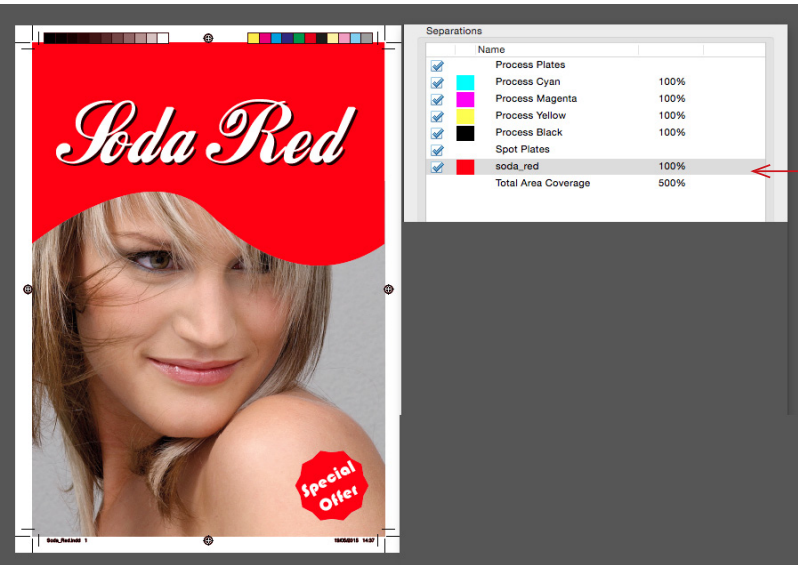
If you pass, you now have a perfect reference point to make daily QC reading. The predicted values will not change nor should your workflow, but over time the Engine will change. Using this method will show the change in the colour reproduced by the engine, if the change becomes large. You can re-profile, and take care to reset the QC setting to your new profile.

Xeikon Color Control. Dealing with Pantones and Brand Colours.

Pre Press files can contain CMYK, RGB, LAB, and SPOT colors. In traditional printing a spot color is printed using a unique INK and plate on a digital press it is emulated using CMYK recipe. Or if your Xeikon uses a 5th color a recipe which CMYK+5th colour.

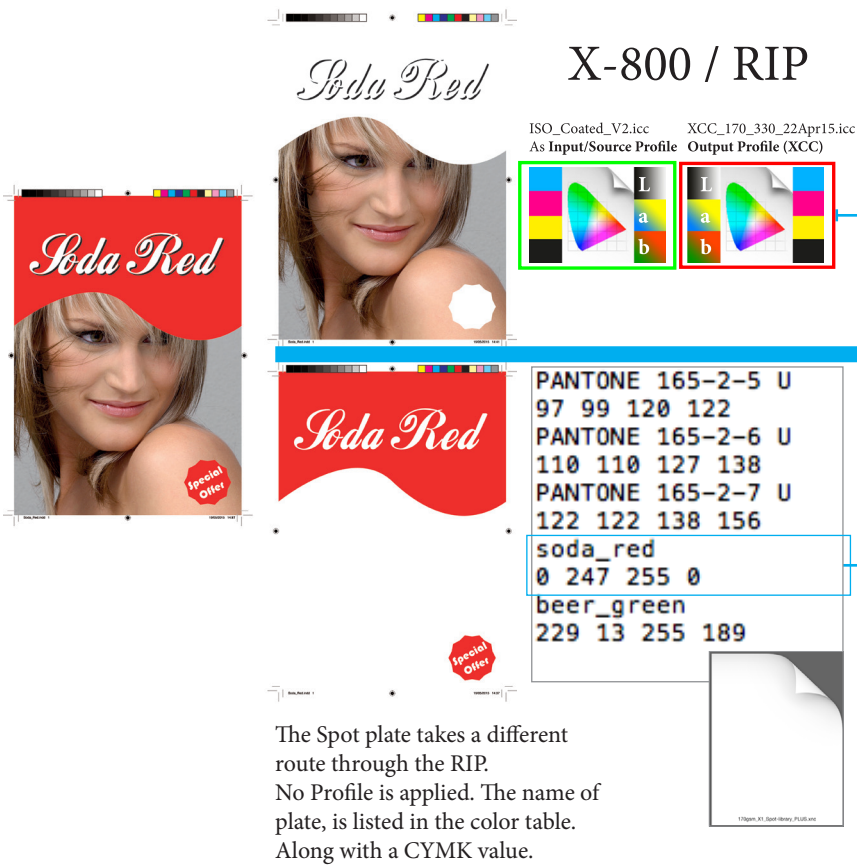
The important thing is to have the best possible recipe. For the output conditions. On pages 22-24, creating and loading a Pantone Table is described.

This table is created based on the output profile.



In this Example.
The Spot Plate/Color is called "soda_red"

X-800 the basic mechanism used to print spot colours



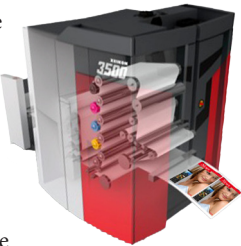
X-800 / RIP

ISO_Coated_V2.icc XCC_170_330_22Apr15.icc
As Input/Source Profile Output Profile (XCC)

PANTONE 165-2-5 U	97 99 120 122
PANTONE 165-2-6 U	110 110 127 138
PANTONE 165-2-7 U	122 122 138 156
soda_red	0 247 255 0
beer_green	229 13 255 189

The Spot plate takes a different route through the RIP.
No Profile is applied. The name of plate, is listed in the color table.
Along with a CYMK value.

CMYK Recipe for the press generated by the profile interaction.
This values will produce the the image



It is this CMYK Recipe read from the table.
This value will produce the the spot plate.

X-800 8 bit table.

When you look at the table the CMYK numbers might appear a little strange. This is because they are NOT percentages.

Rather than the scale being 0-100% (including 0 this scale has 101 values per colour channel).

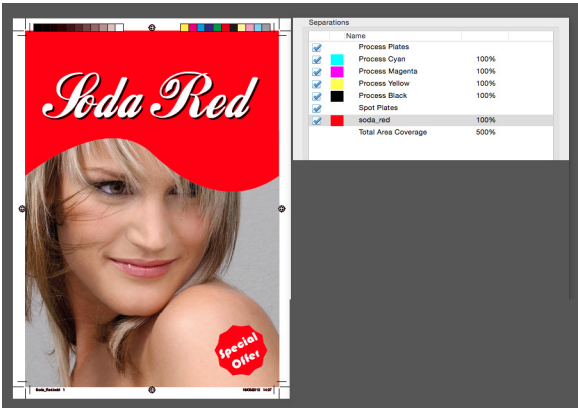
The scale in the X-800 is what is known as 8 bit. 0-255 (including 0 this scale has 256 values per colour channel). This allows more control.

PANTONE	165-2-5	U
97	99	120 122
PANTONE	165-2-6	U
110	110	127 138
PANTONE	165-2-7	U
122	122	138 156
soda_red		
0	247	255 0

→ 8 Bit Values, The color order is C M Y K

Xeikon Colour Control - Spot Brand Colours. 2 Common Scenarios.

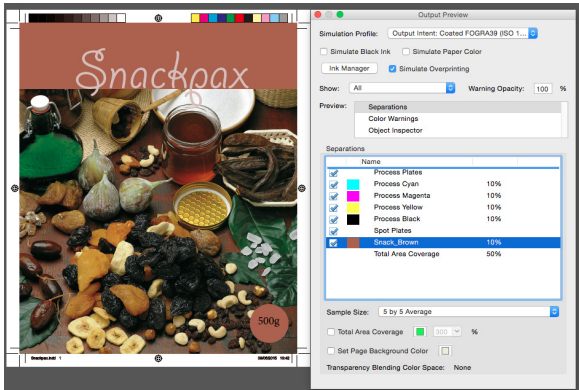
1. Large Brand Owners Will Specify the color in LAB.



Soda Red,
 $L^*=41.20$, $a^*=65.48$, $b^*=47.45$

Note: These are the official Lab's of a famous fizzy drink, check your print against a can.

2. Brand Color defined in file - here it is "Snack_Brown" - You Have a print printed sample to match to.



2. Asked to Match
pre printed samples.



Adding Spot Colors to XCC. Adding LAB values.

Log On to Xeikon Color Control and again move to the expert page.
Click on the [Custom Colors] tab.

XeikonColorControl

Bruce Dransfield
Expert page
Log out



Workflows Custom Colours Create ISO+ control strip Downloads Customer details

Custom Colour name

Colour Name Sample L a b C M Y K

L a b

C M Y K

Upload CGATS

Add the name as it appears in the PDF eg: “Soda_Red”, Add the Lab values and press the the [+] plus button.

Workflows Custom Colours Create ISO+ control strip Downloads Customer details

Custom Colour name

Colour Name Sample L a b C M Y

L 41.20 a 65.48 b 46.45

C M Y K

Upload CGATS

The color will appear in the list.

Workflows Custom Colours Create ISO+ control strip Downloads Customer details

Custom Colour name

Colour Name Sample L a b C M Y K

Soda_Red 41.2 65.48 46.45

L a b

C M Y K

Upload CGATS

Adding Spot Colors to XCC. Adding LAB by Measurement.

Using the **Spot** setting in i1Profiler Measure the solid spot color.
The Result will be text file.



Go to the Custom Colors Tab. Click the upload CGATS.

Workflows

Custom Colours

Create ISO+ control strip

Downloads

Customer details

Custom Colour name

Colour Name

Sample

L

a

b

C

M

Y

K

L

a

b

C

M

Y

K

Upload CGATS

Go to the Custom Colors Tab. Click the upload CGATS. Name your color as it appears in the PDF. Choose file and browse, and to the spot color text file. Press Process

Custom Colour name

Snack_Brown

Choose File

Spot_CGATS Data.txt

Process

The color will appear in the list.

Workflows

Custom Colours

Create ISO+ control strip

Downloads

Customer details

Custom Colour name

Colour Name

Sample

L

a

b

C

M

Y

K

L

a

b

C

M

Y

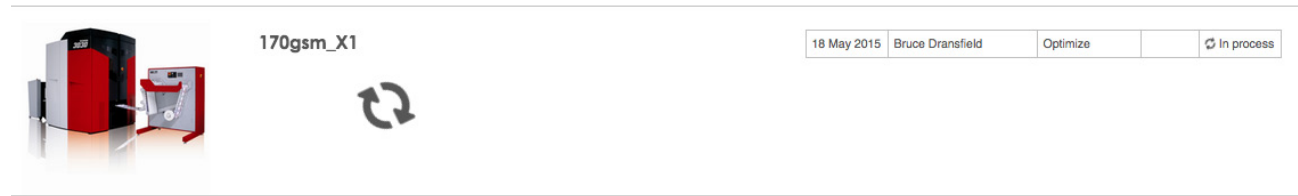
K

Upload CGATS

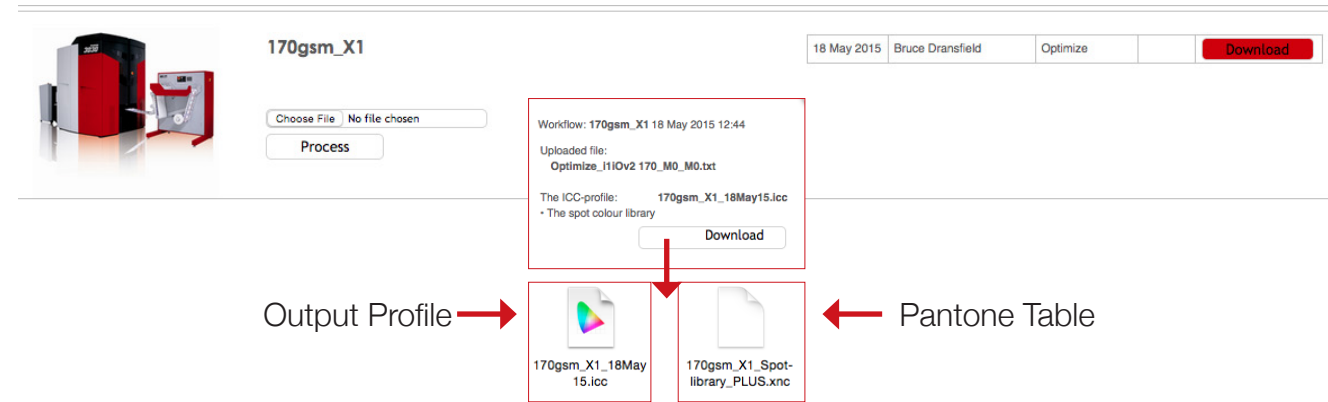
Soda_Red		41.2	65.48	46.45						
Snack_Brown		47.822	33.525	34.07						

Creating Your New Spot Color Table.

You must recreate the profile from the main interface, so it is important that you save your CGATS files in a logical place and name.

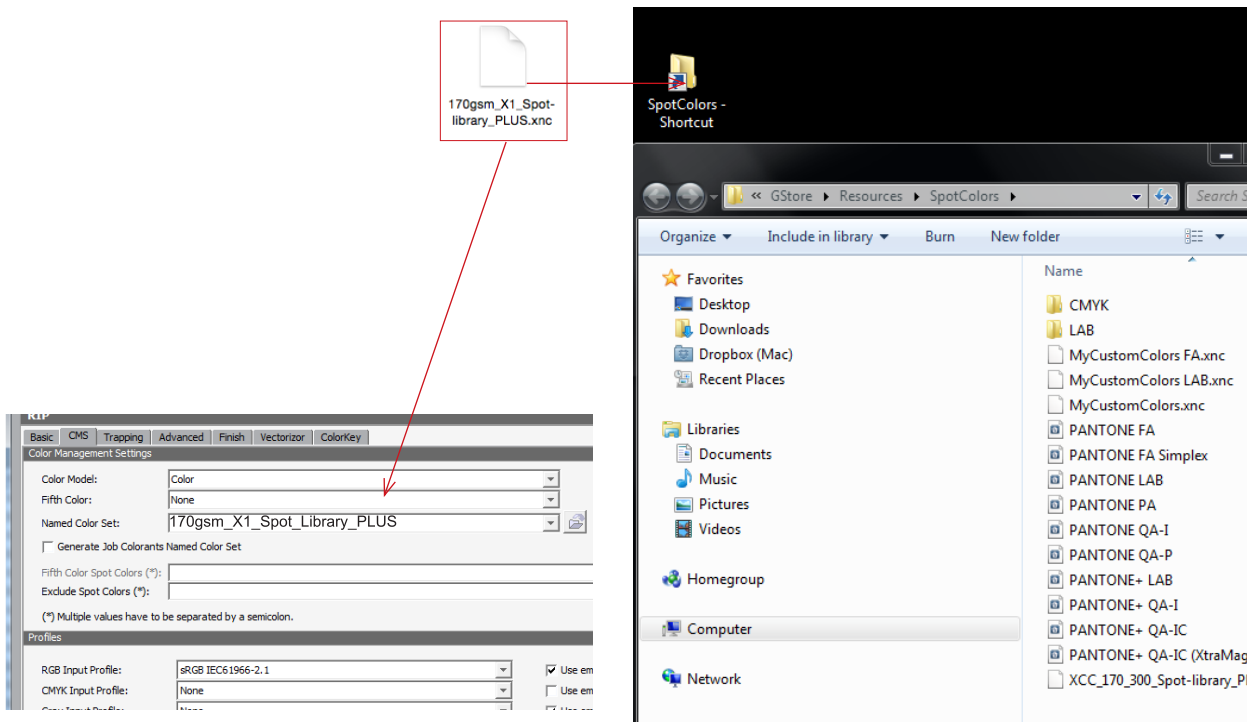


In 5 mins you will see a a RED download button. Click and download your new profile and optimized pantone library.



Your New pantone table will contain your Brand Colors.

On the desktop you of your X-800 there will be a shortcut (please add if training). to the spot color folder. Drag and Drop the spot color table into the short cut.

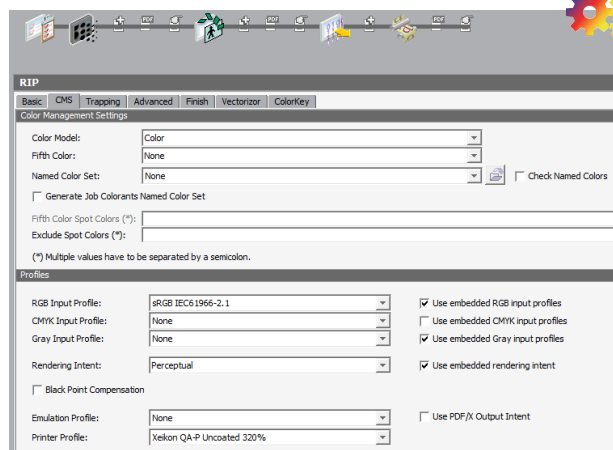


X-800 COLOR FLOW.

By default, the X-800 does not apply .ICC profile color changes to input files RGB are an expectation but are converted early in the flow to CMYK. Named/Spot/Pantone colors are controlled by tables.

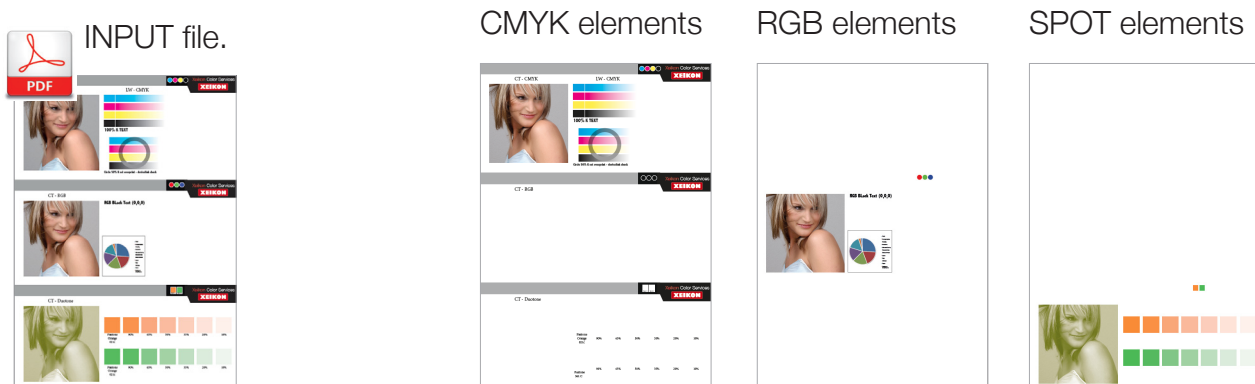
Lets look at the flow of the document.

DEFAULT X-800 COLOUR FLOW

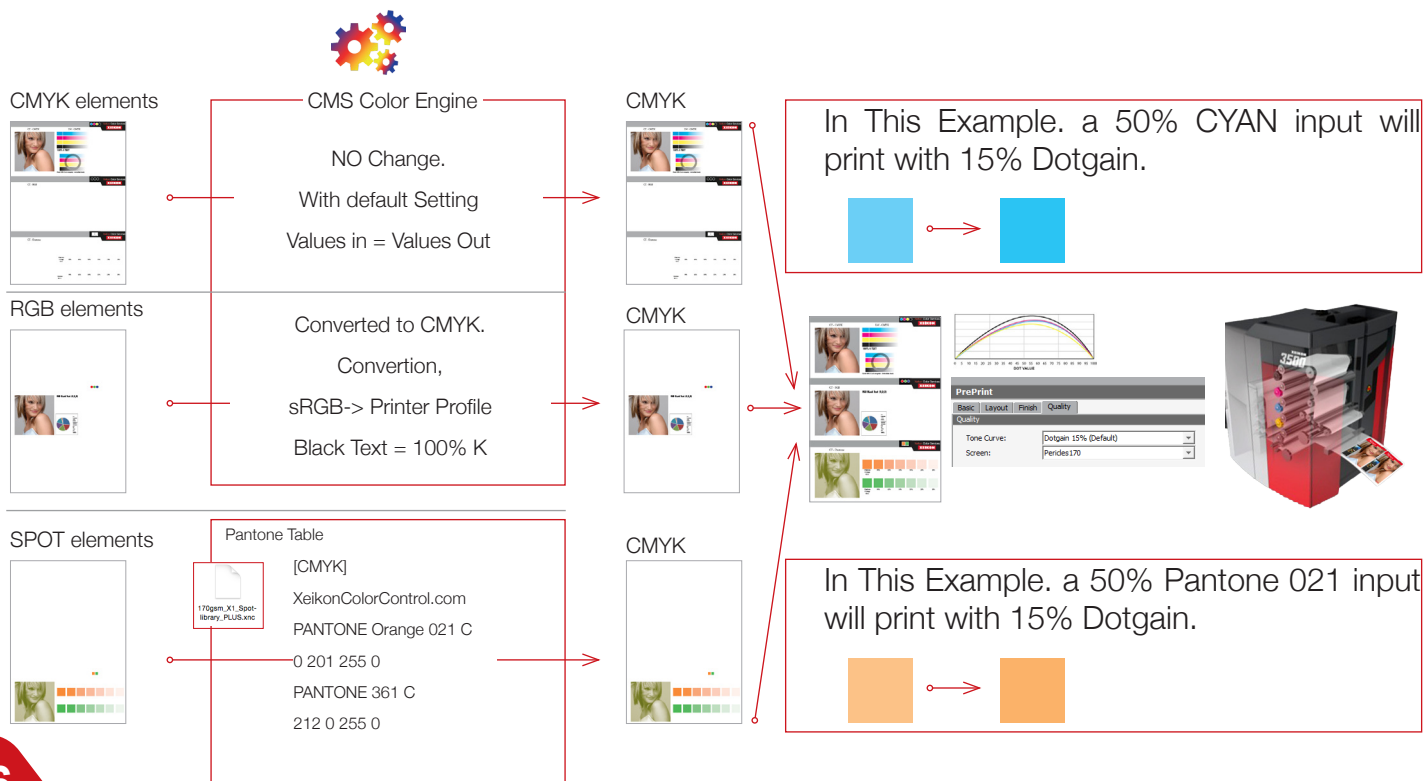


COLOR MANAGEMENT ENGINE

15% DOTGAIN ADD TO WHOLE FILE



DEFAULT X-800 Color Flow, Journey of your file.

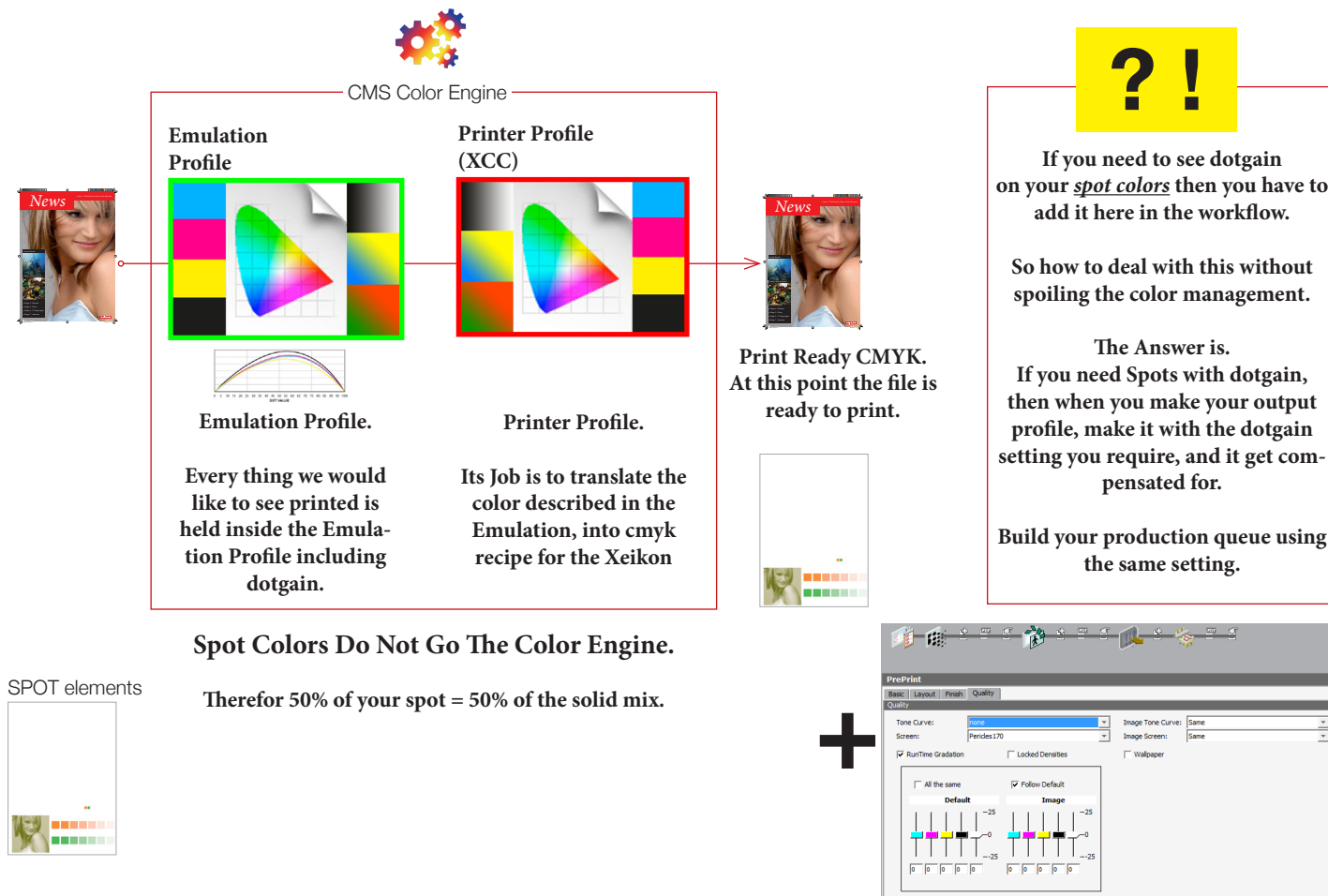


X-800 Dealing with Dotgain and a Profiled Workflow.

When moving to a colour management workflow, you will move to working with Emulation Profiles.

Emulation profiles describe another printing process, and part of any printing process is of course dotgain.

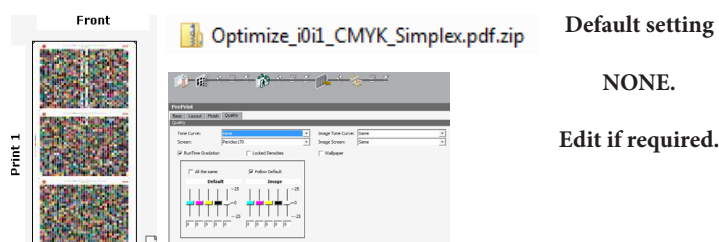
Simply CMYK Workflow



X-800 Dealing with Dotgain Summary.

The Pre-Configured X-800 Optimize job which is used for creating printer profiles are set to DEFAULT 0% dotgain. When you build a production queue, do so with 0%. The result will be CMYK will have the dotgain described in the Emulation, Solid Spot Colors will respect the table value, Tints of the spot colors will be linear. ALL CMYK and RGB workflow should be built this way.

If your spot color tints need “gain” the profile should be made with the gain selected when you build the profile and also when you build your production queue.





Xeikon Color Services

