Bodoni Systems Ltd

inkWIZE

Color Server Application

Contents

Foreword

Thank you for deciding to buy or test inkWIZE.
inkWIZE gives you a hotfolder-based color server for optimizing image and PDF data with DeviceLink and standard ICC profiles.
The main field of use is the optimization and color conversion of CMYK printing data. The DeviceLink profiles used play a major role as regards the quality of the optimization and color conversion of CMYK printing data. For a number of standard tasks, Bodoni Systems has developed standard DeviceLink profiles that you can purchase in a bundle with inkWIZE.
When using an inkWIZE demo license for test purposes, you have all the available Bodoni Systems standard DeviceLink profiles at your disposal for color conversion, limiting the total amount of color, or saving ink.

Since automated color management often requires extensive configurations, especially for PDF files, we attached great importance to simple creation, duplication and modification of existing queues for standard tasks when designing inkWIZE.

And now, it's time to make a start on testing, optimizing and converting colors.
We hope you have fun and get some impressive results!

The Bodoni Systems Team.

Overview of the Manual structure

Simplest possible operation for standard tasks

We see the main application of inkWIZE as being the optimization of PDF printing data by means of DeviceLink profiles. For the usual tasks, the creation and configuration of queues, inkWIZE makes this possible by means of three mouse clicks. This simple operating mode of inkWIZE - also known as Auto-Setup - is also the starting point of the Manual.

Flexible options for special requirements

inkWIZE offers a host of special options for advanced color management users who also want to implement special requirements. However, these options presuppose extensive knowledge in the fields of color management and PDF.

Consequently, they are explained after the description of how to work with Auto-Setup. Please allow some time for reading in this context, since the material is so complex that the effect of the individual options in the workflow is not always instantly apparent.

Useful tips on the subject of PDF preflighting and inkWIZE

One customary configuration of inkWIZE is a combination with solutions for PDF preflighting.

At the end of this Manual you will find a number of tips on how to combine the two work steps to the greatest possible effect.

Installing inkWIZE

inkWIZE runs under Mac OS X, Version 10.3.9 and higher, and under Windows XP / Vista. The Installer for the respective platform installs the program in the respective Program or Application folder of the operating system.

Demo and full-version license files for inkWIZE

To be able to use inkWIZE, you have to install the license file provided by your inkWIZE dealer. A distinction is made in this context between a temporary demo license and a full-version license. Printing data can be processed with both license types. When using a demo license, the word DEMO appears on the output data. The demo version and the full version also differ as regards the support of DeviceLink profiles. The demo license allows you to work with special demo DeviceLink profiles from Bodoni Systems that are included in the scope of supply of the Installer. This enables you to test how inkWIZE optimizes your workflow with standard profiles before actually purchasing the profiles.

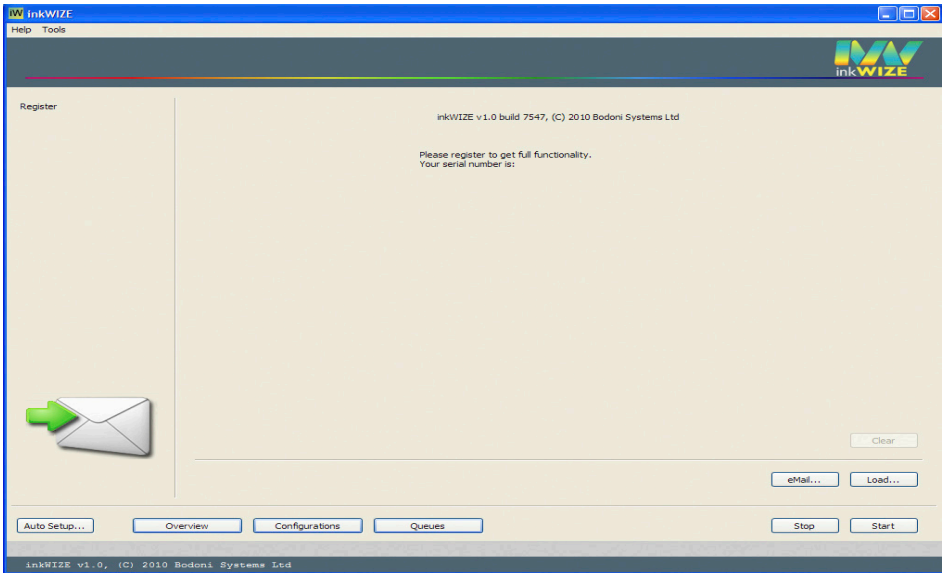
If you purchase a full license for inkWIZE, you cannot use the demo DeviceLink profiles nor will they be shown in the corresponding drop down menues. The corresponding profiles are available as a chargeable option, either separately or in a bundle together with inkWIZE.

Computer-based license versus USB dongle license

A computer-based inkWIZE license always relates to a single computer on which inkWIZE was installed. Only when inkWIZE has been installed can the license be requested via the menu Help / Registration / E-Mail.

This menu item opens an e-mail containing the necessary information for license generation in your standard e-mail application. You should address the e-mail to the dealer who provided you with inkWIZE. After uploading this license, inkWIZE will run exclusively on this computer without a USB dongle.

The USB dongle option is more flexible, the license being used on the inkWIZE USB dongle. The inkWIZE USB dongle is shipped with a full version of inkWIZE as standard, making it possible to use inkWIZE alternately on different computers.



Requesting and installing the demo license

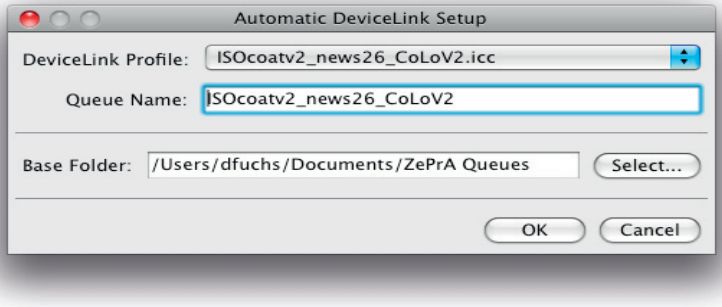
If you would like to thoroughly test inkWIZE as a color server for image and PDF files, we recommend that you request a demo license from your dealer after installing the software. You can then run inkWIZE in Demo mode. This mode works just like the full version, but the word DEMO is printed on every output page. Compared to the regular full version of inkWIZE, using a demo license offers the additional feature that special demo versions of the chargeable standard DeviceLink profiles from Bodoni Systems can be used. The demo license can be requested via the menu `Help / Registration / E-Mail` and is valid only for the computer from which the demo license was requested. The dealer who provided you with inkWIZE should be entered as the addressee. After receiving the demo license, you can load it under >Help / Registration / Load.

Creating the first demo queue with Auto Setup...

After starting inkWIZE, you will find Auto-Setup at the bottom left in the main window. Here, it takes just three mouse clicks to create a queue for optimizing PDF files by means of DeviceLink profiles. Under *DeviceLink Profile*, you can see which DeviceLink profiles are contained in the standard profile folder of your system and/or in the i*nkWIZE/Demo_Profiles* folder.

After selecting a DeviceLink profile, the profile name is used as the default Queue Name, although you can also change it.

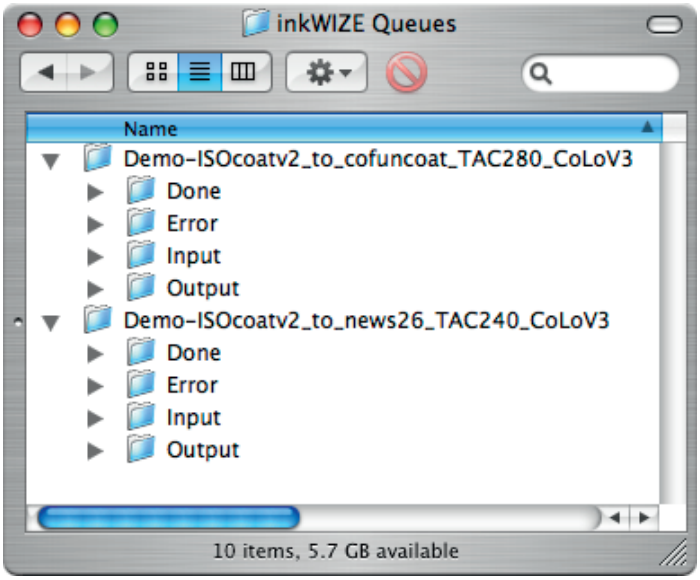
Basic Folder shows the path in which the hotfolders for the respective queues are generated. This example uses the DeviceLink profiles *ISOcoatV2_unc_ColoV2.icc* and *ISOcoatV2_news26_ColoV2.icc*, the purpose of which is to convert printing data from the ISOcoated_v2 color space to ISOuncoated or ISOnewspaper26.



First test run

In accordance with the DeviceLink profiles selected in the example, you will find that the Basic Folder contains two sub-folders. In turn, each of these folders contains the sub-folders *Input* and *Output*.

If you send a PDF file for coated paper to one of the two *Input* folders, inkWIZE automatically converts it for uncoated paper or newspaper printing, then filing it in the respective *Output* folder. You can use the queues immediately.



Overview of the Bodoni Systems standard DeviceLink profile sets

For many standard tasks, Bodoni Systems provides sets of standard DeviceLink profiles, called DLS that can be used for color conversion, limiting the total amount of color and saving ink.
If the profile name starts with *Demo-*, it is a coded version that only works with a demo license for inkWIZE. The normal, uncoded Bodoni Systems standard DeviceLink profiles comply with the ICC Standard for DeviceLink profiles. They work both with the demo license and with the full-version license of inkWIZE and can be purchased separately.

Using the demo version of Bodoni Systems inkWIZE more then 190 Demo-DeviceLink profiles will be installed for testing. With the help of the *Auto Setup* feature explained in this manual, with just a few mouse clicks you can set up configurations and queues for either color conversion, save ink or TAC reduction in order to test the quality of the profiles on your own PDF, TIFF or JPEG files.

In order to assist you in selecting the right profile from the large list of supported standard DeviceLink profiles, inkWIZE shows the profiles in a certain order in the drop down menues. The profiles available in the operating systems profiles folder are ordered according to the profile type, e.g. CMYK-to-CMYK, followed by CMYK-to-Gray, CMYK-to-Multicolor etc and are differentiated with a divider between them. In addition in case of a demo version of inkWIZE the profiles installed in the subfolders of the *Demo_Profiles* folder are shown in the drop down menues according to the subfolders structure shown with a divider between the profiles. In the full licensed version of inkWIZE the provided demo profiles are not shown at all in the drop down menues. With inkWIZE more than 190 DeviceLink profiles for international printing standards are installed which can be tested in the demo version. These profiles are created for the following use cases:

- Color space conversion CMYK to CMYK
- Limiting the total amount of color
- Converting CMYK data to Gray
- Saving Ink and print process stabilization
- Color space conversion including ink saving

Support of international printing standards

The standard DeviceLink profiles of the CoLoV3 series are based on the ECI, IFRA, GRACoL / SWOP, Japan profiles as at March 2009. Detailed information on the field of application of the ECI profiles can be taken from the document "Media Standard Print 2008" of the German Printing and Media Industries Association (Bundesverband Druck und Medien) at www.bvdm.org, and from the documentation on the individual profiles in the download area of www.eci.org. Information on the GRACoL, SWOP and SNAP profiles can be found on the Web sites at www.gracol.org , www.swop.org and www.snapquality.com.
Information in English on color profiles and characterization data for Japan can be found in the Color Management area of the Ghent Working Group at www.gwg.org, and in the ICC Registry at www.color.org.

DeviceLink profiles have been created for the following international printing standards

ISOcoated_v2	Offset, coated paper	FOGRA39
ISOcoated	Offset, coated (obsolete)	FOGRA27
ISOwebcoated	(Web) offset, LWC paper	FOGRA28
ISOuncoated	Offset, uncoated	FOGRA29
ISOuncoatedyellowish	Offset, uncoated yellowish	FOGRA30
ISOcofcoated	Continuous forms, coated	FOGRA31
ISOcofuncoated	Continuous forms, uncoated	FOGRA32
SCpaperECI	Web offset, SC paper	FOGRA40
PSOmfc	Web offset, MFC paper	FOGRA41
PSOsnp	Web offset, standard newsprint	FOGRA42
PSOcoatedNP	Offset, coated FM with 28% dot gain	FOGRA43
PSOuncoatedNP	Offset, uncoated FM with 28% dot gain	FOGRA44
ISOnewspaper26	Newspaper, 26% dot gain	IFRA26
PSRhwc	ECI gravure, HWC paper	
PSRlwc	ECI gravure, LWC paper	
PSRsc	ECI gravure, SC paper	
PSRmf	ECI gravure, MF paper	
GRACoL1	US offset / gravure, Grade 1 (coated)	CGATS TR006
SWOP3	US offset / gravure, Grade 3 (LWC white)	CGATS TR003
SWOP5	US offset / gravure, Grade 5 (LWC yellowish)	CGATS TR005
SNAP2007	US newspaper	CGATS TR007
JapanColor2001Coated	Japan offset, coated	JC200103
JapanColor2001Uncoated	Japan offset, uncoated	JC200104
JapanColor2003WebCoated	Japan web offset, LWC	JCW2003
JapanColor2002Newspaper	Japan newspaper	JCN2002

DeviceLink profiles for color space conversion

Profiles for color space conversion are structured according to the following system: *SourceColorSpace_to_TargetColorSpace_TACxxx_CoLoV3.icc*.

These conversion profiles are based on the ECI profiles for printing according to ISO 12647-2 / PSO, and the GRACoL and SWOP profiles of the IDEAlliance for printing according to G7 Guidelines.
Conversion profiles whose name includes *_TACxxx_* optimally preserve the color composition of the source data (separation preservation) and merely limit the total amount of color (TAC) according to the target color space.

Example: *ISOcoatv2_to_uncoat_TAC280_CoLoV3.icc* converts printing data from the ISOcoated v2 color space for coated paper to ISOuncoated for uncoated paper, limiting the total amount of color to 280% in the process.

DeviceLink profiles for limiting the total amount of color

These profiles do not perform any color conversion whatsoever, but limit the total amount of color for a specific printing standard. They are structured according to the following system: *PrintingStandard_TACxxx_CoLoV3.icc*.

Example: *ISOcoatedv2_TAC300_CoLoV3.icc* limits the total amount of color to 300% for offset printing on coated paper.

Profiles are now also available for limiting the total amount of color to 200% for newspaper printing.

DeviceLink profiles for converting CMYK data to Gray

When converting CMYK data to Gray using normal ICC printer profiles, 100% black in the CMYK data is not converted to 100% black in the Gray color space. Depending on the source and target profiles, it is instead only converted to 96%, for example. To prevent the resultant rasterization, e.g. of black text, CMYK-to-Gray DeviceLink profiles are also available for all supported printing standards, ensuring that 100% black is also preserved as 100% black in the Gray color space. The nomenclature of these profiles is structured according to the following system: *SourceColorSpace_to_TargetColorSpace_Gray_CoLoV3.icc*.

DeviceLink profiles for saving ink

Bodoni Systems DeviceLink profiles for saving ink are based on advanced technology for increasing the black component of the printing data, while simultaneously reducing the CMY component. The algorithms used for this purpose enable far better data optimization compared to ICC-based color conversion with strong GCR. The advantages compared to ICC-based conversion with strong GCR include very soft transitions from tertiary colors to pure colors, and the option of leaving colors with a high black component completely unchanged.
Advantages on the press include better printing properties on difficult papers, shorter makeready times, greater stability over the length of the run, and ink savings.
Like the DeviceLink profiles for limiting the total amount of color, the Bodoni Systems DeviceLink profiles with a low ink-saving setting retain the original color composition, and only very slightly increase the black component. They simultaneously reduce the CMY component, and additionally limit the total amount of color. Printshops that have been successful in generally applying DeviceLink profiles to limit the total amount of color, will usually have no difficulty switching to Bodoni Systems DeviceLink profiles with low or moderate ink-saving settings.
Profiles with higher ink-saving settings call for even more accurate compliance with the standardization targets, and particularly a regular check of the dot gains and solid ink densities for black. Depending on application, Bodoni Systems provides SaveInk profiles with three different intensities for all relevant color standards:

1. *PrintingStandard__SaveNeutralxxx_* moderately increases the black component in the neutral color areas. This is ideal for printshops that are looking to make a quick start on saving ink and first want to gather some practical experience. These profiles primarily serve to stabilize the printing process and are less suitable for saving ink.
2. *PrintingStandard__SaveStrongxxx_* greatly increases the black component, and targets printshops that have their printing process completely under control in accordance with the applicable standards and have already used SaveNeutral successfully.
3. *PrintingStandard__SaveMax_* increases the black component to the greatest possible extent, and additionally reduces the total amount of color to approx. 20% less than usual according to the industry standard. This calls for very experienced printers and an excellent mastery of standardization.

DeviceLink profiles for conversion including ink saving

Even once a printshop has gathered positive experience with saving ink, there are still some applications where the printing data supplied do not comply exactly with the standard later to be used for printing. To get optimum color quality, printing data of this kind needs a combination of color conversion and ink saving.
The general nomenclature of these profiles is structured according to the following system:
SourceColorSpace_to_TargetColorSpace_Savexxx_CoLoV3.icc.

Example: *ISOcoatv2_to_uncoat_Save280_CoLoV3.icc* performs conversion from coated to uncoated paper, saves ink in the process, and limits the total amount of color to 280%.

In this context, the extent of the increase in the black component is slightly greater than when using the combination of color conversion followed by application of a SaveStrong profile for saving ink, but not as great as when applying a SaveMax profile.

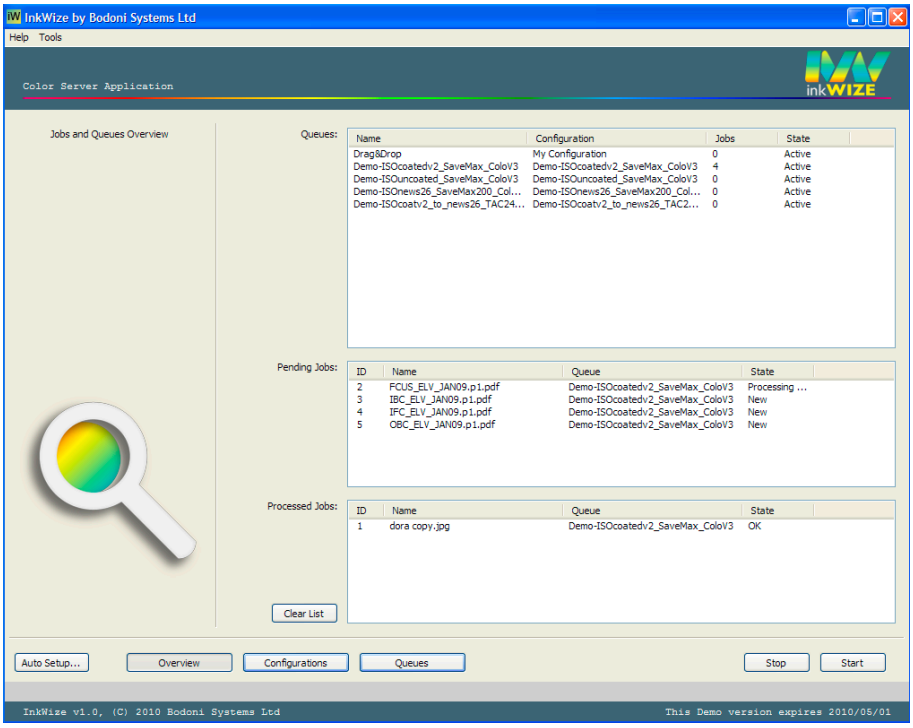
Adaptation of profile sets

Kindly note that we expand or adapt the sets whenever new standard profiles for international printing standards are released. DeviceLink profiles ending with *_CoLoV3* contain special internal identifiers that permit automatic setting of PDF/X color information in inkWIZE via *Auto Setup* (see also p. 18).

The three main windows in inkWIZE

inkWIZE is essentially managed via three main windows, which are completely configured with settings for standard tasks via *Auto Setup*. These three main windows also reflect the internal structure of inkWIZE. The configurations for a queue are always managed separately from the queues themselves in inkWIZE.
The advantage of this is that the configuration assigned to a queue can be changed later on.
In the example shown using `Auto Setup`, two configurations are first created internally.
After that, `Auto Setup` generates two queues, including the necessary folders, and assigns them to the configurations created.

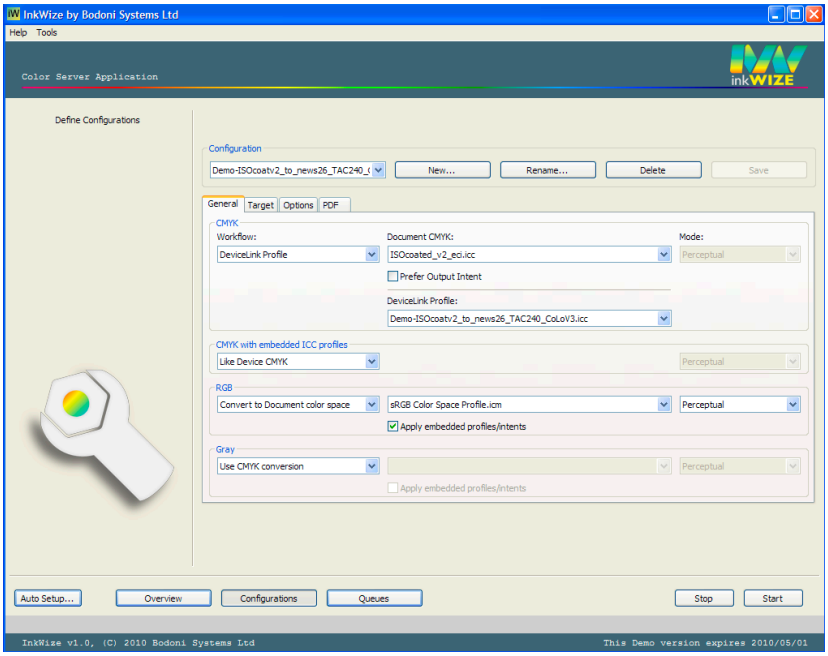
The Jobs and Queues Overview main window



This window indicates which queues have been created in inkWIZE with which configurations.
The screenshot shows the two queues for converting ISOcoated_v2 data to the ISOuncoated and ISOnewspaper26 printing standards. The queues created via *Auto Setup* have the same names as the associated configurations.
Furthermore, the overview shows which jobs are still outstanding, and which have already been processed.

A right mouse click on a job in the *Pending Jobs* or *Processed Jobs* list allows the user to generate a softproof or delete the job.
More information on this subject can be found in the chapter `Special workflow options‘ on pages 27/28.

The Define Configurations main window



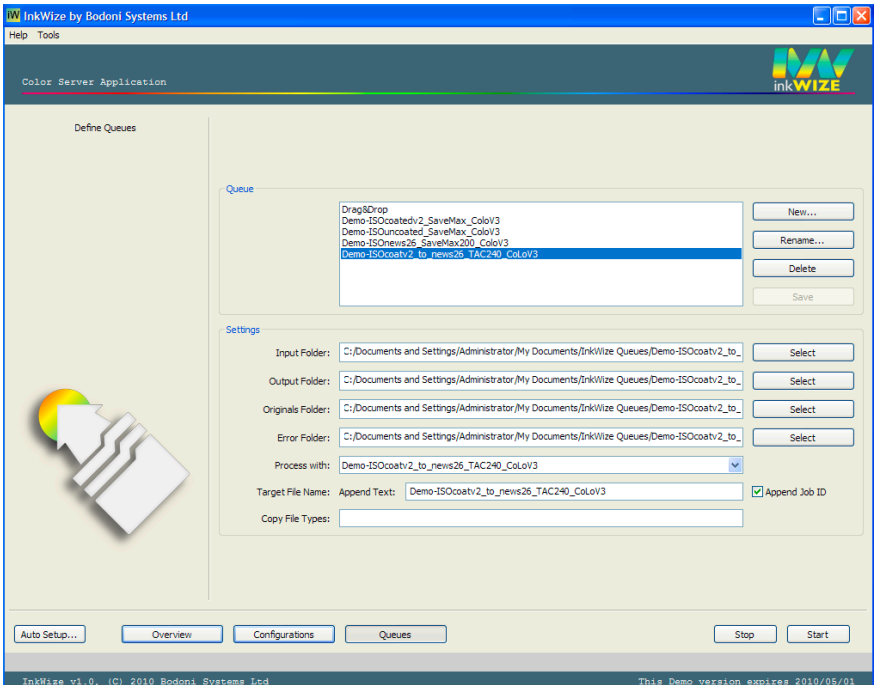
This is where all settings are made regarding the handling of colors and PDF specific parameters. The individual items are explained in more detail in later sections of the Manual.
The topmost area is used to create, rename or delete individual configurations. If an existing configuration is to be duplicated, first select the existing configuration and next click on *New...*. Then, enter the new name, make any necessary changes to the settings, and click on *Save*. A configuration can be renamed at any time. To do so, select it in the drop-down list, click on the *Rename...* button, change the name, and confirm with *OK*. Queues using this configuration are automatically updated.

Please note that, for your safety, every modification you make on one of the tabs in the Configurations window is automatically saved when you switch to a different tab or to the Overview or Queues window.

inkWIZE focuses on the processing of PDF files for printing, this leading to the general structure of the window and its tabs. However, the same configuration can equally be used to process TIFF and JPEG images.

The tab *General* is used to set the type of color transformation (ICC device profiles or DeviceLink profiles), and how color spaces and objects of a PDF file are handled that are not directly present in the document CMYK color space. *Target* is used to specify the target profile of the color transformation. *Options* permits, among other things, more specific handling of spot colors in the DeviceN color space, and *PDF* allows you to make PDF-specific settings.
If you use the *Auto Setup* function, it will create configurations that can generally be used directly, without any modifications.

The Define Queues main window



This window is used to define queues. To this end, you create folders, assign a configuration to the queue, and specify whether and how files are to be renamed after processing. Place the files to be converted in the *Input* folder. The *Done* folder contains the original files after processing. The processed and color converted files can be found in the *Output* folder. Unrecognized and error files are saved in the *Error* folder. Under *Target File Name: Append Text*, you can append a suffix to the original file name. The *Append Job ID* option generates a unique, consecutive number and adds it to the original file name (with appended suffix, where applicable).

If the *Auto Setup* function is used, the folders are created automatically, and the matching configuration assigned. The file name of the optimized PDF file contains both the Queue Name and the Job ID.
When working with the Bodoni Systems standard profiles, *Auto Setup* automatically enters all the relevant PDF/X information (see page 25).

One helpful feature is the possibility of assigning a configuration to the Drag&Drop Queue. This offers a very simple way of testing a configuration by moving the files to be converted into the inkWIZE Overview window by Drag&Drop.

The standard queues that can be created via *Auto Setup...* are suitable for all the usual tasks involved in optimizing PDF files. However, there are occasionally cases where it can make sense to modify a few details of the settings of a standard queue, or to duplicate a standard queue and then make a few changes. However, before getting to that stage, you first need a brief introduction to the automated color management of image and PDF files.
This particularly applies when combining hotfolder-based PDF preflighting solutions with inkWIZE.

Configuring Auto Setup queues

inkWIZE is capable of converting both image and PDF files in one queue. This section describes the impact of the configuration of Auto Setup queues on image files and PDF files. The following sections discuss alternative configuration options for inkWIZE.

PDF files in Auto Setup queues

The main purpose of Auto Setup queues is to optimize PDF files for standardized offset, newspaper or gravure printing. The Bodoni Systems standard DeviceLink profiles used for this purpose are designed in such a way as to safely circumnavigate the customary problems encountered in connection with color management of PDF files.

For example, all Bodoni Systems standard DeviceLink profiles are optimized in such a way that both image and vector data can be reliably converted with them. Vignettes in vector graphics that consist of just one or two CMYK colors still contain only the original colors channels after application of the profile. The color values are adjusted in accordance with the purpose of optimization.

All Bodoni Systems standard DeviceLink profiles have been checked both for smoothness and for visually attractive conversion, and have proven their worth in many months of practical use.

All Auto Setup queues process image and vector data identically, therefore, it is easily possible to optimize PDFs with flattened transparencies.

If a PDF file contains transparencies, individual PDF objects are processed in exactly the same way as in a PDF file without transparencies. The transparency information is preserved unchanged.

If necessary, the gradation of grayscale objects is automatically optimized in the standard queues without converting to 4 colors. If PDF objects are present in the RGB color space, the embedded profile converts them to the document color space. If a relative colorimetric intent is embedded in PDF RGB objects, an Auto Setup queue automatically activates black point compensation to ensure clean reproduction of details in the shadows.

The output PDF file from an Auto Setup queue is always a pure CMYK file without embedded profiles in individual objects. If data including additional spot colors are present, these colors are not changed in the standard queues.

In Auto Setup queues with color conversion, all the color information necessary for PDF/X is set automatically, including use of the target profile as the Output Intent.

In practice, the Auto Setup queues can be used as an automatic function without encountering any problems on almost every occasion.

Pure image files in Auto Setup queues

TIFF or JPEG image files in an Auto Setup queue are handled in a similar way as the corresponding objects of a PDF file. As a rule, CMYK images with or without a profile are optimized via the DeviceLink profile of the CMYK settings. RGB files are first converted to the document CMYK color space and then optimized via the DeviceLink profile of the CMYK settings. For a number of applications, it is advisable to use different configurations, the possibilities of which are described on the following pages.

See chapter `Image files in inkWIZE queues` on page 22 for further details.

inkWIZE configurations in detail

The *Configurations* window is designed to permit the structuring of color conversion with ICC device profiles and with ICC DeviceLink profiles, and also a mixed workflow in the case of PDF files. This results in a great variety of options. To understand them, it is first necessary to go into a little more detail regarding color spaces in PDF files.

1. Profiles in individual objects

Individual objects (images or graphic/text objects) in the PDF file may have embedded profiles and associated rendering intents which need to be honored.

2. Document color space

The document color space serves as a reference when it comes to creating a standard reference for the colors of a PDF file. CMYK color spaces are almost always used as the document color space in print production, as CMYK colors are generally also used for printing.

If a PDF file contains individual RGB or CMYK objects with embedded profiles, they are usually converted from the object color space to the document color space for softproofing on the monitor or for output for proofing or printing.

PDF/X has the Output Intent to ensure that the document color space is unequivocally defined when exchanging PDF/X printing data.

3. Target color space

The situation can arise where the document color space/Output Intent of a PDF/X file does not match the color space of the ultimate printing process. In this case, the entire PDF file has to be converted from the document color space to the target color space. DeviceLink profiles are particularly suitable for this purpose.

The role of Document CMYK in inkWIZE

The document color space of a PDF file can be defined in three ways when working with inkWIZE.

1. Specification of an ICC profile in the inkWIZE *CMYK* configuration window

Manual selection of an ICC profile in cases where the PDF file does not have an Output Intent.

2. Use of the Output Intent of a PDF file

If the *Prefer Output Intent* option is activated in the inkWIZE configuration under CMYK, any existing Output Intent replaces the ICC profile defined for the document color space under 1. in the inkWIZE workflow.

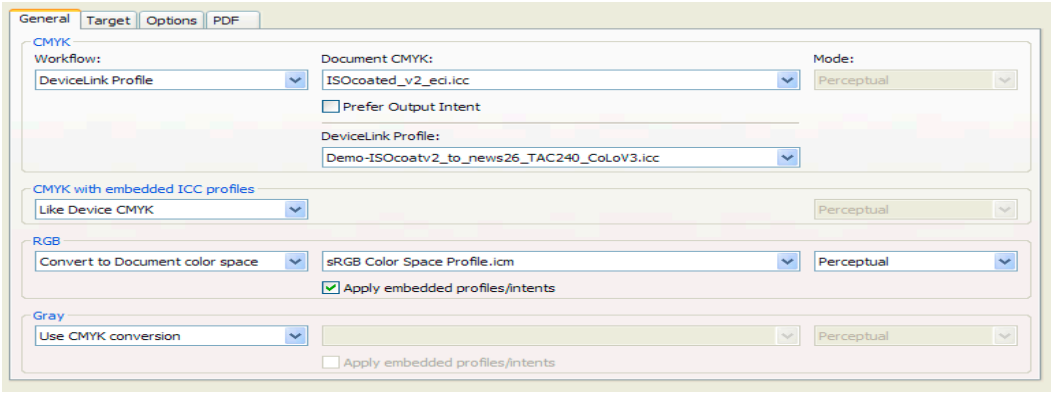
3. Automatic setting of document CMYK and target profile by DeviceLink profile

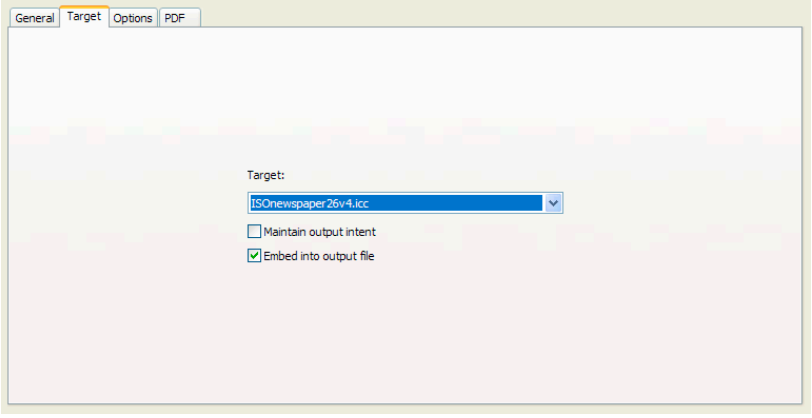
A DeviceLink profile represents a tailor-made color transformation from a defined source (e.g. document CMYK) to a target profile.

Within the ICC Standard, there is the possibility of using the *Profile Sequence Identifier* - PSID Tag for short - in the DeviceLink profile, to indicate the source and the target color space for which a DeviceLink profile was calculated.

inkWIZE is capable of reading the PSID Tag, and thus of automatically setting the profiles under *Document CMYK*" and *Target*.

Saving the user unnecessary configuration work. Incidentally, this is also how the Output Intent is set automatically in Auto Setup configuration.



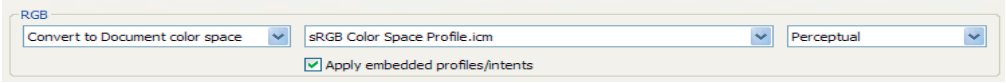


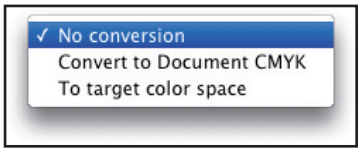
Handling of ICC-based PDF objects

Individual objects (images, graphics, text objects) within PDF files may have embedded profiles. This results in a number of different options in the workflow.

Handling of ICC-based RGB objects

The most commonly used procedure for RGB objects is direct conversion to the target color space.
However, if DeviceLink profiles are used for optimizing PDF printing data, it may well make sense to first convert such objects to the document color space in order to then optimize all the objects in the PDF file by means of the DeviceLink profile. This is the default setting when creating configurations with *Auto Setup*.





For example, the ISOuncoated.icc profile has a maximum total area coverage of 320%, whereas all Bodoni Systems standard DeviceLink profiles with ISOuncoated as the target color space limit the total area coverage to a maximum of 280%. If the user wants to be certain that all the objects in the PDF file really do have a total area coverage of no more than 280% for printing on uncoated paper, it makes sense to first convert RGB objects to *Document CMYK*.

Handling of ICC-based CMYK objects

For CMYK objects with embedded profiles, there is additionally the option of converting them directly with the settings for *Like Device CMYK*. If a DeviceLink profile is selected under *CMYK*, the embedded CMYK profile is ignored for the PDF object, and the DeviceLink profile is used directly for conversion instead. If the DeviceLink profile was calculated with the option of preserving pure primary and secondary colors, this option ensures that pure colors remain pure in CMYK objects with embedded profiles.
If the *To Target* setting is selected, direct ICC-based conversion to the target profile is performed, circumventing the DeviceLink profile. Pure CMYK colors are then almost always contaminated.

Mode / Rendering Intent

When using ICC profiles for conversion, inkWIZE offers not only the standard rendering intents, but also additional options. However, this calls for a brief introduction to the structure of ICC profiles.

If you take a closer look at an ICC profile with suitable tools, you will see that the rendering intents, such as *perceptual* or *relative colorimetric* are large tables that, in the case of CMYK profiles, convert either CMYK color values to Lab, or Lab color values to CMYK.

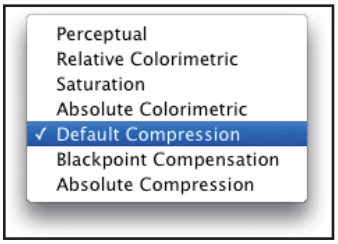
Because of the different directions of color conversion, there are two tables for each intent. These tables are calculated when generating a color profile from colorimetric data. If different profiling software is used to calculate ICC profiles from the same colorimetric data, the tables generated in the process differ substantially in some color areas.

This is particularly true of the two tables for the perceptual intent, and also of the areas of very high color saturation in the two tables of the relative colorimetric intent - also known as *out-of-gamut* colors.

To obtain optimum, harmonious color transformation, it is advisable to ensure that the source profile and the target profile were calculated using the same profiling software, particularly where CMYK-to-CMYK conversion is involved. However, this is frequently impossible in practice, due to the fact that profiles from different providers are often used, e.g. from Adobe or the ECI.

Extended inkWIZE modes

The extended modes of inkWIZE make it possible to avoid unharmonious color transformations that can result if the tables for the source and target profiles are calculated differently. This is done by inkWIZE completely recalculating the source and target profile tables on-the-fly. Three different modes are available for perceptual rendering:



1. *Default Compression* calculates a perceptual rendering for the source and target profiles that is highly suitable for all kinds of gamuts in the source and target profiles. In this context, the gray axis of the conversion is always relative to the paper white of the target profile. If RGB data are converted to a very yellowish paper, the gray balance of the transformed file is also slightly yellowish.
2. *Black Point Compensation* largely corresponds to the *relative colorimetric with black point compensation* option in Adobe applications, with additionally improved rendering of out-of-gamut colors. This version is highly suitable if the gamut and contrast range of the source and the target are not too different, e.g. when converting RGB data with normal saturation to coated papers. As with Standard Compression, the gray axis of the conversion is relative to the paper white of the target profile.
3. *Absolute Compression* is likewise best suited to data where the gamut and contrast range of the source and the target are not too different. In contrast to Default Compression and Black Point Compensation, the paper color is compensated for in the gray balance. In this way, it can be ensured that the color appearance of the original file is optimally preserved on a target medium with a different paper color.

Handling of gray objects

The handling of gray objects is no trivial matter when using ICC color management. They are often excluded from color management, or they are composed of four colors after conversion. inkWIZE offers options both for adapting gray objects by color management and leaving them gray, and for performing explicit color space conversion to the target profile (RGB or CMYK).

Options that preserve gray

The *Use CMYK Conversion* option treats gray objects in accordance with the CMYK settings. This only makes sense if the DeviceLink profile selected there maps pure CMYK gray of the source to pure CMYK gray of the target.

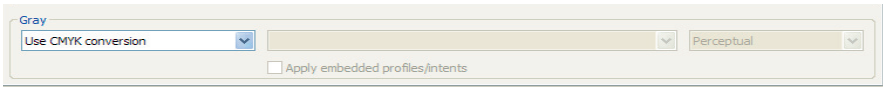
This is the case with all Bodoni Systems standard DeviceLink profiles, for example.

It should be noted in this context that embedded profiles in gray objects are always ignored and removed.

The *Linearize* option uses the black channel of the CMYK target profile to perform an on-the-fly calculation of a grayscale profile, then transforming gray objects from their source profile to the target. Note that, to use the *Linearize* function, grayscale objects without a profile must first be assigned a suitable profile. This should ideally match the black channel of the profile under *Document CMYK*.

Options that convert gray to CMYK or RGB

If gray objects are converted directly to *Document CMYK* or the *target color space*", they are afterwards composed of four colors, or as RGB. The latter is the case if an RGB profile is specified as the Target Profile.



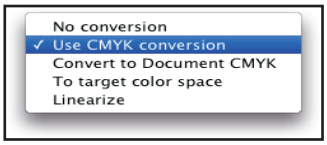


Image files in inkWIZE queues

One queue in inkWIZE can process both PDF files and TIFF or JPEG images. In each case, the same settings are used as for the corresponding PDF objects. CMYK images without a profile are converted in accordance with the CMYK settings. The settings for CMYK with embedded profiles are used for CMYK images that have a profile. If RGB images have an embedded profile, this profile is always used. In the case of RGB images without a profile, the profile specified in the RGB settings is used. While the intent specified in inkWIZE is used for image files, the embedded intents have priority in the case of RGB objects in PDF files. The settings on the *Target Profile* tab determine whether the target profile is also embedded at the end of conversion. RGB-CMYK DeviceLink profiles can also be selected in the RGB settings to deal with special applications.

Use of multicolor profiles

With inkWIZE it is possible to use either multicolor printer pofiles as target profile or DeviceLink profiles which are able to handle an RGB-to-Multicolor or a CMYK-to-Multicolor color transformation.

Use of multicolor target profiles in the PDF workflow

A special feature of inkWIZE is the possibility of using multicolor profiles as target profiles. This is, for example, an option in prepress work for packaging printing if image data are present in the form of an RGB file. They can then be positioned directly in the finished document, which is then used to produce a PDF file with RGB images before converting the complete document in inkWIZE.

Another field of application would be, for example, the printing of photo books by so-called HiFi color printing processes using 6 or 7 inks.
In this case, you get what is known as a DeviceN PDF file, where every single channel is named like the channel name of the multicolor profile. DeviceN has for many years been the standard color space in PDF for describing spot colors for print production. It offers a high degree of compatibility with the time-proven spot color processing functions in common application programs.

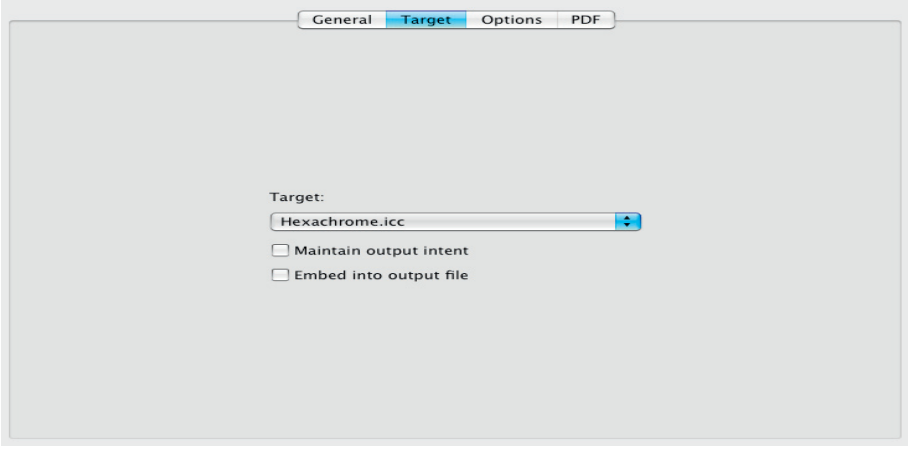
The PDF files generated can usually be assessed in the Separation Preview of the current version of Adobe Acrobat Professional. As a rule, they can be processed with current PDF workflow systems, and can be positioned in current Adobe InDesign documents in order to again export a PDF file from there.

However, depending on the multicolor profile used, the channel designations used there, and the subsequent workflow outside inkWIZE, the complete workflow needs to be tested beforehand to make sure that everything runs smoothly.

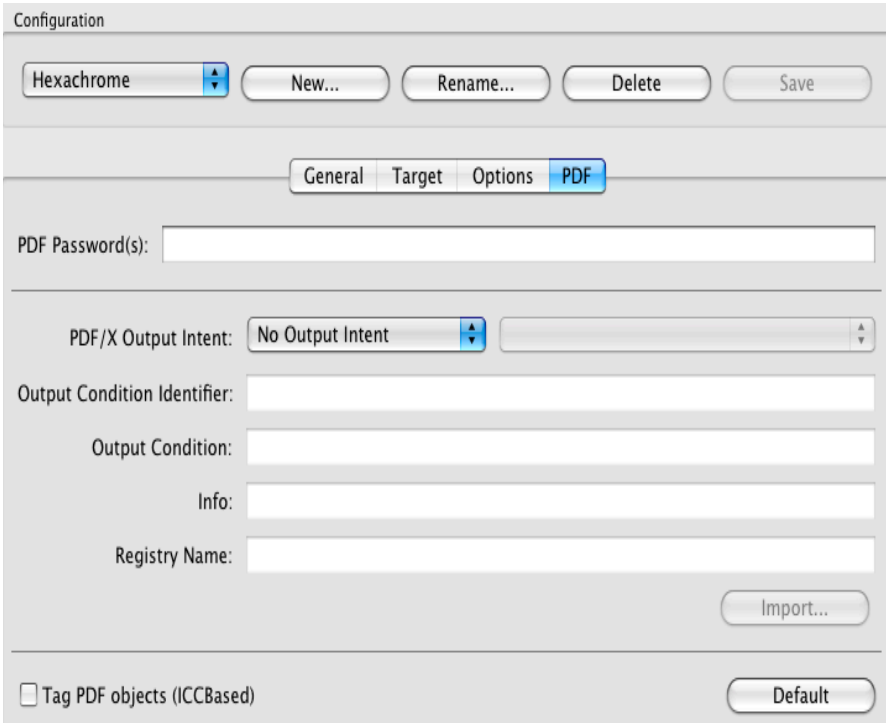
If pure image data are to be converted, please note that inkWIZE does only support TIFF files when using multicolor profiles for conversion. inkWIZE will create CMYK+alpha channel TIFF files. Needless to say, however, you can convert image files in PDF format by means of multicolor target profiles and position them in InDesign.

To generate correct multicolor PDF files with inkWIZE, you must pay attention to the following (the example shows use of a multicolor printer profile):

The *Embed into output file* option under *Configuration / Target* must not be active.

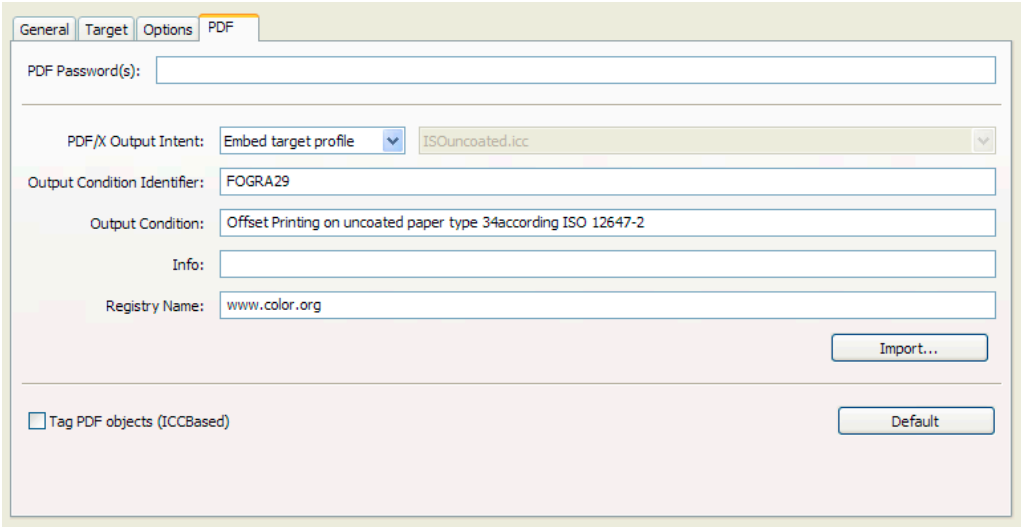


Under *Configuration / PDF*, the PDF/X Output Intent item must be set to *NO Output Intent*, and *Tag PDF objects (ICC-Based)* must not be active.



Setting PDF/X information

The *Configuration / PDF* tab offers the option of including PDF/X-specific information with the optimized or color-converted PDF file. This particularly makes sense when inkWIZE is used for generating printing data. Based on the PDF/X entries, the printer receiving the PDF/X data can then identify the printing standard for which the PDF/X files supplied were optimized. The following are important PDF/X entries:



PDF/X Output Intent:

The color profile that describes the printing color space for which the PDF file was generated. The *Embed Target Profile* option can be used to automatically embed the target profile of the configuration as the Output Intent. Alternatively, a different profile can be defined manually, or the Output Intent of a configuration can remain unchanged in general.

Output Condition Identifier:

The colorimetric data on which the color profile of the Output Intent is based. This information is important because different vendors offer profiles with occasionally widely varying names, e.g. for the printing standards FOGRA39 / ISOcoated_v2 or FOGRA29 / ISOuncoated. If a printer receives PDF/X data from users who work with different profiles, the Output Condition Identifier tells him whether the profile is for an industry standard or a highly individual profile.

Output Condition:

Simple term for the printing standard for which the PDF/X data were optimized.

Registry Name:

At www.color.org, the ICC keeps a registry of colorimetric data / Output Conditions that represent international printing standards.

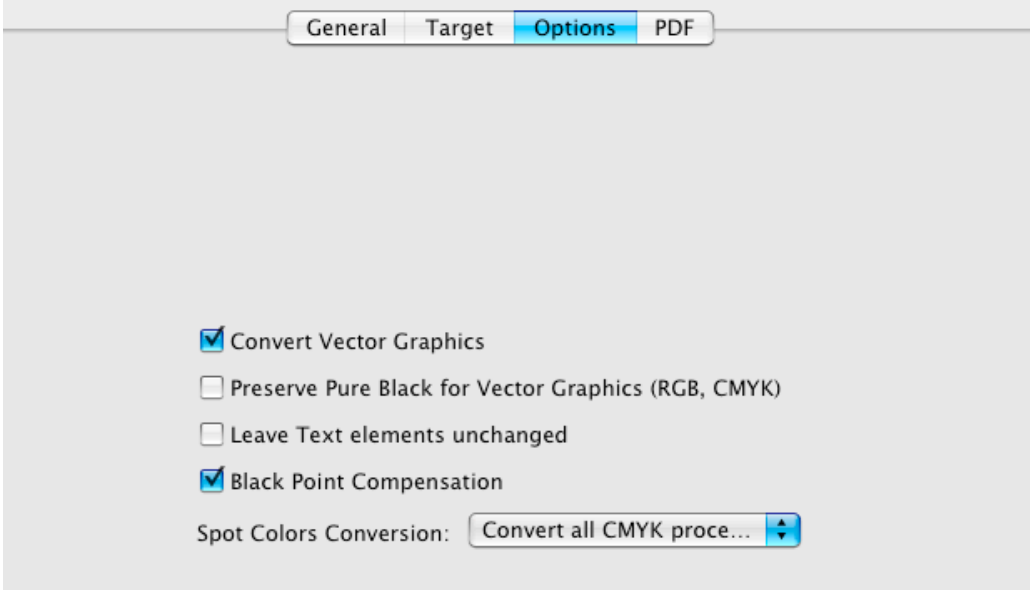
If a printer works with numerous different suppliers, it makes sense to agree on a name / Output Condition Identifier registered with the ICC.

Automatic control of PDF/X information

If the Bodoni Systems standard DeviceLink profiles ending with *_CoLoV3* are used, they contain information that is automatically entered in the corresponding fields for PDF/X information in inkWIZE. When creating queues via the *Auto Setup* option and using the Bodoni Systems standard DeviceLinks, there is no need to make any manual entries in the PDF/X information.

Importing PDF/X information

If a PDF/X file is loaded via the *Import* button, inkWIZE automatically extracts the PDF/X information, eliminating the need for manual input.



Special conversion options

Handling of vector graphics

If, for example, PDF files contain flattened transparencies, it is frequently the case that pixel and vector data of the same color are contiguous. Consequently, the basic setting in inkWIZE always converts pixel images and vector graphics in the same way. This reliably avoids color breaks between contiguous pixels and vector objects of the same color.

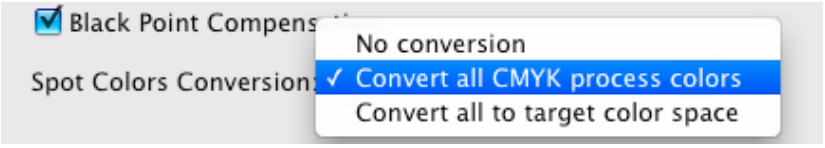
To achieve high-quality color conversion, it therefore makes sense to use DeviceLink profiles that preserve the purity of components composed of one and two colors. However, in special cases where CMYK conversions in inkWIZE are performed by converting with ICC source and target profiles, it is also possible to exclude vector graphics entirely from color management by deactivating the *Convert Vector Graphics* option.

Text and vector graphics are independent objects within the PDF format. For both types of object, the inkWIZE options offer possibilities for preventing black vector graphics or black text being converted into four colors by an ICC transformation. These options are not necessary if the Bodoni Systems standard DeviceLink profiles are used, since they are calculated in such a way that pure black always remains pure.

When dealing with RGB PDF files originating from Office programs, for example, *Preserve Pure Black for Vector Graphics* converts RGB black to pure CMYK black.

Black point compensation

If embedded profiles for RGB, gray or CMYK are activated in inkWIZE, the consequence of this for PDF files is that the embedded rendering intents are also activated. In this case, the intents defined in the GUI are ignored. Numerous scenarios are conceivable where the relative colorimetric intent is embedded when generating PDF files with embedded profiles and intents. To permit high-quality color conversions with the relative colorimetric intent, *Black Point Compensation* should always be activated under *Configurations / Options*, so as to avoid unnecessary clipping during output.



Handling of spot colors

inkWIZE offers various options for handling spot colors

No Conversion means that all objects defined as spot colors are left unchanged.

Convert All CMYK process colors relates to spot-color objects bearing the names *Cyan, Magenta, Yellow, Gray and Black*. These are in fact CMYK objects, but have been created as individual spot-color separations in the DeviceN color space. The *Convert All CMYK process colors* option temporarily converts PDF objects of this kind into CMYK objects, optimizes them in accordance with the inkWIZE CMYK settings, and then converts the optimized PDF objects back into spot-color objects bearing the names *Cyan, Magenta, Yellow, Gray, and Black*.

The final step of back-conversion is necessary because, within the PDF format, spot colors in the DeviceN color space have different overprinting properties than classical CMYK objects. For this reason, it is advisable to have this option activated as standard, this also being the case for queues created using *Auto Setup*.

Convert All to target color space turns spot-color objects into CMYK objects. The details of what happens in the process very much depend on the so-called Alternate ColorSpace of the spot-color object. The Alternate ColorSpace is a substitute color space for spot-color objects that is stored in the PDF file and can take the form of CMYK, RGB or Lab color definitions. Depending on the color space of the Alternate ColorSpace, the colors go through the CMYK or RGB settings of inkWIZE, or are converted directly from Lab to the target color space.

Conversion of PDF files with transparencies

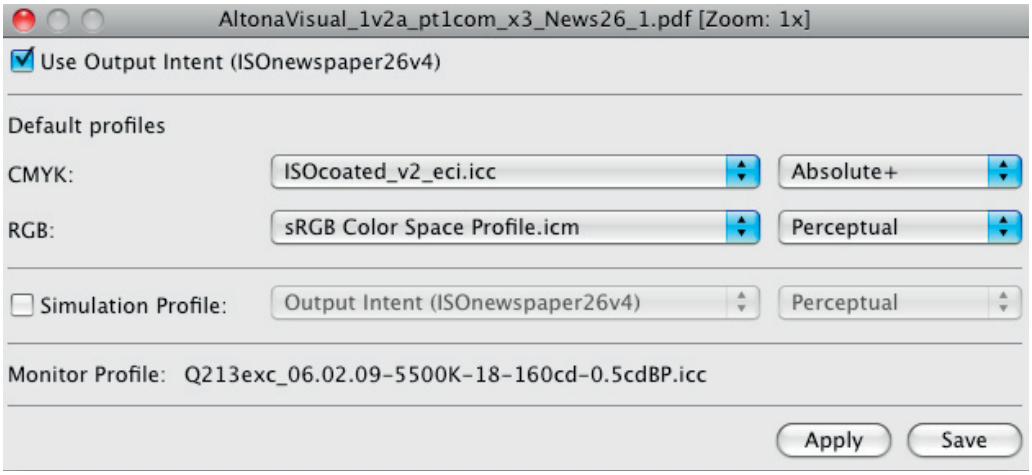
inkWIZE can be used for the color management of PDF files containing transparencies. Please note in this context that the transparency color spaces of all objects should generally be based on the color model of the target profile. The default setting for the transparency color space in Adobe Creative Suite is CMYK, meaning that there are usually no problems whatsoever with print-related workflows in inkWIZE.

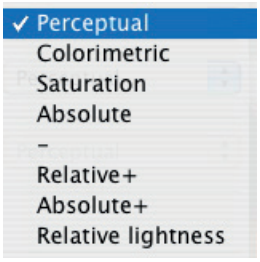
Anyone who wants to be on the safe side should run a preflight before using inkWIZE, and harmonize the transparency color spaces of a PDF file by means of the preflighting program.

Compatibility with GWG patches

At www.gwg.org, the Ghent Working Group provides a number of PDF test files for assessing the behavior of

PDF workflow applications. All GWG patches are rendered visually correctly thanks to the special functions of inkWIZE for handling spot colors and preserving transparency and overprint information.





Special workflow options

Softproofing of PDF, TIFF and JPEG files

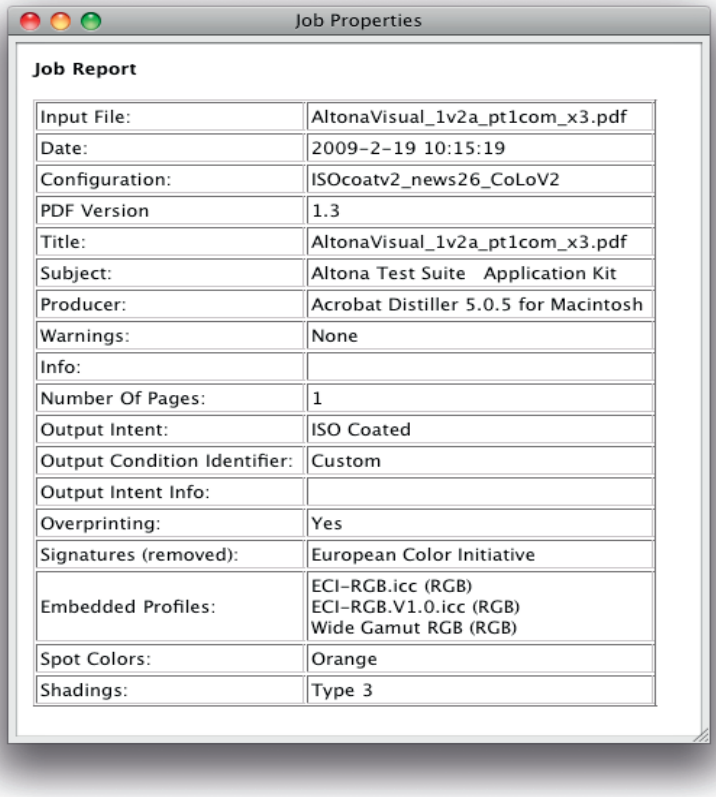
In the Overview window, a double click on a job in *Pending Jobs* or *Processed Jobs* opens a softproof preview. The softproof color space is governed by the color settings to be defined by the user. Embedded profiles or Output Intents in image data or PDF files are taken into consideration.

The rendering intents include not only the normal ICC intents, but also three special Bodoni Systems intents.

Relative+ and *Absolute+* only have an impact if the black point information contained in a matrix-type Monitor Profile indicates that the black point is lighter than L* = 0. The softproof becomes a little darker as a result of this, especially in the shadows. This usually leads to a visually better match with a reference proof.

Relative Lightness is based on the absolute colorimetric intent with paper tone simulation. The lightness of the paper tone simulation is scaled to the maximum displayable lightness of the monitor, the color of the paper tone simulation and the gray balance of the softproof as a whole being preserved. This setting makes sense if the absolute colorimetric softproof is visually too dark, as is often the case in newspaper printing, for example.

In order to select the right softproof intent, it is generally advisable to use not only the monitor, but also a dimmable standardized light box with a reference proof for visual comparison.



Job properties

After clicking once on a job in the Job Overview window, you can call up more detailed information on the job properties - either in the menu under *Tools / Job Properties* or via the context-sensitive menu (right mouse button / Properties).

Under *Spot Colors*, for example, you can get information about the spot colors used in the PDF document. You are shown the PDF version of the file in question, the program used to generate the file, and whether an Output Intent (Output Condition Identifier) is present. If, on very rare occasions, an error occurs during conversion in inkWIZE, you will find the corresponding information under *Warnings*.

inkWIZE in combination with PDF preflighting

Even for highly advanced and efficiently configured applications like inkWIZE, there are still occasionally application scenarios where special file treatment and an additional approval step for the optimized PDF file may be necessary. This particularly applies to printers who receive PDF data from a very large number of customers that have been produced in a variety of different ways.
In cases of this kind, we recommend users to combine inkWIZE with a hotfolder-based preflighting solution. The following points relating to color should be checked there:

Number and type of color channels in the PDF file

Depending on the print job, additional spot colors are either necessary or wrong. In this case, the task of preflighting is to determine whether the number and naming of the color channels match the print job. If you are using inkWIZE Auto Setup queues and the PDF preflight indicates unwanted spot colors, the problem must be remedied in the preflighting program before sending the data to inkWIZE. Alternatively, you can duplicate an Auto Setup queue and use it to convert all spot colors to CMYK (see p. 28). Special treatment of specific spot colors is not currently possible in inkWIZE.
After processing the job, you can inspect the spot colors occurring in the PDF file in inkWIZE by opening the Job Report for the processed file via the *Job Properties* menu item. This is particularly useful if you do not use an additional preflighting program.

Check for RGB objects and CMYK objects with embedded profiles

For fully automatic workflows in printshops without additional approval by the customer, we recommend that only pure CMYK PDF files be accepted from the customer. If the files are not pure CMYK PDF files, we advise you to optimize the data by means of inkWIZE and then send them to the customer, at least in a CMYK LowRes version, for renewed approval. In this context, please note that the standard queues in inkWIZE optimize all CMYK objects in a PDF file by means of DeviceLink profiles and remove any embedded profiles. Alternatively, you can duplicate a standard queue and use it to change the way embedded profiles are handled (see p. 18 ff).
After processing the job, you can inspect the profiles embedded in the PDF file in inkWIZE by opening the Job Report for the processed file via the `Job Properties`menu item.

Check of the total amount of color

For printers, it is important that the data delivery specifications and the order confirmation clearly indicate the total amount of color expected for the type of paper to be printed, and also the printing standard for which the data supplier should ideally prepare the printing data.
When printing on uncoated paper or newsprint, any marked transgression of the total amount of color is a sign that the image data were not optimized for the respective printing standard. This is usually a case of image data for coated paper for offset printing.
When optimizing PDF files by means of standard queues in inkWIZE, you now have the following alternatives:

a.) Limitation of the total amount of color without changing the color appearance.
b.) Conversion of the data from coated to uncoated/newspaper, including optimization of the color appearance.

It is sensible to view the results of optimization on a softproof. If the result is better, you can offer it to the customer as chargeable data optimization, including renewed approval.

Check for overprinting objects composed only of CMY without K

This tends to be quite a rare special case. With a view to maximum color stability in production printing, rapid drying, and ink savings, it makes sense for the printshop to use the Bodoni Systems SaveInk queues as often as possible.

However, if the rare case arises that an overprinting object in the PDF file is composed of all CMY colors without black, the color impression resulting from the overprinting object and the background may change following ink optimization. The root of the problem lies in the way that the overprinting of CMYK on CMYK is handled in the PDF standard. Only if there is no color in one channel in an overprinting object can you completely *see* the color of the same channel in the underlying object. As soon as there is just a minimal amount of color in a channel in the overprinting object, only the color component of the upper (overprinting) object is displayed and put onto the paper.

Optimizing mixed-color PDF files

The Auto Setup queues are optimized for the situation where the PDF files contain pure CMYK data. However, there are also useful presettings for processing other color spaces, and these can be adapted if necessary.

Handling of embedded profiles in RGB objects

As standard, RGB objects are converted to the CMYK color space of the document and then processed further via the DeviceLink profile. Embedded profiles and rendering intents are taken into consideration in this context. This guarantees consistent conversion and optimization of even these data by the DeviceLink profile. It is assumed as standard that RGB data without embedded profiles are in the sRGB color space.

Handling of embedded profiles in CMYK objects

For CMYK objects, the *Like Device CMYK* conversion option is generally active in the standard configurations of inkWIZE. If an individual PDF object (image, graphic, text segment) has an embedded profile, this setting results in the profile being REMOVED, and the object optimized via the DeviceLink profile. This strategy may possibly lead to the rendering of the colors of these CMYK objects in a softproof or hardcopy proof changing after optimization. For this reason, it is essential that you obtain approval from the data supplier after optimization.

If the *Convert to target color space* option is activated for CMYK objects, they are NOT optimized via the DeviceLink profile. Instead, they are converted to the output profile by the embedded profile. Particularly in the case of vector or text objects, this can lead to uneven vignettes or to black lines or text being composed of four colors. If you want to use this option, you should always perform PDF preflighting to check whether vector or text objects have embedded profiles. For special cases, inkWIZE offers the possibility of creating queues where color management is deactivated for vector/text objects. In this way, you could, for example, only take the embedded profile into account for images and leave vector graphics unchanged.

However, this strategy entails a risk of unwanted color breaks in the case of flattened transparencies. Flattening transparencies can easily result in pixel images and vector graphics of the same color being contiguous. Differing color management for pixel images and vector graphics can then cause color breaks of this kind.

The *Convert to Document CMYK* option yields the most consistent results, since the CMYK objects are first converted to the document CMYK using the embedded profile before then being further processed via the DeviceLink profile.