Individual profiles vs generic profiles

Nowadays more and more manufacturers make available generic profiles for their output devices or will be delivered together with the different media (i.e. paper). Furthermore there are several service providers which offer a profiling service. However, are these satisfactory solutions? What are the pros for individual profiles created by the user itself?

Credits

Original document created by BARBIERI electronic

Wolfgang Passler

(International Sales and Marketing Manager)

*Intelligent Measuring Technology
when Color Quality counts*

BARBIERI electronic snc/OHG

Via l.-Seidner-Str. 35

39042 Bressanone/Brixen – Italy

Tel: +39 0472 834 024

Fax: +39 0472 833 845

info@BARBIERIelectronic.com
www.BARBIERIelectronic.com

Basic Information about Profiles

The basic role of a profile is to guarantee that a picture will be printed **color-true**. A profile therefore is a snapshot of the printer-paper-ink-environment combination. As accurate the profiles describe this combination, as more color-true the printed picture will be.

A profile has to be built always only after linearization of the output device by means of a measuring device. For the linearization of photographic output devices until now always densitometers have been used.
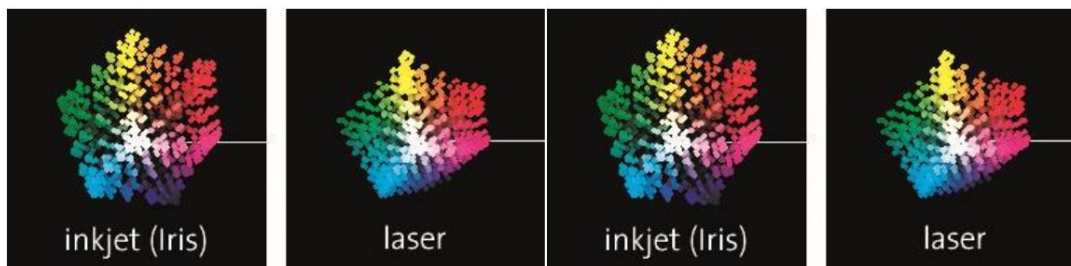
Different color spaces for different printing systems (printer-paper-ink-environment combination).

The color quality of digital output devices can be improved in different steps. These are:

- generic profiles
- individual profiles made by service providers
- individual profiles made by the user itself

Advantages and disadvantages of every option will be discussed in the following.

Step 1: Generic Profiles

Certain manufacturers of printer or media (i.e. paper) create generic profiles for specific printer / paper combinations and deliver them (sometimes asking a fee) to their customers. These generic profiles are a first step to color-true outputs.

Disadvantages: There are too many factors which affect colors in digital output process.

- Not every printer of the same model prints exactly the same.

- There are many printers where different settings can be adjusted which influence the color. These can be the gap between printing heads and media, resolution, sequence of colors printed etc. These settings at customer side can never be exactly the same as the ones during the creation of the generic profile.

- In case of inkjet printers there is also the ink which influences the colors. Even there exist different manufacturers and everyone has different characteristics. Creating generic profiles for three variables would be too extensive.

- A profile describes always 4 variables: printer, paper, ink and environment. The last one, environment, can never be the same at different places. These environmental factors are temperature, humidity, pressure, dust, UV and so on. These environmental impacts influence all other factors such as printer, paper and ink.

- Environmental factors in time can shift. One example is temperature and humidity in summer and winter.

- Photographic output devices do work with chemistry which shift in time and therefore influence color appearance.

- Actually, photographic output devices need a densitometer for linearization which cannot be used for profile creation.

- Photographic emulsions always differ from batch to batch.

- The user does never have the guarantee that the generic profile describes all of his factors.
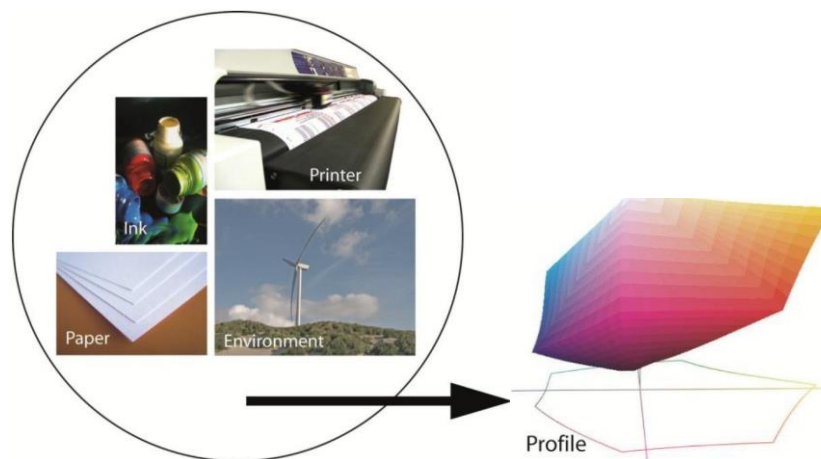
Factors which are described by a profile and which influence colors

Step 2: Profiles made by Service Providers

A further step to color-true printings is to use profiles made by service providers. This works in this way as the user prints the "target" at his used printer-paper-ink-environment combination and ships them (by mail or courier) to the service provider (if he is not in situ). The service provider creates the profile and sends the individual profile to the customer. Theoretically this profile would be 100% accurate. But there still exist some disadvantages:

- The colors of the printed chart during the transport can change (environmental impacts).

- The charts, during the transport can be damaged.

- Loss of time up to several days which can lead to expenses, loss of quality or stopped production.

- The user does not have an impact on the quality of the profiles.

- If during the printout, transport or profile creation something was gone wrong, the whole process has to be repeated.

- Asking a service provider in case of very few profiles can be convenient. But at a certain amount of profiles the costs raise rapidly.

  From time to time profiles have to be rebuilt and cannot be used forever. This is due to the fact that colors shift after modifications of the output device or replacements of ink or chemicals. After such interventions all profiles have to rebuild.

- Environmental impacts which influence colors after time can change. Also in this case, all profiles have to be rebuilt.

- Actually, photographic output devices need a densitometer for linearization which cannot be used for profile creation.

- The user does never have the guarantee that the profile describes exactly his whole printer-paper-ink-environment combination. Some doubts will always remain.

Step 3: Individual "self-made" Profiles

The only way to have full control over in-house color quality is to create the profiles by themselves. As many profiles as needed for every printer-paper-ink-environment combination can be created. As soon as one factor changes (printer, paper, ink or environment) and as a result the colors too, immediately and without loss of time a new profile can be created. This in the long run is the cheapest way to guarantee the best color quality. Besides of this, the user knows the final utilization of the printed product and can build the profile respectively. This would be black compensation, total ink, ink saving, special illumination for transparent materials, special customer needs, and similar.

Creating individual, "self-made" profiles therefore will have the following advantages:

- Speed
- Flexibility
- Step by step quality improvement / learning effect
- Always up-to-date
- Max. quality
- Independence from others
- Independence from environmental impacts
- Independence in case of finishing (laminating, application of layers of varnish)
- Linearization and profiling using one single instrument
- Possibility to create profiles for every output device used (independent of the supplier)
- In the long run the cheapest way

By the means of a modern spectrophotometer two instruments will be combined together: the densitometer for linearization and the spectrophotometer for profile creation.

Comparison of factors which influence colors and different profiling

Factors	Generic profiles	Profiles from service providers	Individual profiles
Different ink	YES	YES	YES
Different media	YES	YES	YES
Flexibility in case of new combination	NO	YES	YES
Difference between printers of the same model	NO	YES	YES
Always up-to-date	NO	Partially	YES
Maximum Quality	NO	Partially	YES
Independence in case of finishing the prints	NO	Partially	YES
Guarantee to have the best results	NO	NO	YES
Adaptation of profiles to the final utilization of the print	NO	NO	YES
Black compensation, "Total-Ink", "Ink-Saving"	NO	NO	YES
Independence from others	NO	NO	YES
In the long run cheapest way	NO	NO	YES
One unit for linearization and profile creation	NO	NO	YES
Shift between media of the same type	NO	NO	YES
Temporary variations of printer setting	NO	NO	YES
Cleanness of printing heads and transport units	NO	NO	YES
Temperature	NO	NO	YES
Humidity	NO	NO	YES
Pressure	NO	NO	YES
Speed in creating new profiles	NO	NO	YES