Timesaving profiling of presses from Alwan

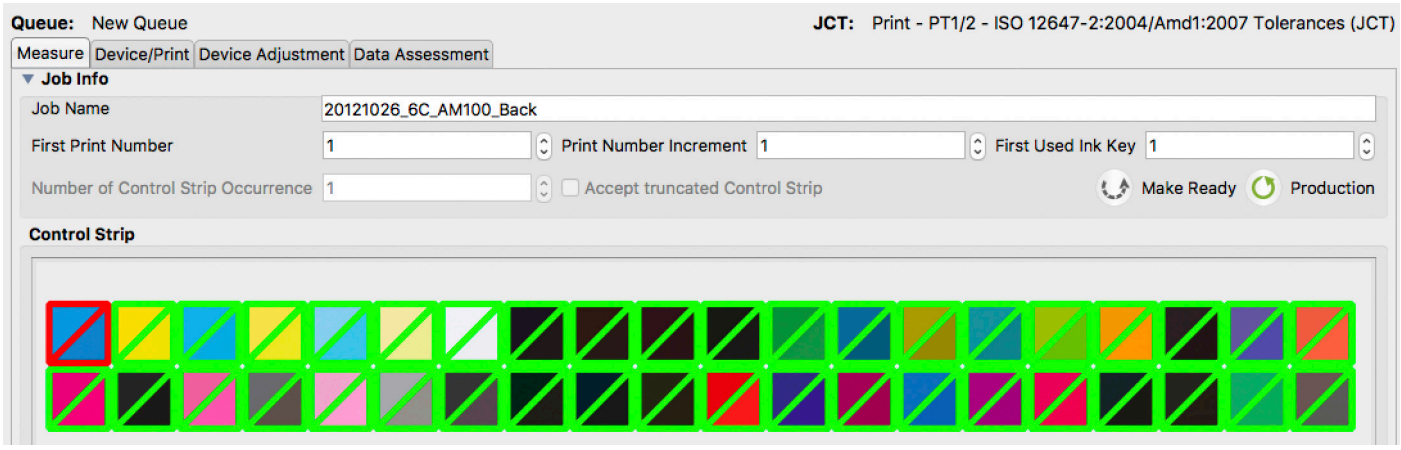
Alwan Color Expertise is a French company well known for their colour control software implemented world-wide, supporting the use of international standards. This summer they launched a radically new profiling software called Hydra Profiling. From what we understand after having learned a bit more about it, Hydra can save a lot of time, and therefore money, for printers who want both high quality and standards compatibility.

We have reviewed several technologies from Alwan before, for example the CMYK Ink Optimizer, and know that their products work very well as a bridge between a RIP system and press control system, streamlining and optimizing the colour management part of the workflow. The three main modules today making up the Alwan Color Suite are ColorHub, PrintStandardizer and PrintVerifier. The new component - Hydra Profiling - is an option for the ColorHub and PrintStandardizer. Hydra uses patented colour modelling, making it possible to build a custom ICC-profile, using spectral data, with very few patches. These can be read from live jobs day to day, thus avoiding time-consuming printing of large colour test charts, blocking the press from real, profitable jobs.

40 colour samples is enough for Hydra

Conventional calibration and characterisation, in essence creating a custom ICC-profile, is necessary if you want to know how a particular printing press performs for a certain combination of paper and inks. This is typically a three-step process. First you print a test form to analyse and evaluate what dotgain (TVI) you get on the sheet for the screening used. For this you normally use linear plates, that is, you have calibrated your CTP system to produce exactly the tone values you expect. So for example, 10% comes out as 10% plus minus maybe 1%. After this you create a modification curve to match the TVI of a certain standard that you want to comply to, for example ISO 12647-2.

The most common test forms are from what is often called the “IT8-series”, but that is the American name for test forms compliant with their ANSI standard, and identical to the ISO 12642 standard. Another popular test form is the ECI 2000, with more test patches than the older IT8. Once such a test form is printed under the same conditions as the first linearisation test and the sheet is measured (or several sheets actually, to normalise the values). Finally, colour separation parameters are chosen, as well as what type of black generation is preferred (UCR or GCR at some amount) and the ICC profile is created. But you wouldn't go into live production without making a test print first, mixing different types of images and placing validation control bars on the sheet. So (at least) three press runs are needed to create the perfect profile for that combination press, paper and ink (and screening technology etc). According to one of Alwan's customers this costs about 4.000 EU per substrate, if you consider just



Alwan Color Expertise just launched a new profiling technology called Hydra Profiling, which can create fully-fledged ICC-profiles from only 40 colour patches.

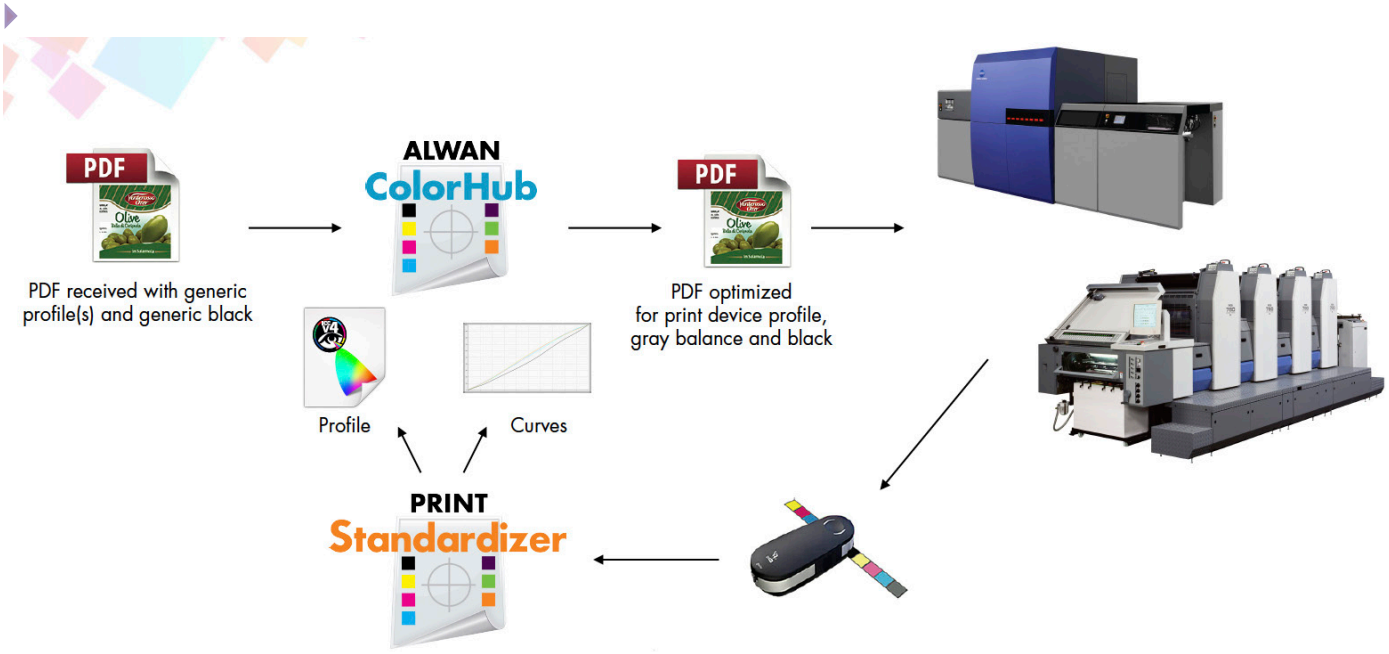
the direct cost of those three print sessions, not even including lost revenue because of the press not being available for real jobs.

Enter Hydra Profiling. Alwan have developed a colour modelling technology making it possible for them to predict the whole colour space for a particular printing technology based on only 40 reference colour samples for a CMYK profile. But not only that – in order not to disrupt normal, daily production, Alwan suggest you take those colour samples from live jobs, by placing a 40-patch colour strip somewhere on the press sheet. As long as you read this control strip, or mini-calibrations test chart, with a spectrophotometer, the Hydra software can then predict what all the colour combinations in the whole colour space will be from this data! Does this sound too good to be true? Possibly, but Alwan can show that the accuracy of the Hydra profiles equals that of profiles built with large test forms like ECI 2000 and ISO 12642 compliant test forms (using more than 1,500 patches), that is, with 95% of the reference patched having a colour deviation of below Delta E 2 (when using a litho offset press, a bit higher for flexo- inkjet or toner based presses). It looks like Alwan has managed to create a high definition model of how a printing system behaves, the "DNA" of the press, paper and ink combination. So, by checking only a few references using their mini control strip of 40 colour patches, they can then map the whole colour gamut from that. Clever indeed! The time savings when calibrating and profiling a suite of presses for several substrates and ink-setups (Alwan specialises in multi-colour and spot colour setups) should be considerable, to say the least.

Alwan chose the name Hydra for their new technology because the mythological creature The Hydra of Lerna could regenerate missing parts, for example a head, perfectly even if it was chopped off.

How Hydra integrates with ColorHub and PrintStandardizer

Alwan ColorHub is used early in the print workflow, preparing incoming files, typically PDFs, for production. When a PDF is received



The two modules ColorHub and PrintStandardizer in Alwan Color Suite can both take advantages of the Hydra Profiling technology, optimising and colour managing both the prepress and print workflow.

containing an embedded ICC-profile, colour management is made using the actual Hydra-made custom ICC-profiles so that the final prints are compliant to the standard. This could be described as the printing press acts like a proofing device, and the Hydra profiles are internal profiles which describes the actual status of the press. By colour management the press matches the referenced standard as well as it possibly can. By validating the prints this is checked in the usual way, verifying that the tolerances set are not exceeded. This opens up really interesting possibilities in that even non-standardised printing processes can be colour managed to comply as closely as possible to a given standard, let's say ISO 12647-2, even if this is only supposed to cover litho offset printing. The method works on more or less any printing technology, be it flexo, digital toner or inkjet based ink technologies!

In the press room, the Alwan PrintStandardizer ensures that the prints are within tolerances and also feeds measurements to the colour library from day to day production, at a frequency you can set. Since you build up your colour library in this way, you can now easily create new profiles for similar ink setups, or enhance and optimise existing profiles.

Everybody who has built profiles know that you should never build a profile based on only one set of readings. So, a central feature in the Alwan Color Suite is to decide which data to use, and to average, or normalise the measurement data before you create the final profile. Here Hydra Profiling show its strength in that you have great capacity and flexibility when choosing different measurement sets, or part of them, when building a new profile.

And then there are spot colours

So far, we have described how Hydra Profiling can optimise and control CMYK process colours according to chosen standards. But this is not

all. Especially in packaging production the use of spot colours is very common, and so needs to be managed as well. Since Hydra use spectral data it's ideal for also managing spot colours, often referred to as Brand Colours. Again, the colour library comes in handy so a certain brand colour can be optimised and faithfully reproduced in different print processes and on different substrates. But not only that – Alwan embrace the concept of the "Fixed Colour Palette", or as Pantone calls it the Extended Gamut. This mean that you use an ink setup of seven colours – process CMYK plus Orange, Green and Violet. In this way, a printer can reproduce 1,729 of the unique spot colours in the Pantone Systems (or up to 90% of them, depending on what substrate and printing process you use). For proofing purposes, it also helps that, for example, Epson has brought some models to market with exactly this ink setup, CMYKOGV, so both proofs and prints should match nicely for this press setup.

Hydra Profiling makes it very fast and easy to build custom profiles for both the Fixed Colour Palette and other ink setup combinations. If you plan ahead you can actually place mini colour strips on every job where you use a spot colour, and later on use that measurement data to help build a profile using that spot colour in another ink setup!

In conclusion, it looks to us as if Alwan offer a very powerful tool to their customers, to be able to colour manage even complex printing workflows quickly and relatively easily, without the need to waste hours and days on non-profitable test prints. Printers and prepress operators who, up until now, have complained that keeping profiles up to date is a nightmare, and so almost futile to pursue, should reconsider.

– Paul Lindström