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Management and motivation

Peter Jeschke talks to DD about aspects of modern management. **Page 10**

You will be assimilated

Postpress is the last link in the chain of the fully integrated printer. **Page 28**

Proofing in a new light

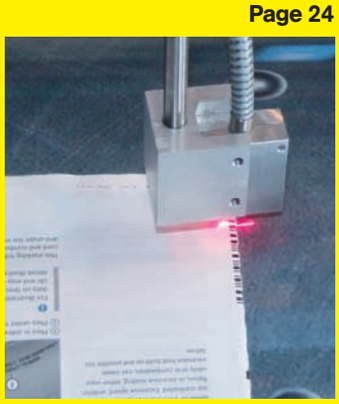
LED arrays to render fluorescent tubes superfluous for matching. **Page 11**

Postpress

Shingle streams

Drupa offered fresh ideas in the field of stacking, trimming and palletizing systems. Gämmerler showed a system for 45 degree turns that exploits the product's kinetic energy.

Page 24



Quality control

Eagle-eyed

Checks by hand are important but can only be based on samples. New camera systems promise the real time monitoring of every single sheet. Special systems immediately sound the alarm if the gluer gets into a bind.

Page 31

Graduates fit for global careers

Improving training has been on the political agenda for years, but there is much argument about the successes. In a seven part series *Deutscher Drucker* looks at what the technical colleges offer.

The impending shortage of skilled labour in Germany threatens not just the mechanical engineering and business management professions; the printing industry too is beginning to feel its effects. It is a development that is difficult to understand in the light of the still high, albeit declining, number of unemployed, but the situation becomes clearer after a look at the statistics. In the main, unemployment climbs amongst those groups of the population with little training.

In the field of print and media technology, Germany's technical colleges are undoubtedly amongst the strongest in the world, and in the course of a seven part series *Deutscher Drucker* is presenting a wide array of the training options that they offer. The series will provide details of course contents, centres of interest, facilities, the anticipated costs as well as the broader milieu and the cultural opportunities. In this issue we look at one of the world's leading institutions for the industry, the Stuttgart Media University (HDM) and its student body of 3,200. The emphasis here is on international outlook, extensive technical facilities and practical work. **Page 32**

Recruitment from page 41

Hiding one's light under a bushel

WITH LIGHT it is always thus:
On the one hand it allows us humans to perceive colours, since if objects were not illuminated by light they would be colourless—or downright invisible—but how we perceive the colour of the reflected light differs from individual to individual and is influenced by many external factors.

STANDARDIZED. For the graphics industry, in which an absolutely standardized colour reproduction plays a key role, this is an unsatisfactory situation. Standards help us to keep the scatter of colour perception as tight as possible. The understanding gained from colorimetry makes the question of colour something that can be quantified and measured; and standardized ambient conditions provide as uniform a basis for judgements as possible in the quality control of prints and proofs. To this end, the fluorescent tubes in matching boxes simulate the 'theoretical' D50 light specified by the ISO 3664 standard. But for how much longer?

ALTERNATIVE LIGHT SOURCES. Whilst the position of D50 as the 'optimum' light keeps on coming up for discussion, in the absence of an alternative fluorescent tubes appeared untouchable as the light source. And yet they do not exactly offer the best energy efficiency, and their use of mercury and phosphorus makes their disposal problematic.
But since Drupa they have had some competition. Just Normlicht has solved the problems of using LEDs to reproduce the light spectrum in matching boxes with a control system that it has developed itself. Over 1,000 LEDs in four arrays create standardized lighting conditions in the LED Proofcontrol product, which was shown as a beta test device in Düsseldorf and which should be commercially available by the end of the year.

CONVINCING. At over €3,000 the new system will cost over twice as much as current fluorescent tube based matching boxes. However, the diodes it uses last ten times longer than tubes, they do not alter with age and their disposal is much more environmentally friendly.
For many users these alone would not be sufficient grounds for spending so much money, but the really convincing advantage of the system stems from the individual control of the seven different types of diode in the arrays. This means that the system can be calibrated to any kind of light and will provide stable observation conditions—and will even do so on two separate devices communicating with each other remotely. What is more, anyone who wants to switch between different types of light will no longer need a second device and the kind of light used for matching will become a question of choice.

ADIEU FLUORESCENT TUBES. It is a shame that the Just LED matching box had such a low profile at Drupa and was kept half under wraps, because the system was undoubtedly one of the major technological innovations at the show. It offers enormous benefits for the matching process between agency, customer and printer that make it worth every cent. In the medium term it should also mark the end of the fluorescent tube as the light source for matching—a prospect that hardly fills us with sadness given its energy and environmental balance.
Yours,

Michael Schüle

Fade out for fluorescent tubes as standardized light sources

INNOVATION. That the days of fluorescent tubes as light sources in matching boxes could soon be numbered was made clear by Just Normlicht at Drupa with its LED Proofcontrol technology demonstration. *Deutscher Drucker* talked to Just's Managing Director, Michael Gall, about the challenges of developing the new LED-based standardized light box.

Just LED Proofcontrol—an LED cabin that can be calibrated and that should deliver stable observation conditions for matching—is due to be available from the end of 2008.

DD: LEDs have been used in the graphics industry for quite some time in applications such as light sources for imaging plates in CtP systems. Why is it only now that these advanced light sources are making their debut in matching devices?

Michael Gall: There is no disputing that LEDs represent modern technology, but up until now it has simply not been possible to sensibly meet the really strict requirements of ISO 3664, and it is this standard that defines the criteria for matching across the entire graphics industry—from photography to the press hall. Problems with the colour reproduction properties and the production of the full light spectrum made it seem well nigh impossible. Recently there has again been an increasing amount of discussion in

the graphics industry about the simulation of the theoretical D50 light type, which in reality simply doesn't exist; and it is against such a background we have now developed a diode control system that is capable of re-creating the spectral properties of virtually any type of light. In addition, the tolerances defined in ISO 3664 are far too broad for such future applications as softproofing or remote proofing. One has to assume that these tolerances will be significantly narrowed in the near future and at this point fluorescent lamps will hit their limits as a light source that is suitable for visual colour matching.

Michael Gall

DD: Were there alternatives to LEDs?
Gall: We ourselves looked at halogen technology but it was quickly clear that it had several disadvantages. It becomes very hot, it is very inefficient, and it provides point lighting and is therefore very difficult to use for illuminating an area. Halogen lamps are very short lived and therefore need to be changed frequently. Then, if I have to go the cost of filtering it to produce the D50 spectrum it becomes more expensive. It also needs to be re-measured every time. Existing halogen light cabins do deliver a good spectrum but they are too expensive and too service intensive to be viable for the many work places where contract colour work is undertaken.

DD: How precisely do you achieve the necessary standardized light spectrum inside the new LED Proofcontrol cabin?
Gall: We selected seven different coloured diodes in order to be able to reproduce the spectrum as precisely and uniformly as possible right down to 360 nm in the UV region. However, the selection of suitable diodes was far from being all that there was to do. The LEDs differ in their brightness behaviour and so the numbers need to be varied within a specified overall number of diodes. Like a monitor, each individual colour channel must be controlled so that the spectral proportion of the individual colour is right. One also has to watch the different temperature and ageing behaviour of LEDs and at the end of the day it is through temperature management that one determines the lifespan of an LED. If I want to achieve a very long lifespan, which is of course one of the major advantages of LEDs then I need to work hard on temperature management. It is here that the secret of the success of the LED Proofcontrol lies. We have sought to achieve a uniform level of lighting and temperature through the number of LEDs. How, however, have I managed to extract the heat generated by the system so that the LEDs are not destroyed? We have already managed to solve this problem very successfully in the beta test device.

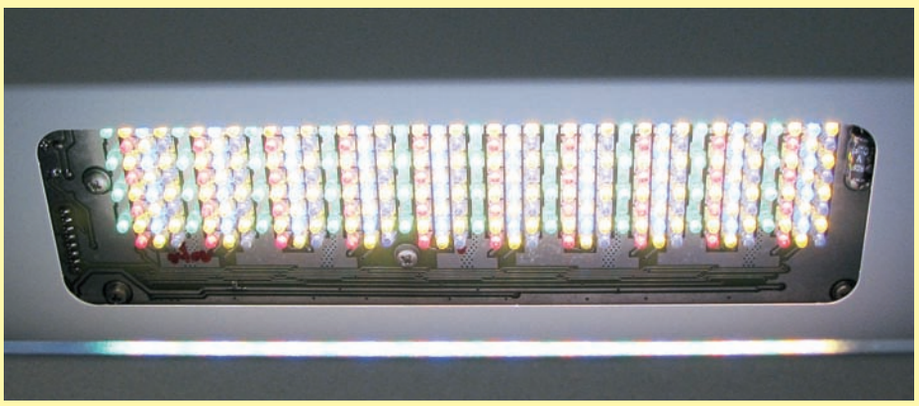
Measuring the lighting conditions at the customer with a spectrophotometer and simulating this environment within the new LED Proofcontrol cabin, as demonstrated by Just Managing Director Michael Gall. This is an invaluable capability.

DD: In order to be able to re-create any type of light, as you have already indicated, it must be possible to calibrate the system …
Gall: Yes, via the measurement device and the Adjust software. As mentioned previously, there is currently renewed discussion about whether one should use several types of light for judging proofs, or whether, when considering softproofing for example, one shouldn't take another look at D65 light because monitors simply work better under D65 than D50. With LEDs it is all the same whichever specific spectrum I require, since I cover all regions of the spectrum. I could even re-create an individual type of light. For example, if I wanted to produce a house standard then I would measure any type of light whatsoever, calibrate the LED cabin to it, define this as the house light type and store it. The user can also measure the lighting conditions of his customer with his spectrophotometer and simulate these in-house on his standardized lighting device. This is an invaluable advantage because the production of a proof or even the production run is no longer like some leap in the dark, since during production the user can see what his customer sees.

DD: How many diodes does the beta test device use and how does it compare energy-wise with current fluorescent tube systems?
Gall: Around 1000 LEDs, and so the cabin will not be exactly cheap. There are four arrays, each with more than 250 LEDs, arranged in the cabin—two above and two below. It terms of efficiency and effectiveness the diodes are considerably superior. LEDs convert significantly more energy into light and are therefore economically more attractive. The diodes are also much more environmentally friendly, since they do not need to be changed as frequently and they therefore generate correspondingly less waste. On top of this, the reduced level of waste they do generate is less harmful to the environment and easier to dispose of because in contrast to fluorescent tubes they contain no mercury and little phosphorous.

DD: How quickly do the diodes wear out? When do they need to be exchanged and how much does it cost?
Gall: The lifespan of the LED arrays is defined in terms of loss of brightness. After around 25,000 hours we are only achieving 50 percent of the brightness and the cabin is no longer meeting the criteria of ISO 3664. At this point the LED arrays must be swapped in their entirety; in other words, 1,000 diodes in one go. However, when one thinks how many new fluorescent tubes, which are used up after 2,500 hours, would

have been required over this same time period, there is still an economic advantage. This is in addition to the considerable advantages of the system such as the stable viewing conditions over the entire lifespan—and in comparisons between different devices, since different ageing states no longer need to be taken into account as they do with fluorescent tubes—and above all the ability to calibrate LED cabins.



One of the four LED arrays in the future Just Normlicht cabin. Smart temperature management means that the LEDs last around ten times as long as the fluorescent tubes in the current system.

DD: Over what timescale do you plan to introduce the LED Proofcontrol?
Gall: The beta test has already been running in-house for some time and we are aiming to have the first market-ready version by the end of the year, after which the first trial devices will go out into the market for field testing. From then on its move into the market should take place very rapidly. We have of course taken steps to secure our rights to the application.

DD: What challenges are there still to master?
Gall: At present we have one point in the spectrum where there are still some small gaps that we want to close. There is a suitable diode for this—an eighth colour if you like—and we are already negotiating with the LED manufacturers. It is simply a question of price or unit numbers. If there are other industrial requirements beyond our application then this LED will simply be cheaper to manufacture. A ninth colour could even be added, and the cabin will constantly evolve along with the state of LED technology.

DD: Is the end nigh for the fluorescent tube in standardized light matching processes?
Gall: I don't see this in the near future, that is the next five or ten years. One has to remember that it is quite different to use LEDs in modestly sized matching cabins than it would be to use them in large proofing stations. At present we are still not able to offer large illuminated areas, and this wouldn't work on economic grounds either. No press manufacturer and no user would pay out the amount of money needed to convert the press desk to LEDs. Here the advantages of cross comparability are not large enough in relation to the costs, and in the end the use of our Prographic tubes to illuminate large areas still carries the day. However, even here nothing should be ruled out and we must see how things develop. There is talk today of power LEDs and OLED technology (organic LEDs)—something new is constantly being developed. And if some day we were to achieve sufficient output with the same number of LEDs to illuminate a larger area then we would illuminate this larger area.

DD: Will this development lead to a restructuring for Just Normlicht as a company …
Gall: Naturally we will turn into a different kind of factory. We have already been building up an electronics department in Weilheim for some considerable time. We use suppliers for certain areas such as circuit board production. However, the ongoing development, fitting out and installation of the cabins will continue to be our core in-house area of expertise. In this way, we will be able to remain flexible in relation to future developments and we will hold our quality control and future in our own hands. This in turn makes us more independent and more stable.

Interview: Michael Schüle

