

# Black on White in Green

**GREEN PRINTING ... // ...** is not a temporary fashion. It is a serious trend. An environmentally friendly print production combines ethical responsibility with economic advantages. The best example is a Speedmaster XL 105-6+L with the full range of eco-equipment. In comparison to the standard model, it can save around 331,000 dollars (210,000 euros) per year.

**W**hether passive housing, "Green IT," hybrid motors or organic groceries, ecological products are conquering the market across the board. Heidelberg has been actively pushing this development, too. Since 1992, environmental protection has been an official company objective. In the meantime, the range of environmentally sound print solutions is correspondingly wide and with sales increasing worldwide. More and more print shops are realizing that environmentally sound investments pay off. For one, tighter environmental regulations are to be expected in the future. For another, the number of print shop customers demanding environmentally friendly print products, in part to actively promote their image, is growing. For many, especially for businesses active worldwide, only "climate neutral business reports," for example, come into question. Or only paper from sustainable forestry, certified, for instance, by the Forest Stewardship Council (FSC) or by the Programme for the Endorsement of Forest Certification Schemes (PEFC). Print shops able to provide corresponding solutions have a clear advantage – and this will only increase in the future.

**Amortization after two to three years.** "Green printing isn't just a sales argument to give print buyers, though," emphasizes Eike Frühbrodt, Director of Product Management for Peripheral Systems at Heidelberg. "Environmentally friendly production also reduces costs considerably. This realization isn't yet that widely known on the market." Heidelberg calculated how large the yearly savings potential really is using a six-color Speedmaster XL 105 with coating unit (see page 38). In comparison to the conventional model, the press with "green" equipment consumes around 20 percent less energy, and waste expenses are even reduced to a third. Savings in CO<sub>2</sub> production and waste accumulation were around 5 percent. The consumption of ink, alcohol, cleaning agents, water and powder are also reduced considerably.

At the end of the day, a business operating in three shifts can expect savings of a full 331,000 dollars (210,000 euros) per year with the use of full eco-equipment," says Frühbrodt. "The investments in environmental technology therefore amortize after around two to three years already." That doesn't even include the fact that productivity increases from reduced make-ready times. The expanded opportunities for new customer

acquisition aren't factored into the calculation either – as is the case for the additional savings potentials from the rapidly increasing prices for resources and energy.

**Around 190 Tons Less Waste.** The ecological figures are as impressive as the economic calculations. The most important environmental factor in sheet-fed offset printing is start-up waste. Assuming an average of 600 sheets per job, a printing press running in three shifts with format 3B has a total start-up waste of over 280 tons. This corresponds to CO<sub>2</sub> emissions of around 300 tons. The example of the "green" Speedmaster XL 105-6+L shows that start-up waste can be reduced to 400 sheets per print job. This reduction adds up to a total of 190 tons of paper saved per year. That's about 3,000 trees. These enormous eco-potentials can be achieved with the use of Prinect Prepress Interface or the Prinect Pressroom Manager to preset ink zones, Prinect Color Assistant to optimize color pre-settings easily as well with the color measuring and control systems Prinect Axis Control, Image Control or Inpress Control.

Prinect Inpress Control, for example, measures and regulates both color and register while the press is in operation – and at all speeds. For this purpose, a spectrophotometric measuring unit is located on the last printing unit; in the case of perfecting presses there is an additional one placed before sheet reversal. Every unit measures process colors, special colors and the register in control bars. If it's necessary to adjust the register or ink zones, these corrections get forwarded directly to the Prinect Press Center. "The printer doesn't have to pull sheets and can adjust the press without interruption during print runs," explains Frühbrodt. In addition, the completely automatic print regulation also ensures high color stability over the entire run.

**Brand New Drying Technology.** The second largest expense factor in print production is energy consumption. A printing press in format 3B with six colors, coating unit and dryer has an average power consumption of 140 kilowatts. Its yearly electricity consumption corresponds to 290 tons of CO<sub>2</sub> emissions. Of that, 26 percent of the energy is needed for running the press. 35 percent goes to the dryer, 20 to air supply, 8 to cooling and 11 to other units.

In order to further reduce the energy needed by the machine's largest power consumer – the dryer – Heidelberg lowered the radiators down to 3.1 inches (8 cm) from the sheet. "A dryer's infrared radiators work like a sunlamp at home: The closer you are to it, the more you feel the warmth," says Frühbrodt. And every centimeter less means about 5 percent less energy consumption. The so-called Y-dryer brings yet another impressive innovation to the world market: For the

**SHORT INTERVIEW //** Fulmar Managing Director Keith Marley and Production Manager David Copson (from left) on the "dedication to green" at a leading British commercial print shop.



**FULMAR COLOUR PRINTING**  
CROYDON // GREAT BRITAIN

*Mr. Marley, what made you start thinking about "green printing"?*

**Marley:** Climate change and environmental protection are issues that concern everyone. As a print shop, we feel it's part of our responsibility. Our customers feel the same way. Particularly high-profile companies listed on the stock exchange consider environmentally-friendly print products an absolute must. But small and middle-sized businesses are also climbing on the bandwagon more and more. It's like a domino effect which we prepared ourselves for early on. This allows us to keep existing customers and also gives us a competitive edge in the acquisition of new customers.

*What concrete steps have you taken?*

**Marley:** We are ISO 14001, FSC and PEFC certified, for example. As of June 2007, we have also been printing completely alcohol-free. In addition, thanks to our investment in the filtration and reprocessing system EcoClean, as well as other measures, we can boast a recycling rate of over 90 percent. That makes us one of the few climate neutral print shops in Great Britain.

*So that means that you offer climate neutral print jobs?*

**Marley:** No. Our annual balance is climate neutral, not the individual jobs. For this purpose, the business CarbonTrust determines all of our climate relevant parameters. This includes the printing press, type of paper and all transportation. A "CO<sub>2</sub> finger print" is then created for an entire year. We then balance out the measured CO<sub>2</sub> impact by buying the corresponding emissions certificates.

*How do customers react to your environmental dedication?*

**Marley:** Without the certificates, we wouldn't stand a chance with many customers anymore today. Printing alcohol-free without the quality suffering in any way is just as important and we've been able to employ this successfully as a marketing tool.

*How do your employees react to this dedication?*

**Copson:** They're enthusiastic about it because they see that saving doesn't have to mean sacrifice. Instead, it can be a meaningful and worthwhile investment. This motivates them in their own lives, too.



**SPEEDMASTER XL 105-6  
WITH GREEN PRINTING EQUIPMENT  
VERSUS  
SPEEDMASTER XL 105-6  
WITH STANDARD CONFIGURATION**

- 90 %** less ink residue: 0.2 instead of 2 tons per year

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- 67 %** less waste: 94 instead of 283 tons per year

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- 63 %** less IPA: 713 (2,700 l) instead of 1,902 (7,200 l) gallons per year

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- 63 %** less VOC (IPA): 642 (2,430 l) instead of 1,717 (6,500 l) gallons per year

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- 50 %** less waste water: 423 (1,600 l) instead of 845 (3,200 l) gallons per year

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- 42 %** less powder emission: 77 (35 kg) instead of 132 (60 kg) pounds per year

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- 40 %** less powder consumption: 1,190 (540 kg) instead of 1,984 (900 kg) pounds per year

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- 21 %** less energy: 440,000 instead of 560,000 kWh per year

**331,000 U.S. dollars (210,000 euros) Total Savings\***

\*at current German prices for paper, energy, etc.



► first time, the drying system's hot exhaust air can be reused in a circular flow. This saves up to 30 percent of energy consumption. And progress is being made in UV technology as well. The new electronic power supply units reduce the dryer's standby consumption.

**Peripherals Save Energy.** Using additional Star peripherals allows you to save even more energy. The AirStar, for example, uses up to 50 percent less electricity than comparable air supply cabinets – and that with higher performance, thanks to the newly developed turbo radial blower. With the CombiStar Pro, the so-called “free cooling” saves energy by making use of the outside temperature. With temperatures of up to 64.4 °F (18 °C), the machine is cooled using a heat exchanger. A cooling unit only turns on when the outside temperature climbs higher than that. All together, this lowers energy consumption on the Speedmaster XL 105-6+L by about 20 percent.

**Perfect Balance.** As little as possible, as much as necessary: That's the motto at Heidelberg when it comes to energy consumption. The machines are designed to function quickly and reliably and deliver print products with a constant higher quality even when the most is demanded from them. That's why they also have higher specification values for power input than many competitor models. This doesn't actually mean that they need more energy for normal production, however. The opposite is actually the case. With the help of innovative control systems, the machines flexibly adjust their energy consumption to the respective demands. At the end of the day, this means they need even less energy per sheet than most competitor products. “Printers shouldn't orient themselves only by the maximum power input values in the operation manual. Instead, they should request actual performance data for the machines in operation,” advises Frühbrodt. “Contrary to the familiar information on average gas consumption in cars, there is no standardized basis for measurement when it comes to energy consumption in printing presses.”

**Alcohol – Choosing to Go Without.** Reduced alcohol consumption or even alcohol-free printing also helps protect the environment. This is because alcohol and washing agents are volatile and evaporate quickly. Under the influence of the sun, the emissions in the form of low-level ozone cause so-called summer smog. But this can be avoided. After all, almost all printing presses can be operated without the use of alcohol – or at least with minimal amounts of 2 to 3 percent. The conditions in the print shop determine how well it'll work. “Alcohol-free printing isn't a product, it's a project,” explains Frühbrodt. “The print shop management has to be convinced about the decision and allow printers the time and

mistakes needed during the learning process.” It's also necessary to find the right combination of dampening form rollers, dampening solution additive and ink. The dampening solution has to be impeccably clean and the water quality kept constant. Frequent use of special colors or printing on foil is nearing the boundaries. More than 50 Heidelberg machines in Europe are already running completely alcohol-free.

**Green Development, Green Production.** Heidelberg doesn't only offer its customers ecologically progressive products for their own businesses. Already beforehand during the development and manufacture of solutions for print shops, environmental protection is given great importance. For all development projects, Heidelberg's goal is to be significantly below the legal limit values for the operation of printing presses. Heidelberg has achieved this, as demonstrated by the “emission-tested” certificates from various testing and certification groups in Germany. In addition, all of Heidelberg's German sheet-fed offset production locations are certified according to the environmental management standard ISO 14001. On top of that, the company employs environmental protection officers in all factories. As a result, despite increasing production, the consumption of energy and water are steadily dropping. “The print industry can contribute a lot to environmental protection. That's why we've developed processes and products that benefit financially our environmentally conscious customers,” says Frühbrodt. ■

**Further Information**

on this topic can be found in the article “Business Model with Perspective” in the archive of Heidelberg's Global Online Newsletter (GON). Access to the Web site requires registration at [www.heidelberg.com/hd/Newsletter](http://www.heidelberg.com/hd/Newsletter). More information on environmental protection at Heidelberg at [www.heidelberg.com/hd/Environment](http://www.heidelberg.com/hd/Environment)