Julie's Bicycle
SUSTAINING CREATIVITY

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Julie's Bicycle Fact Sheet:

Print and the Environment

Print and The Environment

The UK is the world's fifth largest producer of print, with over 10,000 companies turning over £14.3 billion. Like other large industries, printing has been associated with pollution and waste due to its use of inks, chemicals and water, and high consumption of raw materials – mainly paper. Many people in the industry are working hard with manufacturers, suppliers, regulators and consumers to improve its overall environmental impact.

This fact sheet will show you what the main issues are, how they are being addressed, and what you as users and buyers can do to make sure print becomes, and remains, a responsible and sustainable communication medium.

Printing in the UK can roughly be broken down into two distinct categories – litho (sometimes called offset), and digital.

Litho

In litho printing, ink is transferred onto an aluminium plate. The image areas on the plate attract ink, while non image areas repel ink. This image is offset onto a hard rubber-blanketed cylinder, before being transferred onto the paper under pressure. A litho printing job has high set up costs, but once the press is running it becomes a very efficient way to print – especially for large quantities.

Digital

In digital printing, electronic files go straight to the printer and an image is printed using inkjet, laser or toner technology, without pressure. Digital print methods continue to develop at a very fast rate. One advantage of digital is that you can print very small runs as and when needed, with little waste.

There are other industrial print processes mainly used for magazines and packaging such as gravure and flexography. Screen printing uses a mesh to distribute the ink, and is mainly used for point of sale (POS) products, as well as by artists and print studios.

How print impacts the environment

Paper The paper making process, and what happens to paper after it's used, are the main environmental concerns. Paper is potentially sustainable, because it comes from a renewable raw material (wood pulp) that is re-usable, recyclable and biodegradable. Always try and use paper that is made from post-consumer waste, or if that is not possible, Forest Stewardship Council (FSC) certified paper. Recycle it, to prevent it becoming landfill, and promote actions for recycling. Paper fibre can be recycled up to 7 times before it becomes too weak to be made into something else. For more information see our Paper Factsheet.

Energy Print can use lots of electricity. A good printer will use renewable power. They will also be monitoring its use, because you can't manage what you don't measure, and have a look at all energy consuming devices such as machinery, lightning, air conditioning – with a programme of measures to improve efficiency.

Water Your printer should monitor and have policies in place to reduce water consumption or recycle waste water. Preventing pollution and reducing consumption are the goals (although digital-only printers use little in the first place).

Waste How does your printer handle, collect and separate recyclable materials? Paper and aluminium plates, ink tins, toner cartridges, pallets and plastics can always be recycled. Recycled aluminium consumes only 10% of the energy used to produce virgin aluminium. Be wary of 'zero waste to landfill' claims – many such claims are made by firms that simply use incineration or other methods, rather than reducing, re-using or recycling.

Chemicals These should be taken away by a licenced hazardous waste carrier, and waste litho ink reprocessed to ensure safe disposal. Make sure there are strict policies in place for the storage and handling of chemicals, and a well maintained yard and grounds, if you can manage a visit.

Production Processes

Pre-Press – New technologies have significantly reduced environmental impacts, so check which systems your printer uses. Computer to plate (CTP) uses technology without use of film or chemicals and is more energy efficient. Soft (i.e. screen based) proofing eliminates consumables, energy cost and logistics required for physical "hard copy" proofing - but use with caution. A hard copy proof is generally more colour accurate, so you are less likely to be disappointed with the end result and require a reprint – a much bigger waste of resources.

Inks – Litho ink manufacturers are increasingly using renewable and recyclable resources such as soy, vegetable oil and starch, even for metallic and fluorescent ink. Soya based -unlike mineral – ink is renewable. Digital inks are not oil based, but they have disadvantages when it comes to de-inking printed paper for recycling. See INGEDE for more information on digital processes and de-inkability.

Water based or UV varnishes can all be treated by modern recycling plants.

Lamination – even bio-degradable cellulose (wood based) ones, and the adhesives needed to apply them, create recycling problems. Avoid if you can.

Foil blocking – Studies show that hot and cold foiling caused no problems in recyclability, although always consider the resources and energy used in its making and application.

Binding methods affect recyclability. This may be an 'ask your printer' question, as it will vary so much according to what the printed item is. One big issue is the type of adhesive used in the binding.

What To Look For In A Printer

Environmental Management Systems

ISO14001 certification accredited to UKAS standard. Whilst it is not a performance standard, it is a strict management and record-keeping system, used to manage and improve performance. The three key areas are compliance with environmental regulation, preventing pollution, and improving environmental performance.

EMAS, the Eco-Management and Audit Scheme, is a voluntary initiative designed to improve companies' environmental performance. EMAS sets the highest environmental standards of all the environmental management schemes. It recognises organisations that go beyond minimum legal compliance.

Good printers maintain their machines to a high standard, have digital workflow management systems and use quality standards and colour profiles, to minimise waste. They keep production data to help show where things can be improved.

Forest Stewardship Council (FSC) Chain of Custody

This is about tracking paper fibre from responsible plantation to printed sheet, and preventing FSC and non-FSC material getting mixed. If a printer holds the FSC Chain of Custody, and the paper being used in a project is FSC certified, the end product can be labelled as FSC certified. The printer can also offer you the FSC certificate mark to put on your printed product.

Not all printers have the resources to implement environmental management systems, or become FSC chain of custody certified. At the very least they should have a written environmental policy that they are following, and are happy to explain in detail.

You should also check to see what your printer does about workers' safety, ethical supply chains, and how they interact with their local community. Other things to look for are the use of low emission and fuel efficient vehicles or green couriers for delivery, and the encouragement of cycling amongst employees. The best thing you can do to is to talk to them, or arrange a site visit.

Buying Tips

- Think about print run length. Overproduction is the mother of all waste, but if you order too few and need a reprint, it will be both financially and environmentally costly.
- Confirm the paper order in good time to ensure your printer does not need an emergency delivery from the paper merchant's warehouse.
- Think about delivery logistics. 'Group up' any of your final deliveries if they are going to more than one place.

Design Tips

- Design around the size of the paper the printer uses or can get hold of - usually 'A' or 'B' standard sizes.
- Consider a smaller format, to reduce the cost and environmental impacts.
- Use lighter papers, which consume less in the way of raw materials and energy.
- Keep ink coverage to a minimum, to reduce the amount of potentially environmentally damaging ink used. It also makes your product easier to recycle.
- Check files and proofs thoroughly before sending them off to print. Re-proofing, pulling a job off press or correcting after completion is costly and wasteful.
- If you want longevity of use from your product, design it to be updateable.

Print vs Digital Media

"Go paperless" and "save trees" are common phrases heard these days. The continued growth of digital media and online publishing means electronic forms of communication are often perceived as being environmentally better than print – perceptions that are wrong, in many cases. The issue of print vs electronic are very complex, and there isn't a definitive answer, but here are some things to think about:

- Electronic waste is the fastest-growing waste stream in the UK, according to the Department for Environment, Food and Rural Affairs (Defra).
- The amount of electronic products discarded globally has sky rocketed recently with 20-50 million tonnes generated every year.
- Energy demand of electronic media and its carbon footprint is several times greater than of ink-on-paper. Pulp, paper and printing accounted for 0.6% greenhouse gas (GHG) emissions in Europe (2009, EEA data) and an estimated 1-1.5% of global energy. On other hand internet data centres were forecast to use 4% global energy consumption by 2010 – double the level of 2006. And that doesn't include TV, mobile and other electronic media devices.
- Many people use electronic communication for things that they will then print themselves anyway. They are then still using energy, ink and paper.
- The impact of reading online varies according to a number of factors. Time spent reading affects energy use, as does file size for energy use in storage and transmission.
- Fitness for purpose is important, and will be a factor in whether or not people end up printing it. Reading a lot of text online is not easy, for instance. But then for some things, electronic is better – for those with impaired vision, for instance, an e-book allows the type size to be increased.

In summary the graphics industry has made big improvements in reducing its carbon footprint and improving energy efficiency, as well as making environmental progress through technological advances, improved production processes and the continued implementation of EMS systems and certification and labelling schemes. It will remain work in progress for many years to come.

Environmentally conscious print design is best kept simple as each additional finishing process; beyond running it through the press adds energy, waste and uses resources. Always ensure the printed paper product can be recyclable and de-inkable, and consider its whole lifecycle - including whether the grave of one cycle can be the cradle of another. The responsible printer's cradle-to-cradle approach is something the digital sector doesn't share, although things are improving.

In reality we live in an increasingly digital world, where electronic and paper based communications coexist and are often complementary. Anyone who feels the need to choose will often have to look hard at the fine detail so better we should continue to look for ways to reduce the impact of both.

References and Resources

The British Printing Industries Federation (BPIF)

PrintCity

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