Intergraf's 2022 Young Talent Reward

How do you see print products (graphics and packaging) in the circular economy ?
What is your vision for print for a sustainable future ?

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How I see print products (graphics and packaging) in the circular economy

Introduction and problematic

A circular economy as opposed to the linear economy can be defined as a model of production and consumption, which involves reusing, repairing, and recycling existing materials and products as much as possible. A circular economy aims to tackle global challenges like climate change or biodiversity loss. A simple solution to go in this direction is to make sure that waste and pollutants are designed in order to reduce the use of raw materials and regenerate natural resources. Recycling plays a major role in circular economy for returning materials to the supply chain as showed in the illustration on the next page. A simple statement may follow: every industry should adopt circular economy as it will without a doubt implies a long-term future of their sector.

Thus, in what way can the printing industries fit into a circular economy?
Whether it is books, newspapers, magazines, flyers or packaging, print remains an essential and highly effective marketing and communication tool. But in an age of increasing concern for the environment and carbon reduction targets, how do we use print in the most efficient and responsible way?

Use of renewable resources

For me, one of the steps in the circular economy is to use raw materials that have a low ecological impact and are easily reusable. For the printing industry, research on ink formulations needs to be done for example.
Despite of the increasing importance of digital media over the last decades, printing still plays an important role in our daily life. Even though the market for printed media is declining, there is an increasing demand for inks in other areas of the printing industry, such as packaging and digital print. Ink manufactures are forced to develop more sustainable inks thanks to increased legislative burden and rising environmental concern.
Indeed, an ecological conscience is already being born, this development is driven by an increasing environmental awareness throughout the population and as a result a growing demand for inks with a small ecological footprint. Thus, solvent-based inks are slowly being replaced by water-based and UV-curing inks. These developments come with an economical benefit as these inks allow reduced drying times for example.
As most of the ink formulations consist to a high degree of components from petrochemical raw material, which results in a considerable environmental impact. Research efforts needs to be made to introduce more and more inks composed, at least partially, of renewable resources to reduce our dependency on petrochemical resources and mitigate our environmental burden.

The formulation of inks

As already stated above, research on ink formulations needs to be done given that some of them are a major impediment to recycling which is a key step in a circular economy. Mineral oils (written sometimes as MOAH for Mineral Oil Aromatic Hydrocarbons) are substances on which it is important to act to enable a circular economy scheme. Indeed, although only offset printing inks are likely to contain mineral oils. Some of the mineral oil compounds used in printing are likely to migrate from the paper or cardboard packaging to the food when in direct contact and may also end up in the recycled fiber, calling into question their use in the packaging.
Clearly, using MOAH-free printing inks, glues, and additives in the manufacturing process of paper and cardboard packaging is easier said than done. Alternative solution needs to be met because obviously, we will have to do without them.

In the future, it will be necessary to facilitate and systematize the detection of these compounds, for all types of printed matter. To sustain a circular economy where recycling and the use of renewable raw materials are of paramount importance, propose alternative inks devoid of aromatic hydrocarbons of mineral oil* is essential.

*or almost devoid since it will probably be a question in the long run of determining a regulatory threshold

Adopt an eco-inking approach

All packaging and most graphic papers are windows for brands to communicate with consumers and other stakeholders. They must attract attention, be identifiable, inform and generate interest or desire to buy. It is possible to reduce the quantities of ink used without betraying the graphic intention and without reducing the visual impact of the creations.

However, the inks used are partly made of non-renewable materials and can make recycling more complex. As recycling allows to complete the loop in the circular economy, printed products need to be recyclable as easily as possible.

Eco-inking is an effective solution and is an integral part of the eco-design of packaging and graphic papers. As de-inking procedure is a step-in recycling, reduce the amount of ink used is necessary. To achieve this, I can think of several actions that could be taken into consideration. Firstly, the indicator to be considered is the rate of ink coverage defined as the measurement of the superposition of the inks which are deposited on the support by the forms of impression. The ink coverage rate is then the sum of the percentage of coverage of all the primary inks of a given sample. Thus, preferring the direct tones to the quadrichromy for the realization of flat tints when these cover a great part of the surface to be printed saves ink.

Moreover, lighten ink-laden backgrounds, use gradients, or integrate lightly inked patterns will also reduce the ink coverage rate and reduce the ink consumption and thus facilitate the recycling of the product.

Nowadays, it is possible to measure the ink consumption on precise points of the visual document with Adobe Photoshop® for example. Then, it is possible to opt for solutions that minimize the ink rate at each stage of creation for the same graphic efficiency.
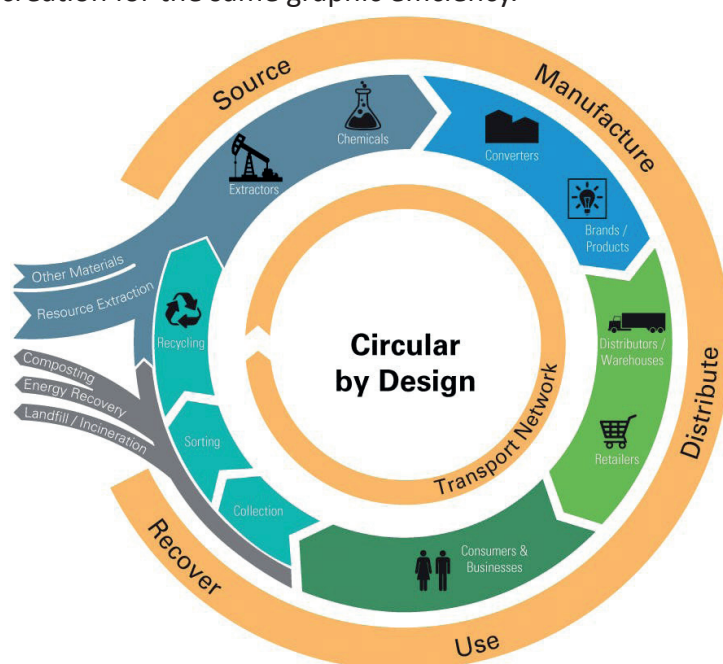
Pierre Pienaar, CPP, Effective Packaging in the Circular Economy: A Global View [online].
Available on : packworld.com/issues/sustainability/article/21784525 (Viewed on 02/02/2022)

My vision on printing for a sustainable future

Current economic situation and strategy

The economy has been brought to its knees, reporting on what the Graphic Industries have experienced since March 2020 seems to be a starting point. We have seen in an unprecedented way, that these periods of confinement have required urgent adjustments, the industries have had to react quickly, and a real introspection has been necessary.

To overcome this troubled time, I can think of a few recovery strategies: upmarket, possibility of personalization and connection between paper and digital, through augmented reality. In my opinion, it is necessary to avoid reactivating a war between digital and paper, first because the graphic industries will probably lose it for sure, as my generation is well more sensitive to digital than to printed products. If industries manage to connect paper to digital, exactly as we already connect digital to paper (newspapers are online now), we could hope for a perennial cohabitation.

If the printing industry wants to have a ''sustainable future'', this sector must adapt and move on to a more promising one. It is necessary to listen to the customer, who has mostly abandoned paper. Nevertheless, augmented reality is gaining momentum in recent years, and use of smartphone application such as ARGOPlay are possible today. This is a continuation of the digital habits developed during the confinement. I can think of a connected paper. 500 copies in short runs, but more beautiful with a high-end paper with a personalization while being connected to our smartphones could have a greater added value than 10,000 basic flyers ending up in the trash in a few seconds.

This is a strategy that has been defended for some years and the health crisis having accelerated and reinforced these changes (we probably do not have enough hindsight yet to know if it is for the better or worse).

A sustainable future involves a circular economy

Even though two questions have been asked in this Young Talent Award from Intergraf, there is no doubt that there extremely connected. To reach a future causing, or made in a way that causes, little or no damage to the environment and therefore able to continue for a long time, a circular economy needs to be implemented in every sector.

Environmental awareness is growing among more and more people, and I think we are moving towards new modes of production and exchange in printing industry. As already said, the magazines, for example, will probably change, they could be more luxurious, more expensive, but also concentrated on smaller print runs. High volume might no longer be the norm and that is what we will have to adapt to. As said above, personalization and the use of digital platforms are some of the new marketing strategies and result in smaller editions. In a few years, we will have to reinvest in machines more adapted to the short series and we will have to train staff to the new processes which will result from it. Less waste with smaller print runs will occur and enable the emergence of a circular economy.

Ecological stakes

Concerned about reducing their impact on the planet and the environment, individuals and businesses are increasingly receptive to sustainable development. Several standards and labels can allow to turn to the good professionals. For example, in France, "Imprim'Vert" is a reference label for ecological printing. A charter is signed by the companies and annual audits allow to verify the respect of the commitments taken by the printers having obtained this certification. Thus, I think that this kind of standards and labels should be generalized worldwide.

On the other hand, the printing support is one of the main elements that comes to my mind when facing sustainable printing. Whatever the materials chosen, the use of a recycled support must of course be favoured. However, recycling cannot be done forever, so the use of paper from certified forests is a possible alternative and complementary to recycling. Also, the bleaching of the paper requires chemicals with the traditional bleaching method using chlorine, which are toxic for environment. However, oxygen bleaching of paper is an interesting alternative and should be a more widespread practice.

Finally, still in France, pictograms exist to help the consumer to take an ecological approach. These must be unambiguous: the green dot (on the right) attests to the issuing company's contribution to the financing of the selective collection and recycling system developed at the time by Eco-Emballage (which became Citeo after merging with Ecofolio), but it does not mean that the product itself is recyclable or recycled. Too many misunderstandings and confusions were generated so it will disappear, in favour of the Triman (left) which is now the reference logo to indicate that a product is recyclable.

This regulation has been in place for several years, but I still see a lot of products without the Triman label where it should be. An intense campaign, with producers, importers, distributors could be necessary.

General conclusion

In printing industry, a circular economy is closely linked to recycling. Printers must adapt to the problems encountered during this process. De-inking is the stage of recycling that directly concerns the printing industry, so the quantity and type of ink used must be widely considered by printers to be part of a circular and sustainable economy approach.

Many aspects must be considered to adapt the printer's services to the new role of print in the context of a communication that has become multi-media. The printer must accept that his job has become much more complex and consider the new orientations of the role of print in the coming years.

Thank you for your time and your consideration.