The Impact of 20 Years Environmental Certification on the Shift from Traditional to Digital Printing

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Abstract

We are celebrating now 20 years of the Austrian Environmental Sign. At the beginning this environmental effort for printing was mainly designed for traditional printing and 20 years ago we started with traditional printing shops in Austria. The outlines were only designed for traditional offset printing and in the beginning 4 printing plants could fulfill the standards of the regulations.2011 there are 56 printing facilities certified and out of this number 30% percent of the plants are using digital printing.

Austrian Eco-Label for printed Paper Products

The objectives of The Austrian Ecolabel (AEL) are a better orientation for the consumers on the point of sale. It was designed to motivate producers and traders to develop and offer less environmental-polluting products. It was mainly designed for offset printing and since the last ten years dry toner digital processes and in the last year also inkjet was put to the framework of AEL. The label was designed by Hundertwasser the famous artist and also eco- prophet in Austria and worldwide.
The main goals for the award criteria are:

Consumption of raw materials
Toxicity of contents
Emissions (e.g. exhaust gases, sewage, noise)
Disposal/recycling
Distribution and transportation
Quality, safety
Longevity, ease of repair

Printed Paper products

In the beginning mainly lithographic (offset) printing products were certified but in the last 10 years also dry toner Electro - photographic printing is more and more used in Austrian printing plants and out of 50 Plants 20 are using digital printing. One big obstacle was also the deinkability of the digital printed products as well as UV-Cured printed offset. The main dry toner machines from XEROX, OCE, Canon and Ricoh are meeting the deinking requirements according the test methods used by INGEDE or practical mill experience.

Equipment

The next step was also to test electro-photographic dry toner printing systems available on the Austrian market. The main suppliers like Minolta, OCE, Canon and Ricoh are marked with AEL and Xerox is in the certification stage. Also all main digital printing units like XEROX, Canon, Minolta, OCE and Ricoh are certified printing units. The main parameters therefore are environmental friendly toners, energy consumption especially by starting the printing process and also emission of ozone and CO2 consumption. The criteria's for electro- photographic dry toner are also used for "The Blue Angel" in Germany.

Criteria for digital printing

The goals for recycling and deinking are therefore: Toners have to be deinkable and for deinkability appropriate test methods are necessary e.g. INGEDE –Test methods or practical mill tests. Toner containers must be able to be reused or supplied to a material recycling scheme. Also in most of the other Environmental signs Nordic Swan, Eco Mark of Japan and Blue Angel deinking is an important factor too.

Toner

Toner must be free of substrates with any of the following risk phrases :

1.dangerous to environment 2.toxic (T) very toxic(T+) 3.carciogenic(T), mutagenic (T) or reprotoxic (T) .Toner must not contain heavy metals like lead, cadmium, mercury and chromium VI and toner shall give a negative AMES test.

Paper Criteria

Paper must be Eco-labeled by national Systems,
ISO 14024 I;

AEL, Blue Angel, Nordic Swan, European Eco-Label and the emission limits derived from EU Eco-Label " graphic and copy paper". A scoring system is used for calculation

PCOD =10x (COD paper/COD reference)

Parameter	Hurdle	Reference	Weight
COD	≤ 37,5kg/t	25 kg/t	10%
AOX	≤0,25Kg/t	0,07kg/t	20%
SO2	≤1,35kg/t	0,9kg/t	10%
NOx	≤3,45kg/t	2,3kg/t	10%
CO2	≤1100kg/t	733kg/t	40%
WOOD cert	≤10%	0%	10%

Conclusions

The above-mentioned criteria's were in the beginning of the certification processes in digital printing in some cases a problem. But now most of the printing plants have no problem at all with the regulations and can fulfill all above-mentioned criteria's.

Giving some figures how digital printing is covering these criteria's it can be pointed out That out of 60 certified printing plants 30% are using also mainly digital printing and from the equipment suppliers aspect for dry toner electro-photographic systems 80 % are certified with AEL. The same figure also can be used for digital printing system suppliers working with dry toner Technology. The expectations – a significant demand for environmental friendly printing service especially in digital printing are reached in Austria and especially from green public procurement. The whole digital printing landscape has changed dramatically and is still in a conversion process and is a big environmental challenge for the conventional and the digital printing industry. In office printing 80% of the users are using labeled paper, most of the digital printers are using now environmental friendly toners and the CO2 emissions and the deinkability of digital printed products have changed according the influence of the regulations arising from the AEL.

References

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