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Siegwerk UV/LED solutions provide outstanding deinkability on various paper grades

Based on fundamental investigations into the deinkability of UV/LED cured prints Siegwerk has developed an enhanced UV/LED offset ink system for coated and uncoated types of paper.



Siegwerk, one of the leading global providers of printing inks for packaging applications and labels, has joined forces with INGEDE member Stora Enso, a leading provider of renewable solutions in packaging, biomaterials, wooden constructions and paper, to improve the deinkability of UV/LED cured prints. First results of this cooperation have already marked a significant milestone towards more sustainable UV printing solutions in terms of deinkability in the paper recycling process. Based on these investigations Siegwerk has developed a new UV/LED offset ink system with impressive deinking properties on various paper

grades even comparable to the deinkability of conventional oil-based sheetfed offset inks.

In general, paper that is printed with UV/LED inks shows poor deinkability as these inks form a solid, chemically and mechanically resistant layer after curing comparable with adhesive plastic layers. In other words, UV/LED inks are strongly attached to the paper fiber and therefore very hard to remove during the recycling process resulting in big color spots in the recycled paper. It is important that the cured ink film is fragmented into hydrophobic particles as small as possible during recycling in order to become detached and more easily separated from the paper fiber. “Present standard UV/LED inks often lead to large hydrophilic particles leaving visible traces on the recycled paper. That’s why we have focused our research resources on finding enhanced solutions for this problem and improving the recycling of UV cured prints,” explains Thomas Glaser, Head of Technology Sheetfed at Siegwerk. As low-energy curing UV inks (iron-doped UV, LED-UV) are gaining more and more market share, the problem has reached new dimensions and has increased the need for further advancements of UV inks and the UV printing process.

Since 2017, the partners have already investigated the deinkablilty of different ink formulations developed by Siegwerk and have examined the different inks’ behavior with standard UV, LED-UV as well as iron-doped UV curing such as LE-UV, H-UV, HR-UV and LEC-UV. “Our goal has been to develop UV/LED solutions for all UV technologies that show good deinkability similar to traditional offset and gravure inks without any loss in ink performance and printability,” adds Glaser. The deinkability has been checked using the INGEDE* method 11 (01/2018) and the EPRC** scorecard, the officially-approved industry standards for deinking testing and evaluation.

Based on extensive investigations, Siegwerk has succeeded in developing an enhanced UV/LED offset ink system with good deinking properties on both high- and low-weight coated paper as well as on uncoated virgin fiber-based

newsprint (iNP). Therefore, existing Siegwerk inks like the L-NRGY series have been refined for good deinkability. The research project has already proven the suitability of the new ink system for commercial printing. The new UV/LED offset ink system is free of reclassified photoinitiators 369, EDB, EHA and PBZ and offers very good printing stability, high gloss levels, excellent dot sharpness and great flow properties as well as fast curing and good mechanical strength. A full range of process, base and special colors of the new ink system is available now.

As one of the leading global providers for packaging inks, Siegwerk is always driving the development of eco-friendly inks. Assessing ways of enhancing the ecological footprint of the company's inks with no loss of performance is one of its key research and development efforts. Improved deinkability is the first step to full recyclability of UV/LED cured prints strengthening the ecological benefits of the general UV/LED printing process. To share knowledge and further drive discussions around the use and disposal of UV/LED cured prints, Siegwerk plans a roadshow to inform customers about the requirements and challenges and to present the latest research results including the company's enhanced UV/LED ink system. Interested people can contact Siegwerk via email at deinking(at)siegwerk.com to learn more about the company's activities and upcoming events.

***INGEDE** is an association of leading European paper manufacturers founded in 1989. INGEDE aims at promoting utilization of recovered graphic paper (newsprint, magazines and office paper) and improving the conditions for an extended use of recovered paper for the production of new graphic paper, hygiene paper, and white top liner and folding boxboard. www.ingede.com

****The European Paper Recycling Council (EPRC)** was set up as an industry self-initiative in November 2000 to monitor progress towards meeting higher paper recycling targets. These are set out in the European Declaration on Paper Recycling first published in 2000 and renewed every five years since. The current target for the 2016-2020 declaration is set to 74%. www.paperrecovery.org

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