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Siegwerk offers UV/LED UV solutions with outstanding deinkability

Siegwerk and INGEDE member Stora Enso joint forces to improve the deinkability of UV/LED UV cured prints. Thomas Glaser, Head of Technology Sheetfed at Siegwerk, gives insights into the collaborative research project and the company's newly developed UV/LED UV offset ink system for coated and uncoated types of paper.

Thomas Glaser, Head of Technology Sheetfed at Siegwerk.

Q: What is the cooperation about?

A: Since 2017, we cooperatively work together with Stora Enso, a leading provider of renewable solutions in packaging, biomaterials, wooden constructions and paper, to develop more sustainable UV/LED UV printing solutions in terms of deinkability in the paper recycling process. Therefore,

teaming up with our partner combined our comprehensive formulation know-how for the development of compliant packaging inks with Stora Enso's fundamental knowledge in recycling and industry standard testing - the best base for fundamental and solution-oriented investigations.

Q: What is the general problem with deinkability?
A: Most UV/LED UV inks are difficult to remove from paper fibers as they form a solid, chemically and mechanically resistant layer after curing - comparable with adhesive plastic layers. In order to become detached and separated from the paper fiber the cured ink film needs to be fragmented into hydrophobic particles as small as possible during the recycling process. However, most of present standard UV/LED UV inks often lead to large hydrophilic particles resulting in big visible color spots in the recycled paper and therefore minimizing its quality. 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/LED UV inks and the UV/LED UV printing process at all. That's why we have started the research project to concretely find sustainable solutions for this problem and develop UV/LED UV solutions for all UV/LED UV lamp technologies that show good deinkability similar to traditional offset and gravure inks without any loss in ink performance and printability.

Q: What concretely has been tested?

A: During the extensive investigations the deinkability of different ink formulations has been tested by examining the inks' behavior with all UV technologies including standard UV, LED UV as well as iron-doped UV curing such as LE-UV, H-UV, HR-UV and LEC-UV. The deinkability has been checked using the INGEDE method 11 (01/2018) and the EPRC scorecard (01/2017), the officially-approved industry standards for deinking testing and evaluation.

Q: And what are the results so far?

A: Based on the fundamental tests we have refined existing inks like our L-NRGY series and developed an enhanced UV/LED UV offset ink system with impressive deinking properties on both high- and low-weight coated paper as well as on uncoated virgin fiber-based newsprint (iNP). The deinkability of the new UV/LED UV offset ink system **SICURA Low NRGY UV/LED UV** is now even comparable to the deinkability of conventional oil-based sheetfed offset inks. It 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. Tests have already proven its suitability for commercial printing. All in all, the results look very promising as the new ink solution already represents a first step to full recyclability of UV/LED UV cured prints further strengthening the ecological benefits of UV/LED UV printing.

Interested to learn more about deinking and the new ink system? Then email us at deinking(at)siegwerk.com.

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