

## **Characterization of nanographic technology as one of the newly developed digital printing techniques**

**Prof. Mona Moustafa Abo tabl**

**Professor of Control Systems and Quality Control - Department of Printing, Publishing and Packaging - Faculty of Applied Arts, Helwan University**

[monaabutabl@yahoo.com](mailto:monaabutabl@yahoo.com)

**Dr. Hanaa Abd Elfadeel Sarhan**

**Director of the Commercial Press Department at Akhbar Al Youm Foundation - Lecturer at Akhbar Al Youm Academy**

[hanaa.sarhan@yahoo.com](mailto:hanaa.sarhan@yahoo.com)

**Assist. Lect. Sara Ebrahim Abd-Elrahman Ramadan**

**Assistant Lecturer, Department of Advertising, Printing and Publishing - Faculty of Applied Arts - Benha University**

[sara.printing@yahoo.com](mailto:sara.printing@yahoo.com)

### **Abstract:**

The aim of research is clarifying the importance of modern digital printing systems, which represent the most important pillars of the modern printing industry. Therefore, knowledge of the elements and requirements of advanced digital printing techniques is a major demand. And continuous development

It is also clear that traditional printing techniques are no longer sufficient to achieve the required print quality compared to the digital methods that achieve the best quality and reduce the problems of print production compared to the traditional methods, as well as the printing methods are less expensive.

sometimes, especially in the case of printing operations of limited quantities.

In this research, the researcher will describe one of the techniques of digital printing, which has proved to be successful as a printing technique that achieves high quality in the printing press by the use of micro-micronuclear inks. The research will show nanographic technology in terms of ink quality, printing technology and components of nanographic printing machines for commercial applications Feeding machines Whether sheet fed machines or web fed machines. The search problem is summarized in The difficulty of printing on different types of paper and materials with high printing quality due to the problems caused by the thickness of the ink film and the lack of suitable cover to receive it.

The research aims to Reduce the problems resulting from increasing the thickness of the ink film and including the long time required to dry the print Plus a set off problem. And The possibility of printing on different materials with a high quality. the research conducted the descriptive analytical method; By reviewing the following:

Nanographic Printing , The nanographic technique is summarized in jet billions of nanoparticles of water- base nano inks. To a hot rubber runs through an endless cycle (blanket) to form the print image. ; As a result of the hot blanket ,water evaporates from the ink and with the evaporation of water the ink becomes a film of ultra-thin dry polymers. , Less than half the thickness of the ink layer in offset printing , Installation of the printing unit, Describe the requirements and variables of nanographic technology and The installation of digital printing

machines with nanographic technology has been reviewed in the both (sheet and web) fed digital printing machines .

**Keywords:**

Nanographic Printing, ink ejectors, perfector

**Research introduction:**

Digital printing techniques vary and differ clearly in terms of printing technology, machine installation and the ink used. Digital printing techniques are constantly evolving and more advanced new technologies appear, which requires the need to know everything new in order to keep pace with the development process, as well as in order to improve quality and raise the efficiency of the final printed product, Nanograph technology is one of the new technologies in digital printing that uses high-quality nano-inks, which improves the properties of the final product and the color appearance of the print.

In addition to its advantages and the simplicity of installing its machines, it is easy to operate and print registration, and the secret of its high print quality lies in the micro-nano-micron inks, which ensures the registration of the most accurate network points that cannot be seen with the naked eye, which guarantees full printing of details without any loss in network points, in addition to the mechanical printing The technology performs the complete transfer of the color printing image to an intermediate surface, which achieves full color transfer to the surface of the material.

**Research problem:**

1- The arrival of traditional inks to the surface of the paper causes some printing problems caused by the increase in ink thickness, impregnation and dryness, and then it has become necessary to work on solving these technical problems.

2- The use of traditional inks in printing, whether traditional or digital, leads to many problems that affect print quality, and then it has become necessary to rely on nano-micronized inks.

**Research goal:**

1- Reducing the problems resulting from the increase in the thickness of the ink film, including the length of time required to dry the edition and the problem of off set

2- The possibility of printing on different materials with high quality.

3- Reaching the highest levels of color values production as a result of using nano-micronized inks.

**Research Methodology :-**

The descriptive analytical method was followed in this research.

**Research Results:-**

**Through the theoretical study, the following was concluded:**

1- Avoiding many printing problems related to offset printing inks, as the nanograph technology achieves high print quality in printing through the printing mechanism that includes heating the

rubber media to evaporate the water from the ink film and with the evaporation of the water, the ink becomes an ultra-thin dry polymeric film, less than Half the thickness of the ink layer in offset printing.

2- Giving the opportunity to use a wide range of materials to be printed, whether covered or uncoated paper.

or on any plastic wrapping film - no pretreatment required; through this technique.

3- Doubling the speed of the paper feeding system and doubling the productivity with the same quality. The design of the ink system in nanograph technology, which contains eight printing columns in the printing machine, allows the possibility of allocating two columns for each printing color, thus doubling the production.

4- Recording the micro-retinal dots without any loss through the use of nano-micron inks.

### **Researcher's recommendations:**

1- Encouraging the owners of printing presses and small enterprises to invest in the field of printing and to purchase advanced printing machines that achieve high profitability compared to those of traditional printing machines, as well as a longer operational life thanks to their newly developed mechanisms and urging the need for continuous development.

2- Attention by experts and concerned authorities in the printing industry to support and finance scientific and applied research to monitor the new and most advanced in this industry with the aim of raising production efficiency and improving product properties by raising print quality in order to achieve a strong financial return on printing institutions.

### **References:**

1-Düsseldorf, Landa's Breakthrough Nanographic Printing Presses Change the Face of Mainstream Print Markets, Germany, 2012 , Landa Corporation

2- Landa Corporation, White Paper, The Nanographic Printing™ Process, UK , 2012

3-Landa Corporation , Landa S10P Nanographic Printing® Press , <https://www.youtube.com/watch?v=e0B4z2oEK2A>, February 12 , 2019

4- Landa Corporation , LANDA NANOINK®

,<https://www.landanano.com/nanography/nanoink> , December 19 , 2018