HITACHI
Inspire the Next

Industrial Inkjet Printer

For Increased Efficiency: Automated Printhead Cleaning compared to Traditional Manual Cleaning Methods

When it comes to industrial coding and marking, the Continuous Inkjet (CIJ) is a reliable method that is widely used in a variety of production processes.

To guarantee the print quality and performance of this printing method, the printhead must be in the best operational condition.

During operation, all printheads suffer from the gradual build-up of ink deposits, resulting in a variety of problems and makes regular cleaning a necessity. Within this context, we will examine the importance of the printhead cleaning process and the various cleaning methods that can be deployed, and especially, the benefits of automated cleaning that is performed by an on-board cleaning station.

Why is it so important to clean the printhead regularly?

For this question the meaning of the term “Ink Build-up” is crucial. This phenomenon occurs in industrial inkjet printers and describes the accumulation of ink residue onto the components within the printhead. Over time, the consequences of ink residue can lead to poor print quality, inaccurate drop positioning, nozzle clogging and ultimately a failure to print.
Additionally, external contamination, better known as “Ink Splashback”, is possible. This is because some ink particles splash back from the surface of the product being marked into the printhead, this is especially apparent on non-absorbent surfaces.

The degree of severity of “Ink Build-up” is related to several factors:

- The duration of the production process, especially in multiple shift operations, can be an influential factor.
- Long periods of operation without regular and proper printhead cleaning will result in an increased buildup of ink deposits in the printheads.
- Furthermore, the operating temperature, humidity and specific printing conditions can also affect the intensity of the “Ink Build-up”.

The goal is to minimize ink residue, ensuring consistent marking and coding quality, and extend the printhead’s operation life. To achieve this, regular maintenance, and cleaning of the printhead are crucial.

Methods of cleaning

There are two options for printhead cleaning:
A) Manually by an operator
B) Automatically via the printing system itself.

Manual Cleaning

In practice, the experience has shown that manual cleaning uses a large amount of expensive solvent as manual rinsing wastes solvent, leading to increased costs. From a safety and health perspective, it is important not to neglect the potential risks to the environment and the health of employees when handling solvents, which are volatile organic compounds.
Pre-programming a manual cleaning is impossible, resulting in a more complex planning of the cleaning intervals.

Automated Cleaning

In comparison, the automated cleaning with the On-board Safe Clean Station offers many advantages.
The Safe Clean Station drastically reduces the amount of solvent waste, minimizing human error, and the ability to schedule the cleaning via pre-programming. Each application has its own unique requirements. Different programmable cleaning modes make it easy to meet those needs. The fast-cleaning time of standardized 2 minutes is consistent and thorough.

VIDEO

Above all, the health aspect is the most important factor:
The Safe Clean Station provides protection against **solvent evaporation, which therefore can be reduced up to nearly 0%**. This actively safeguards employees from health hazards such as inhaling harmful volatile organic compounds.

Automated Cleaning of the printhead with On-board Safe Clean Station

The On-board Safe Clean Station is custom designed to meet the needs of automated printhead cleaning. Manual interventions for the cleaning process are no longer necessary. An efficient, precise, and economical solution for printhead cleaning is therefore provided.

Advantages of automated cleaning

- Cost savings: Reduced solvent usage

- Operational readiness: Permanent constant which is unaffected by extended downtimes.
- Print consistency: The viscosity of the ink remains consistently at the same level.
- Convenient pre-programming: Planning of cleaning intervals.
- Adaptability: Different cleaning methods based on specific application requirements.
- Preventing Human Errors: Reliability through automation.
- Time efficiency: Cleaning process consistently takes 2 minutes.

Considerations

Expenses for the safe cleaning station: Upfront costs may arise. Nevertheless, the long-term effects of the initial investment should be taken into consideration.

Availability of Automatic cleaning systems

Currently, only a few manufacturers provide automated cleaning systems. Hitachi plays a pioneering role in this technology and has already well-established cleaning stations in the Japanese market. After undergoing continuous optimization, the UX2 CIJ-Printer with Safe Cleaning Station is now available also outside of Japan.

Results

The automated cleaning of printheads on industrial inkjet printers offers an efficient, consistent, safe, and eco-friendly solution compared to traditional manual cleaning. This innovative technology meets the needs of the manufacturing industry by providing a reliable, straightforward, and modern cleaning method that ensures high-quality print results and optimized production processes.

WEBSITE

Redefine your expectations of cleanliness.

VIDEO

A visual journey of discovery.

Contact Us!

Explore Hitachi's extensive portfolio of innovative solutions - from automation to compressors: Quality and customized solutions for your business.

Everything at a glance.

Automation products

Compressor

Click here to learn more!

Click here to learn more!

Hitachi Europe GmbH | Niederkasseler Lohweg 191 | 40547 Düsseldorf | Phone: +49 211 5283 0 | www.hitachi-industrial.eu | coding@hitachi-eu.com