

Comparison of Laser Marking Machine and Inkjet Printer

Introducción detallada :

Laser marking machines and Inkjet printers are the most widely used marking equipment nowadays.

Common **laser marking machines** include: CO2 Laser Marking Machine, Fiber Laser Marking Machine, UV Laser Marking Machine, Semiconductor End-pumped Solid Laser Marking Machine, etc.

Common **inkjet printers** include: Small character inkjet printer, High-resolution inkjet printer, Large character inkjet printer, UV variable data inkjet printing system, R series thermal transfer intelligent printer, etc.

Would you mind following us to see the similarities and differences between the Laser Marking Machine and Inkjet Printer?

1. Working principle

Laser marking machine:

It adopts a laser beam to make permanent marks on the surface of various objects. The effect of marking is to expose the deep material through the evaporation of the surface material, engrave traces by the chemical and physical changes of the surface material by light energy, or burn off part of the material through light energy etch the required text or pattern.

Inkjet Printer:

It adopts ink to achieve the marking effect on the products.

2. Anti-counterfeiting and anti-tampering

Laser marking machine:

The high-energy laser is used to make permanent marks on various metal and non-metal surfaces. The marking effect is corrosion-resistant, can prevent malicious tampering, and has an obvious anti-counterfeiting effect.

Inkjet Printer:

The marking is clear but easy to erase and change. Generally speaking, inkjet printers have limited anti-counterfeiting effects. But the newly introduced invisible ink has a better anti-counterfeiting effect, and the characteristic is that the mark is not easy to find, and the concealment is good.

3. Production efficiency

Laser marking machine:

It can be used as a stand-alone machine or for high-speed non-stop laser marking on the production line, with high efficiency. In terms of application areas, laser printers are more versatile.

Inkjet Printer:

It is more suitable for use in the production line, with no pauses in production and high production efficiency. Some printers may affect production efficiency due to ink clogging nozzles. However, the high-resolution inkjet printer has fast printing speed and high efficiency, the first choice for marking

equipment for enterprises with large production volumes.

4. Flexibility

Laser marking machine:

The printed content can include serial numbers, batch numbers, barcodes, QR codes, logos, and patterns. There is no limit to the number of printing lines and font size.

Inkjet Printer:

You can print barcodes, batch numbers, and simple patterns, but there are limits to the number of lines you can print and the font size. If you use non-contact marking, there is no direct contact with the object's surface and no damage to the surface or interior of the object.

5. Definition

The definition of a laser marking machine is higher than a small character inkjet printer, but lower than a high-resolution inkjet printer.

6. Reliability and Service life

Laser marking machine:

It is stable and reliable and can work continuously throughout the day. The long service life of tens of thousands of hours if properly maintained.

Inkjet Printer:

The performance is stable, but the failure rate is high. The nozzles will be blocked due to environmental temperature and humidity changes, and dust. If the nozzles are not cleaned frequently, the machine's service life is easily affected, the failure rate is relatively high, and the service life is short. The maintenance workload is large, and it is greatly affected by the environment.

In terms of equipment reliability and service life, the laser marking machine is slightly superior.

7. Operation

Laser marking machine:

Intuitive Windows software (WindowsXP), high-resolution display interface, clear picture. The creation and editing of print information are quick and easy. The marking function is powerful. Either dot matrix method or vector marking method can be used, which is easy to operate and flexible to use. A variety of characters are available for selection. In addition, new characters can be added independently, which is convenient and flexible, and easy to upgrade.

Inkjet Printer:

The display interface is simple and has low resolution. The inkjet printer can only use the dot matrix method. Due to the limitation of the number of printing lines, it is difficult to print more complex patterns and multiple letters or numbers on the surface of a product with a small area. Even if it can be printed, the marks are difficult to distinguish. Generally, inkjet printers are only used as production date printing equipment.



8. Cost

Laser marking machine:

The one-time purchase price is high, but the latter operating cost is extremely low, preventing unplanned production interruption. The equipment can be operated without maintenance for a long time, no consumables are needed, and the operating cost is zero.

Inkjet Printer:

The one-time purchase price is low, but the inkjet printer consumes a large amount of special ink and solvent, a long-term cost. In addition, the replacement of nozzles and other accessories is expensive, requires specialized maintenance personnel, and will stop production unplanned, causing indirect losses.

9. Data processing ability

Laser marking machine:

The control host adopts an industrial control computer, which has powerful data processing capabilities and can be connected to all anti-counterfeiting data systems to meet multi-level anti-counterfeiting requirements.

Inkjet Printer:

It adopts single-chip microcomputer control, limited data processing capacity, and few anti-counterfeiting functions.

10. Environmental protection concept

Laser marking machine:

The mark is environmentally friendly, non-toxic and non-polluting, and is widely used in the management and traceability of product identification in the food and pharmaceutical industries. Although the laser engraving produces smoke, it can usually be handled with a smoke exhaust

system.

Inkjet Printer:

Ink and solvent are highly volatile substances, which will produce more chemical and toxic residues and pollute the environment. In addition, the chemical composition and odor of ink and solvent completely penetrate the marked object.

While the above compares the two kinds of marking equipment, each has its advantages and disadvantages. Most customers use inkjet printers and laser printers at the same time to achieve complementary effects.

There is no best marking equipment, only the most suitable marking solutions. Only by accurately positioning requirements can customers reduce costs and obtain more benefits. If you have a good suggestion, please contact us.