

IMPACT PRINTERS VERSUS LASER PRINTERS

There are basically three technologies for cheque completion printing: laser, ink-jet, and impact. The first, **laser printing**, is strongly advised against. The problem with toner-based non-impact printing is that the ink consists of a fine plastic powder that is melted and fused to the paper, Under the best circumstances, this results in an image composed of material which is attached to the surface of the paper and can be removed with a scalpel, or through freezing techniques, microwave technology; and is easily replaced with bogus information using widely-available desktop lasers.

The MICR toner is easily available for all people, not only for the banks who use a laser printer.

Under adverse circumstances, such as if the paper has a high humidity or the laser printer fuser temperature is incorrect, the image will sometimes spall spontaneously or be readily removable with Prestik or similar means. The laser printer machines are usually cheaper than conversational impact printers, but have a higher cost each cheque produced, and hence could be much more expensive in the long run. If you take in consideration that laser printed cheques also are the one most commonly cheques used by the swindler, you take a big risk and can loose a lot of money.

Ink-jet printers are a reasonably good technology as there is wet ink, which will penetrate the paper fibres to a degree (the paper used should have an open, slightly porous surface, not glossy or calendared). Printing in reverse image, however, although once considered secure it is definitely not as secure as impact printing. It is possible to black out the printed area completely and use white stick-on lettering. However, you will not find any Ink jet printers who print MICR, so the cheque printers in the market based on Ink jet will be a combination of impact hammer solenoid for the MICR printing, and ink jet printing for the personalisation lines.

Impact printing has many advantages. The form of impact printing recommended is hammer solenoid and dot-matrix printing. When film ribbon is used on the code line, penetrating or so-called bleeding MICR film ribbon is recommended. The fonts should be bold, with a high dot density giving physical deformation of the paper and driving the ink into the fibres. By using the impact printing for the MICR you are ensured much higher signal strength, and hence have far less problem in the automatic clearing system. The technique developed by AH, adds another dimension by using special security ribbons with penetrating and fluorescent affect; hence to prevent both alteration and duplication..

Laser printers are printers that use radiation of toner through heat unto the paper surface. The LASER is an acronym for " Light Amplification by Stimulated Emission of Radiation". This is a device that produces a concentrated, coherent beam of light by stimulating molecular or electronic transitions to lower energy levels, causing the emission of photons.

Laser printers cannot be compared with Impact printers, due to the fact that Laser printer imaging on paper are not direct while that of impact printers are direct imaging.

There are no needs for any chemical manipulations for imaging in impact printers while there are lots of chemical manipulations between the toner and the heat before imaging in Laser printers.

Impact printers have no health hazards while the Laser printer on its own generates health hazards as a result of the chemical manipulations inherent in its operations.

Below are some of the differences between Impact and Laser printers:

	IMPACT PRINTERS	LASER PRINTERS
1	<p>CLEARING The print out can undergo multiple cheque clearing process without deteriorating</p>	<p>Experience in the financial services industry processing cheques produced from MICR Laser or other non-impact printer has been marginal at best, unless they have been substantially modified (Incorporated some mechanism beyond the simple addition of magnetic toner and MICR font to prevent the MICR characters from deteriorating during cheque clearing process).</p>
2	<p>ENVIRONMENTAL CONDITION It can be used under any environmental condition as long as it is an environment with room temperature and habitable.</p>	<p>The printers can only be used in an environmental condition which varies from printer manufacturers and this has an implication on the toner and the machine operations.</p>
3	<p>PAPER QUALITY This will accommodate any quality paper produced according to standard. It comfortably prints on ply papers up to 5 ply paper.</p>	<p>The paper quality plays an important role in the quality of the MICR printing produced. When moisture content affects the paper, the quality of MICR is affected. It can only print on a single ply paper.</p>
4	<p>MICR FONTS The font is on the print wheel and directly imaged on cheque leaves.</p>	<p>These are created by software and depend on the resolution of the print device, often the character shape, radii, stroke widths, and even proper character spacing may affect MICR specifications.</p>
5	<p>EXTENDED SECURITY TREATMENT There is no need for extended security treatment of cheque leaves before usage.</p>	<p>There is a dire need for extended security treatment of cheque leaves like 'Toner Grip' to further prevent it from being easily altered.</p>
6	<p>HAZARD IDENTIFICATION There are no health hazards identified from the use of impact printers</p>	<p>There are lots of health hazards identified from the exposures of the toner powders encased in cartridge housing. Although, health effects are expected to be very low when used as intended but cumulative effects could be high. Some of the identified hazards are: Irritated eyes, nose and throat to dermatitis, headaches, premature ageing and reproductive, cancer etc.</p>

7	VENTILATION Ventilation is not at all required	Ventilation is highly essential in order to reduce some of the health hazards. There is need for outdoor air exchange.
8	OZONE This is never associated with impact printer.	Ozone is a gas produced during the high voltage electrical discharge in photocopiers and laser printers. It is sweet smelling and highly toxic.
9	TONERS The machine uses tape which is cheap and no emission of toxic components.	This machine uses Toner. Toners are generally a mixture of plastic resin and carbon black often with other additives. Carbon black is classified as a nuisance dust (i.e. is only mildly toxic in itself) but will contain impurities known to be carcinogens.
10	OPERATIONAL SPEED It has a uniform operational speed throughout any job processed. This can help to time the machine to achieve the desired goals in minutes to hours. It is faster than Laser and supports large daily production.	The operational speed is faster at the beginning of a job but becomes slower as the generated heat increases. It is not easy to time; the daily production is low because the machine needs down-time to recover from excessive heat generation.

FACTS

Laser printers are designed and optimized as page printers. Continued usage of laser printers for the printing of smaller document sizes will lead to toner spillage on the cheques and possible malfunctioning of the Laser printers.

It becomes more expensive to produce cheque leaves because of the needed extended security treatment of cheque leaves,

Operators are continually being exposed to various health hazards

Cheque rejection rate may go high as the cheque leaves from Laser would deteriorate over multiple processing at the clearing house and this means extra charges for the bank

Laser machines are to be used occasionally and serviced regularly. However, this will not support what the bank needed.

Toner cartridges are expensive compared to tape.

I have taken my time to make the above research with different opinion of hazard journals and newsletters.

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