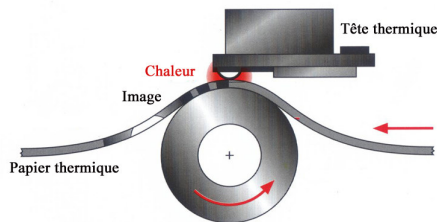




## The advice of an expert on thermal printing

### What is the principle behind direct thermal printing?



Source: KANZAN - fabricant de papier thermique

Direct thermal printing is a printing process that consists of heating thermal-reactive paper (thermal paper which reacts to heat by becoming colored, usually in black) with a print head made of micro heating elements that come into contact with the paper. The heating of the paper blackens it and, in this way, prints on it at specified points. The thermal elements are activated or de-activated as the paper passes over them in order to form characters and/or logos from tiny dots juxtaposed in such a way as to obtain the desired, printed effect.

### What are the advantages of thermal printing?

#### There are numerous advantages to direct thermal printing:

- **Simplicity and low-cost of usage:** only a single consumable is necessary. The direct thermal printing process requires neither ribbon nor toner; the only consumable used is the thermal paper, which provides a major advantage.
- **Great autonomy:** direct thermal printing also offers its users greater autonomy because there is no need to change a printer cartridge as with ink jet technology or to replace a ribbon as required by impact printing.
- **Reliable printing quality and performance:** thermal printing solutions are highly reliable, requiring less maintenance and offering excellent quality with a thermal printing speed up to 250 mm/s. For this reason, they have been adapted to a large range of applications, especially those involving intensive use (supermarket registers) or demanding environments (outdoors applications).
- **Compactness and portability:** direct thermal printing uses mechanics that are very simple and compact. Their electrical power system allows them to run on batteries (5V or 3,3V). This is thus the best technology for applications requiring products that are small and light: portable electronic payment terminals, supermarket register printers, printers inside vehicles.

## What is the profile of the current thermal printing market?

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Because of its many advantages (low cost, low maintenance, speed of printing), direct thermal technology has attracted and continues to attract large numbers of customers.

The printing of tickets, receipts, and coupons is at the heart of the thermal printing market. There are many constraints on equipment for printing these items: often, given the number of transactions involved, the equipment must respond to the need for a high printing speed and reliability. Maintenance must be reduced to a minimum. The printing of bar codes requires a high quality for errorless reading, especially with "Two Dimensional" formats. Currently, the only technology that responds perfectly to these requirements is direct thermal printing. This has been the heart of Axiohm's work for almost twenty years.

The majority of electronic and financial transactions are now validated by a receipt. Such receipts are ever-present, be they for transactions made at a superstore, a self-service station, a point-of-sale, or a restaurant. With Axiohm a major player in markets calling for receipt printing, we naturally play a role in many, diverse markets such as point-of-sale, payment terminals, ticket kiosks, gaming/lottery, gas pumps, transportation, entertainment and leisure, etc....

In addition to these ever-growing markets, new markets are always emerging for Axiohm because new needs for printing receipts and/or tickets appear all the time, with the emergence of new applications fuelling the evolution of thermal technology. For example, bi-color printing (for coupons), contactless RFID tags, 2D bar codes, or tickets that are erasable and reprintable (transportation, customer loyalty). There is still much room for growth in this technology.

## Axiohm and thermal printing

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Axiohm is one of the pioneers of thermal printing. We have been a major actor in the field since 1988 and we continue to position ourselves as a innovator thanks to our strong and dynamic R&D team. We have been rewarded for inventions such as the Clamshell™, a simplified system for loading paper which revolutionized the thermal printing world in 1994 by permitting users to change the thermal paper roll very quickly and thus simplifying their lives. The Clamshell™ design is now used all over the world (and the word for this Axiohm invention has even entered common usage!).

Having mastered several fields of expertise, we maintain an advanced technological know-how in the fields of mechanics, plastics, electronics, and the design of printing software and we work at creating tomorrow's thermal printing solutions. Our strength is developing printing solutions that are reliable, high-performing, and adapted to each of the specific markets in which we operate. In addition to our range of standard products, we are known and appreciated for our ability to design and develop customer-specific products. We attach great importance to helping our customers find a customized thermal printing solution that is truly adapted to their technical and financial needs. At a time of globalization and "standardization", the customized aspect of our business has become a rare and sought-after quality which is Axiohm's great strength.

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### About AXIOHM

Since 1988, AXIOHM has specialized in the design, production, and sales of an extended range of thermal printing solutions. Thanks to its mastery of thermal printing technologies, AXIOHM is today among the world leaders in number markets, such as :: Point-of-Sale/Commerce, Gas Pumps, Credit Card Payments, Gaming/Lottery, Transportation, Tests and Measures, Weigh Scales, ATM, etc.

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