

TAKING IT TO THE SHEETS

Sheet-fed gravure printing combines the advantages of two established printing technologies.

By Brandy Brinson

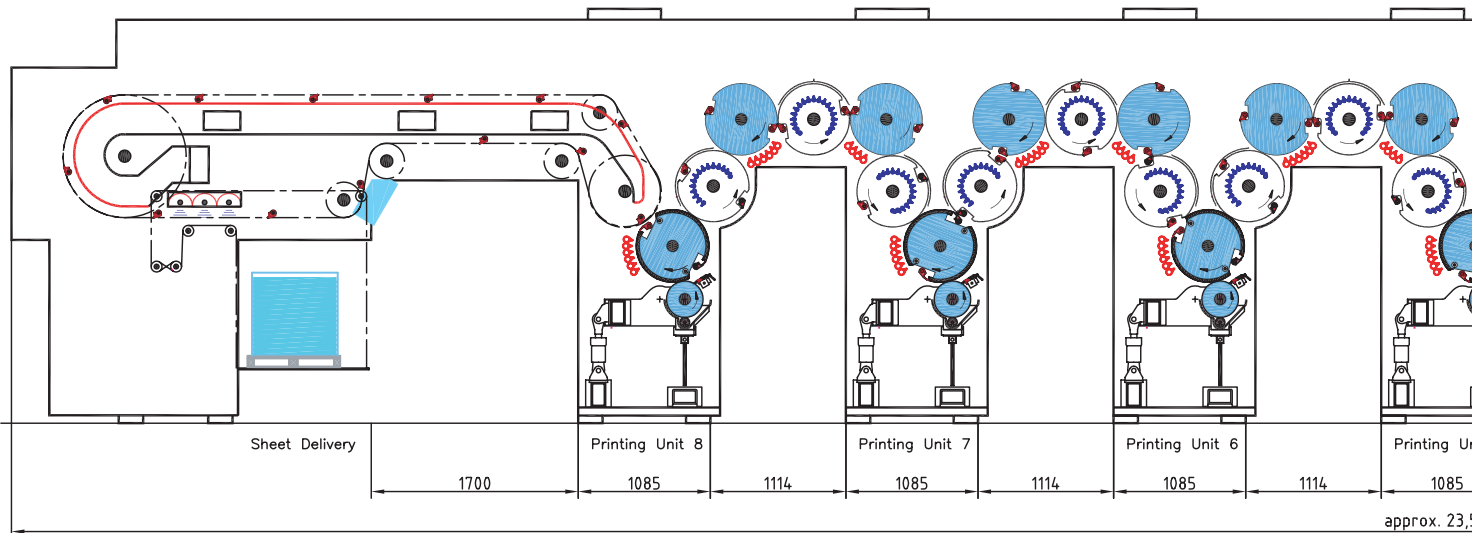
The global cigarette industry is juggling two major trends—stagnant volumes and a proliferation of brand varieties. In the packaging and printing department, this means greater emphasis on quality and flexibility while maintaining and improving efficiencies. In this article, *Tobacco Reporter* examines the growing popularity of sheet-fed gravure printing.

When choosing a printing process, there are a couple of options. The major types of printing technologies available to the tobacco industry are offset, web gravure and sheet-fed gravure.

Offset printing does not produce international quality

appropriate for premium cigarette brands. It is often used in developing markets such as Russia.

A major problem with offset ink is that it leaves powder on the printing surface and is generally very wet. There are also issues with offset in that it can result in color variations. Yet another problem is the odor associated with offset. One source says that it smells like cat excrement, which obviously isn't good for tobacco applications. Thus, offset printing for tobacco packaging is used only in countries where consumers are not concerned about quality, or where they smoke strong cigarettes. An example of an application that offset is good for is printing leaflets.



Therefore, the only printing options for quality tobacco applications are web gravure and sheet-fed gravure.

Gravure printing is smooth and not sticky. It does not leave powder on the printing surface as offset does. A smooth surface ensures good “runability” in cigarette packing machines. Gravure is also solvent-free.

“Gravure is the most [frequently] used technology for cigarette printing because [it does not leave residual] solvent in the ready printed sheet. Tobacco is very sensitive regarding any soiling,” says Achim Kurreck of H.C. Moog, a manufacturer of sheet-fed gravure machines based in Germany near Frankfurt am Main.

Web gravure offers inline printing and is good for printing brands with large production runs. A company can run one product on a machine for at least three weeks.

“But in web gravure it is not possible to print small or medium runs in a cost-efficient way. Therefore, some printers use offset or UV technology, but there is always the smell and other dirt, which is not welcome and affects the taste of tobacco,” says Kurreck.

Enter sheet-fed gravure. “This is the solution for the small and medium runs with nearly no paper waste, fast job change, the gravure quality and smell-free printed product,” says Kurreck.

Oscar Bos, sales director for Gestel Printing Co. based in the Netherlands, which has a sheet-fed gravure machine for tobacco packaging, explains how sheet-fed gravure works. “The gravure part of the machine is an exact copy of the web-gravure press, and the sheet feeder is a copy of the offset sheet printing press. This means it is in fact a combination of two different machines, two different techniques.”

Kurreck adds, “Sheet-fed gravure works like normal gravure, but the machine feeds sheets like in offset. It’s a combination of both technologies and combines all the good advantages in one machine. The sheet on a pile will be separated with the feeder and moves to the front and side lay for accurate register. Then the swing arm speeds up the sheet to the machine speed and gives the sheet to the rotating pressure cylinder, which also has gripper bars to hold the sheet. After printing with a normal gravure cylinder, there are some drying drums between the printing units. The drier in three drying drums works with [room-temperature] air, and two

work with warm air. After the last printing unit there is a long delivery for end drying and the sheets will be stacked on the pile.” (see diagram)

ADVANTAGES. Sheet-fed gravure offers a variety of advantages, including great color brilliance; low wastage; overall production stability; streak-free, full-surface ink application; solvent-, UV- and water-based varnishing; and other specialty applications. Sheet-fed gravure also produces consistent colors and is good for anti-counterfeiting applications, such as hidden images.

Bos says that, compared with offset, sheet-fed gravure specifically offers:

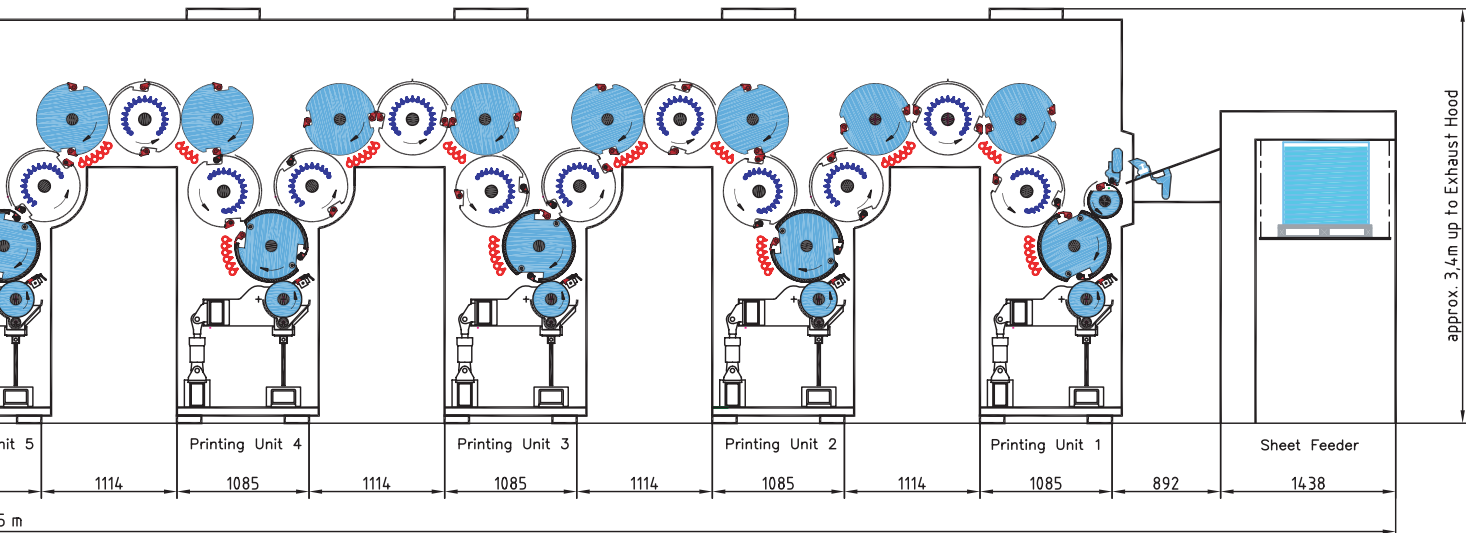
- higher color density
- better color strength
- fewer parameters that influence the printing process negatively
- no waste of time with regard to a next step as it does not need to dry
- higher brilliance with regard to gold and silver inks
- few color differences and stable colors during the printing process
- easy application of special colors such as Iriodin/pearlescent, interference and UV reactive

Compared with web gravure, Bos says, sheet-fed gravure is more flexible, offering quick changes, which enables smaller runs and trials. “It is unique because we are able to switch from sheet-fed gravure to offset and back again if necessary as long as the sheet size does not change.”

Therefore, there is less waste when changing from one job to the next, says Kurreck. Sheet-fed always uses the same cylinder size, so there is no need to change diameter. The initial expense is higher, but the cylinder lasts as long as the machine. Moog uses a standard cylinder worldwide. Thus, the engraver can pass cylinders from one customer to another.

Because the sheet is dry, the die cutter can run until the job is finished, whereas wet offset would stick on the knife.

Sheet-fed printing is slower than web printing; it has a speed of 180 meters per minute versus a speed of 260 meters per minute for web printing. Thus, sheet-fed is appropriate





Sheet-fed gravure offers advantages such as color brilliance, low waste and production stability.

for medium-sized and small orders. Printing occurs off-line. The register is more consistent, as the operator has to set the register only once. In web printing, the operator must continuously adjust the register.

For cigarette makers with different brand types, web gravure plus sheet-fed offers a winning combination, says Kurreck. However, few companies know they can combine web gravure with sheet-fed. “These companies don’t know the possibility of combining sheet-fed gravure with sheet-fed offset and the accurate register between these two sheet-fed options. Web gravure has the problem of misregister in print-

ing (1/10 mm) and cross cutting (1/10 mm to 1.5/10 mm) the web. This creates a lot of waste and cost time and money.”

COSTS. In comparing the costs of sheet-fed to other printing technologies, Kurreck says, “Every printer has to calculate for himself. The facts are that the gravure cylinder gets a better result of printing and it is cheaper than flexo technology, the lifetime is longer, and no cleaning [is required] during the print run.”

He adds, “The web technology creates a lot of wastage, and the die-cutting tools are very expensive and are only suitable for very long runs. Sheet-fed gravure has less than 1 percent waste paper. Die-cutting tools for a flat bed cutter are 90 percent cheaper than rotating die-cutting tools.”

PROSPECTS. Printers can likely expect more sheet-fed gravure business from the tobacco industry in the future. Bos says the tobacco industry is increasingly turning to sheet-fed gravure printing because “the gravure enables you to reach a much better quality with regard to brightness [and] intensity of colors, and [it] is very consistent. This means you are able to create a ‘unique’ pack without having to change a design (with regard to image and presentation) and on top of this, it is hard to copy. However, everything depends on quantities, not too high (because of web) and you will need a minimum with regard to cylinder cost.”

He says Gestel is pleased to have made the investment in sheet-fed gravure printing. “We have created a quite unique position in the tobacco market of which we are proud, and [that] makes us known as an innovative printer.” TR

Machine manufacturer Moog

There are only a few manufacturers of sheet-fed gravure machines in the world, one of which is H.C. Moog. Gestel acquired its sheet-fed gravure presses from Moog in 1995. Bos says, “The choice we made was H.C. Moog GmbH. This is due to the fact that this is the only supplier in Europe. The other suppliers are based in Asia. In the past Roland and KBA used to build similar machines, but they stopped building them by the end of the 1990s.”

Moog began manufacturing printers in 1986 with a new technology—new transfer and drying drums between printing units. This allowed the machine to run faster. Today, it can produce 12,000 sheets per hour.

Moog, which is now being run by the third generation of family management, employs only a few people and sells one to three machines per year, say maximum 10 stations per year, 90 percent of which go to the cigarette industry.

Demand for sheet-fed gravure printers started increasing at the end of 2005. Moog is not expanding capacity, however. It wants to remain a small family company with stable production.

Kurreck says, “We sold the first machine to the tobacco industry in 1950. The printers now use our machine type to print small brands and special packs for duty-free shops and for new markets. The tobacco printing companies always look to new possibilities to be a little bit better at the point of sale than others. For many years now, customers haven’t been buying only a pack of cigarettes; they are buying the complete feeling of life that the cigarette companies suggest. The smoker wants to have a nice printed pack that he can wear and that he can put on any table to show what is his style. Special printing effects are a must for any kind of quality packaging.”

Moog’s customers are quality printers. “Our customers are located in all continents where there is a need for high-quality products, but not in South America and Australia. These continents will increase the printed quality in latest two years. The markets with the most potential are Asia, the Middle East and Europe,” says Kurreck.

Recently, Moog has been getting inquiries from Indonesia, a new market for its machines. “Sheet-fed gravure was totally unknown in Indonesia because the teachers in universities look only to presentations of standard equipment. If they [would] look to the worldwide market, then it is possible to transfer the know-how to the students. The printing market is very simple. All print shops buy the same equipment to print the same products, but a little bit cheaper than the competitor. The result is that quality goes down and then they have no money for investments. A printer who creates his new market can take a lot of the cake. But therefore he has to do something special, like sheet-fed gravure.”

Moog believes sheet-fed gravure printing is the future for the tobacco industry, and it will continue to court quality printers. The company plans to attend various tobacco shows in the future in Europe, the Middle East and Asia. —**B.B.**