Development of the Minilab Don Franz (Photo Imaging News)

The origination of the concept of a minilab has been debated for many years. Entering the 1970s, photofinishing, the process of developing photographic film and printing the images on color photographic paper was either performed either automatically in large central labs or in manually in small shops.

Early in that decade, Gretag Imaging, a large well-known Swiss manufacturer of photofinishing equipment for central labs, began “miniaturizing” a photofinishing production line connecting a printer, paper processor and cutter. In another part of the world, Kanichi Nishimoto, a creative photographer in Wakayama, Japan who had invented an automatic print washer in 1951, demonstrated the first real minilab, in which the printer, paper processor and cutter were all contained in the same unit in 1976. His company, Noritsu Koki, exhibited this QSS-1 (Quick Service System) at the Photo Marketing Association international trade show the following year, and the 1-hour photo finishing industry was established. However, these minilabs were expensive and they needed special plumbing as well as silver recovery systems, adding to the installation cost. Also, although Noritsu sold film processors, which developed the film, under its brand, they were manufactured by another Japanese company.

PMA, a US-based organization, was composed primarily of large photofinishers and photo dealers, and the US photofinishing market was by far the largest in the world. Its major spring tradeshow — there was a smaller tradeshow in the autumn — attracted visitors from all over the world. The demonstration of the QSS-1 created a sensation, and many entrepreneurs placed orders. However, the arrival of a new on-site technology that might threaten the dominance of large photofinishers, and while there were “groups” within the organization for photofinishers and photo retailers, the organization did not want to recognize a new group of minilab owners. Consequently, a separate organization, the International Minilab Association (IMA), with its own monthly magazine, was established for this group and quickly attracted hundreds of US and international members. Realizing that the number of minilab owners had grown quite large, PMA subsequently established a group for them and the IMA eventually closed.

In 1984, KIS, a French company based in Grenoble, showed a very simple, manual minilab at the PMA. The price was well under $10,000 and the company’s exhibit attracted hordes of potential buyers and salespeople. A US subsidiary was established and sales skyrocketed. Within a short period, more than 6,000 units were sold, often to be installed in non-traditional locations such as bicycle and pizza shops. KIS created special operating manuals to enable almost anyone to operate their minilabs, with colored photos indicating what created off-color prints and how to correct the chemistry or other settings. These units required use of a special patented photographic paper canister, and, at one time KIS claimed to be buying 15% of the total production of Kodak paper. Since the paper canister was expensive, KIS owners in the US developed a replacement which worked and avoided encroaching on the KIS patent.

By the end of the 1980s, the companies which manufactured the processing chemicals were all selling minilabs. Fujifilm and Kodak initially had their minilabs manufactured by Noritsu. Both later set up their own production lines – Fujifilm in Japan and Kodak in the USA. The Kodak-made machines were designed with special plastic chemical tanks to prevent erosion and cleaning requirements of the metals tanks used by other manufacturers. However, the US-made models were quite expensive and production issues resulted in the operation being closed relatively soon.

Agfa, a German company which made high-speed central lab photofinishing systems, began building minilabs in a facility in Germany. However, to be more competitive it soon moved its production to a factory near Shanghai in China. In 2003, the Agfa photo group was spun off to a private investor group and in 2005 that group declared bankruptcy, closing the Agfa minilab manufacturing operation.

Konica began manufacturing minilabs in Japan, and continued until 2005, when Konica merged with Minolta and the Photo Group was sold in part to DNP. The minilab operation was closed. KIS, which had developed an automatic minilab, began building this model in France, although later, after it was acquired by UK-based Photo-Me it moved production to Eastern Europe and eventually to a facility near Shanghai. As Noritsu’s business grew and it sought to remain competitive in some world regions, it opened assembly facilities in Brazil, China and France. Gretag Imaging in Switzerland, which had an entrée with large photofinishers and consequently large drugstore chains, and San Marco Imaging in Italy (in which Gretag invested) were both building minilabs. Due to the high cost of manufacturing in Switzerland, Gretag transferred production to San Marco.

The introduction of Disc film by Kodak in 1982 presented challenges for both minilab owners and makers, since the equipment was never designed for the circular disc of the film. Adapters were developed to enable these film formats to be scanned in the minilabs, which were designed for film strips. Because of this difficulty, which also affected large-scale central labs (ironically, although the Disc film was introduced by Kodak and later by Fujifilm, with the much superior quality of the Fujifilm version elevating that company’s reputation), this format never really became widely popular. Kodak, which was manufacturing photofinishing equipment for large-scale labs, did not design any Disc film equipment or supply adapters for minilabs.

**Figure 1**

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The 1990s brought the arrival of digital cameras. Initially, minilab operators could buy a device from third party manufacturers that enabled them to print digital images on their standard analog (film) machines. However, the minilab manufacturers quickly introduced their own digital minilabs. By the year 2000, minilab users in the major photographic regions of the world were rapidly replacing their analog machines with digital ones. By 2003, the worldwide population of digital minilabs had grown to almost 95,000 units, surpassing the number of analog minilabs, which had declined rapidly to 84,000.

Many of the “used” analog minilabs were refurbished and sold to “developing” countries in Asia, such as China and India, South America and Africa. This is illustrated in Figure 2. The Chinese market began to evolve as the government opened the way for private photofinishing operations, and sales of the refurbished units grew rapidly. This encouraged the evolution of Chinese minilab manufacturers such as Shanghai Doli, Shanghai Prismlab, Tiandra, Sophia and Ningxia. While these locally-made models were not as fast and sophisticated as their “Western” competitors, they were considerably less expensive.

Kodak was a well-known photo brand name in China and the company jumped into the exploding minilab market by creating an “on-site photofinishing shop” concept that included a simple Chinese-made minilab, film processor, shop design, and accessories for under $2,000. The number of minilabs under the Kodak Express banner quickly swelled to more than 10,000 units, making it the dominant player in that market. Other companies supplying photographic paper and chemistry were Agfa, Fujifilm, Konica and China Lucky(“Lucky”), the latter moving into second spot as it benefitted from tariffs being imposed on imported paper and chemistry. The Kodak program began to falter as many of the “entrepreneurs” who had invested family money to become owners failed to receive proper training on the maintenance and operation of their equipment and were completely naïve in business and marketing. Consequently, the number of minilabs in operation in China peaked in 2004 and began falling quickly. (see Figure 3).

Small companies in India and the Middle East began selling minilabs, but onsite photofinishers outside of their countries, and even locally inside, realized that these machines had too many limitations to overcome their cheap prices and allow the operators to be competitive. Other companies that produced minilabs, usually for specialized applications, include Colenta (USA), GPE (Italy), Jobo (Germany), LumeJet (UK), Polielettronica (Italy) and ZBE (USA).

**Figure 2**

Foreign currency restrictions in Russia and other Soviet Republics made it difficult for onsite photofinishers to obtain modern minilabs, film processors, paper and chemicals. Even when the minilabs were purchased, these operators continued to develop the film and have customers look at the negatives on a light table to select which images to print in order to keep their costs down. This was a total contrast to the “double print” marketing programs being eschewed by both central and onsite photofinishers in the USA. Restrictions were lifted in 2000, and the number of minilabs in operation rose from 2,300 that year to a peak of 3,500 in 2004 before beginning to fall as older analog machines were replaced with new, but more expensive, digital minilabs.

In India, where inter-state commerce involved additional taxes, the “photo” community was divided into three basic sections according to the strengths of the distribution networks for films, paper and associated chemicals of Fujifilm, Konica and Kodak. This commerce restraint, along with a lack of good delivery networks, also prevented large central labs being established in the country to collect films from other states, print the images, and send back the printed photos. Kodak focused on the professional photo labs, setting up more than 200 Kodak prolabs throughout the country rather than promote minilabs. Fujifilm and Konica did promote minilabs. However, imported minilabs were expensive and most of the printing of films was performed in small shops that developed and printed the film manually. For a few years, Photoquip manufactured minilabs for Gretag Imaging in India.

With the arrival of e-commerce companies such as Canvera, set up by entrepreneurs who had worked in US e-commerce photo companies, along with the implementation of internet networks, improvements in both delivery networks and government restrictions, has provided consumers with many more photo service options. The impact on minilab population is shown in Figure 3.

Konica introduced its washless chemistry in its own minilabs, which eliminated the wash cycle in paper development, speeding up processing time. This was also adopted by Noritsu. Later, Konica developed this chemistry in tablet form, called the EcoJet, which eliminated the need for minilab operators to handle the photographic chemicals. Although Kodak initially reacted by broadcasting that the washless chemistry would not totally complete the process and prints would fade, two years later it introduced its own washless chemistry as SM.

Konica licensed the German chemical company Tetenal to manufacture its EcoJet tablets and eventually stopped its own production. Lately, with a greatly reduced demand for the EcoJet tablets, Tetenal has also ended production, creating a dilemma for those operators worldwide of the unique EcoJet minilabs who will soon see the inventory depleted.

**Figure 3**

The concern about water pollution from chemical waste in minilabs continued to grow in the 1990s and into the 2000s. Specialized silver recovery units were available from various manufacturers, and the value of the recovered silver somewhat offset the cost. Still, many municipalities enforced strict regulations, making it difficult for minilab operators to obtain the necessary certificates to provide film and paper processing. International conferences that included representatives of the photofinishing industry, government regulators, silver recovery equipment manufacturers and experts helped ameliorate the strict regulations, but the stage was set for the first “dry” minilab, the Nortisu dDP-411 in 2002 which employed an Epson inkjet print engine in place of the silver halide photo paper exposure system.

Other manufacturers started offering Dry minilabs shortly thereafter. Fujifilm entered into an alliance with Noritsu in 2006 in which Noritsu manufactured Dry minilabs that were sold under the Fujifilm brand. At that time, Fujifilm did not have inkjet technology of its own. Fujifilm later developed its own minilab using an Epson inkjet print engine. At the end of the decade, Epson introduced its own minilab, which was almost identical to the Fujifilm Dry minilab but less expensive. Within a year, Fujifilm had a new Dry minilab based on its own inkjet technology. Epson continues to sell its own minilabs today.

In 1996, Kodak, along with Fujifilm, Nikon, Canon and Minolta, introduced the APS format film as a replacement for the 110 format introduced in the 1970s. This used a smaller, specially designed film cartridge than the standard 35mm film that indicated whether it was undeveloped, partly exposed (it could be removed from the camera and later reinserted to shoot the remaining unexposed frames), fully exposed but not processed, or processed, and came in 40, 25 and 15 exposure lengths. When the film was printed, customers could order one of three different sizes: C for "classic" (25.1 x 16.7 mm; aspect ratio 3:2; 4x6" print or 10x15 cm print); H for "HDTV" (30.2 x 16.7 mm; aspect ratio 16:9; 4x7" print or 10x18 cm print); or P for "panoramic" (30.2 x 9.5 mm; aspect ratio 3:1; 4x12" print or 10x24 cm).

Since no minilab manufacturers other than Fujifilm were privy to the development, for which the information was carefully withheld by the five project participants, this new format presented another challenge. The film was pulled out of the canister and processed, then rolled back in. Similarly, it had to be pulled out for printing, then returned. This meant that onsite photofinishers had to acquire a device for processing the film, as well as an accessory and associated software for printing the film images. Although the penetration of this format into the US market reached about 6%, about 8% in West Europe, and 15% in Japan, it was never adopted in other countries, began to decline in 2002 and was discontinued in 2012.

At the end of the 2000 decade, Lucky, which by then was producing color photo paper of its own design (for many years, it was making paper using Kodak formulae under an agreement between the two companies), showed samples of a double-sided color halide color paper. Kodak was in disbelief that this was possible and we learned that Fujifilm had developed a similar double-sided paper a couple of years earlier, but did not commercialize it because the market potential was insufficient.

Nevertheless, since the paper alone is no use, it requires a special printing and processing system, Lucky teamed up with Prismlab, which developed a special minilab capable of handling the paper with a sensitized coating on both sides. Although sales of this system were restricted because Lucky was barred as a result of a lawsuit from exporting its paper to the USA and Europe, sales grew quickly in China and some Southeast Asian countries. The paper was a little thicker than regular single-sided photo paper and cost about 1-1/2 more, but thinner in photo albums than two standard prints glued back-to-back. In an effort to penetrate the European market, Prismlab approached Polielettronica in Italy, which ultimately declined to license the technology. Still, more than 500 double-sided minilabs were sold by Prismlab. Today, although the paper has been significantly improved, the ability to make photobooks on non-photo digital printing equipment, along with improved mail and courier delivery infrastructure, has provided consumers with numerous options for printing their images and interest in double-side photo paper albums has declined.

This trend has affected minilab sales around the world. Photo paper minilabs (2,500 print/hr.) are much faster than Dry minilabs (600 prints/hr.), and “component” systems consisting of an input terminal/kiosk connected to one or more inkjet or dye sublimation printers, are less expensive, take up less space and can be easily “expanded” with additional printers as volume requirements rise. Fujifilm and Noritsu, along with some Chinese manufacturers, continue to make “original” photo paper minilabs as well as Dry lab models.

Kiosks are being increasingly deployed for downloading images directly from smartphones (even minilabs require a device for downloading these images) and offering onsite printing of limited products along with connections to offsite facilities that will produce other personalized photo products. (see Figure 4). As 3D printing systems evolve further, photo printing shops will be able to make 2D products and 3D products onsite while-you-wait.

Do minilabs have a future? The real question is: how do you define a minilab? A “minilab” shop could be defined as one that produces photo products in-house, in which case, minilab shops will continue to grow.

**Figure 4**