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The Future of Microfilm

"Microfilm use has declined significantly over the last ten years as digital technologies have been adopted more widely." - This seems to be the general feeling and understanding of the microfilm industry, but what is the reality?

Genus – The Microfilm Shop is the largest independent reseller and manufacturer of a complete range of microfilm consumables and equipment. It has been selling Microfilm products since its inception in 1974. In the last 10 years Genus has also moved into selling Document Management software products, web hosted document environments and equipment service. As such Genus is well positioned to be able to given an informed view of the state of the Microfilm industry, especially in the context of the wider Document management industry.

The last 3 years have been the best in the companies history but this is not necessarily a reflection on the state of the microfilm market. As mentioned above we have broadened our product offering but, more importantly, we have become a "bigger fish in the smaller pond" of microfilm. This has generated us extra microfilm sales, from existing microfilm users, purely because we have been one of the very few companies left selling a number of microfilm products.

However it is very interesting to have a look at our recent sales patterns as it shows how some areas of the microfilm market are prospering whilst others are declining. In the last 5 years we have seen a 23% decrease in the sales of general microfilm consumables. However a number of product lines have increased – Toner for reader printers is up 29%, Storage cabinets are up 14%, Film scanning equipment is up 357%, Silver Film Duplicating equipment is up 35% and Digital to Film writing equipment is up 68%.

The other big question is what do the big three manufacturer's (Kodak, Agfa and Fuji) say about the microfilm market? The underlying question has been that if the manufacture of microfilm stops then the microfilm market would come to an abrupt end, even if people wanted to carry on using it. The Green Sheet magazine managed to interview Agfa and Kodak and got these replies:- From Agfa - "Agfa are therefore convinced that, unless a true alternative is found, there will probably always be a demand for microfilm", "..., Agfa see that decline (microfilm usage) flattening out to the hard core of microfilm users", "At present Agfa are working on specific microfilm related projects (e.g. environmentally-friendly products)" - From Kodak - "Microfilm continues to be a viable archive medium", "For the future, we see opportunities in making efforts to simplify the interface between digital and film as being one of the key developments" and "our microfilm film products are currently produced in the newest and most sophisticated coating facility that Kodak operates". It must also be noted that Kodak has in the region of 1500 Archive Writers in the marketplace, creating a large demand for the specialised film used in them, something that Kodak may not want to walk away from. It was unfortunate that Fuji were unavailable for comment but the above replies give a relatively positive feeling about the on-going manufacture of silver microfilm. However my personal feeling is that there will be some consolidation in current microfilm manufacturing to the extent that one of the current manufacturer's may well manufacture for one of the others. There has been a precedent for this in the camera film market and it does make financial sense. Either way there should continue to be manufacturing of microfilm.

On the Equipment side Canon continue to make microfilm equipment, as do Minolta through a third party company called Kyoko Seiko. Even though Canon have discontinued the DR5060F

camera/scanner in Europe due to RoHS compliance it is still made for the worldwide market. In addition there are a number of smaller microfilm equipment manufacturer's including e-imagedata, Solar, Real, Houston Fearless, MicroVue, Indus, Buic, Icam, Alos, ST-Imaging, Eyecom, Nanomach, Bernschein, Microform, Wicks and Wilson, Visitek, Sunrise, Nextscan, SMA, Microbox, Zeutschel, Staude, Hirakawa, OMS and Bray. There are also three new manufacturer's that will be entering the market place in 2008 that will have to remain confidential at this point in time.

As such the microfilm film and equipment manufacturing look stable and broad which is a positive point for the future of microfilm. The next area to look at is the current state of the market, what is happening out there today? Basically conventional microfilm usage is in decline with Computer Output Microfilm (COM) seeing by far the largest decline. Where microfilm is being used as an information distribution medium it is being replaced, quite rightly, by digital systems. However where microfilm is being used as an archival medium it is generally being retained. The two major growth areas in our industry at the moment are the scanning of microfilm and the writing of digital images back down to microfilm for archiving. This new “Digital preservation” market has seen Zeutschel, SMA and Fuji enter the market with products in the last two years to accompany the front runner – Kodak. Next year I know of two new companies who will enter this market. As a result the way microfilm is created is starting to change - from conventional microfilm cameras to document scanners and then dropping that digital image to film through a “Film writer” device.

There are also some very large microfilm projects happening at the moment – In Ireland the South Eastern Health Board is currently filming 22 million patient records onto microfilm, over 30 countries now use microfilm to store their Census data, both the UK and US 2010 and 2011 Census's are looking at the potential to use microfilm again as the storage medium of choice. There is a huge surge in demand for microfiche with the current UK bank charges situation. Newsplan 2004 was a huge project to microfilm all the UK Newspapers, there are currently similar projects happening in Australia.

However the real reflection on the future of microfilm are the new uses of microfilm that are starting to emerge:-

1) Colour Microfilm – Two new Digital to Colour Microfilm writing devices have been developed by MicroArchive and ProArchive. Both units are laser devices with the MicroArchive unit being able to write to just 35mm roll film and the ProArchive unit being able to write to both 35mm roll film and fiche. In addition both the current SMA and Zeutschel Archive writing devices can write to colour microfilm. In line with these capabilities Ilford Switzerland have just announced that their colour microfilm now has a Life Expectancy (LE) rating of 500 years which is a major step forward as before it was generally considered that colour microfilm only had a shelf life of approximately 50 years. Now all colour scanned documents and all colour computer generated documents can be archived to microfilm. This will allow Libraries and Archives the perfect ability to scan their important historic documents and books and then archive a full colour copy to microfilm.
2) New Black and White Microfilm Manufacturer – before I was discussing the possible ways that the current microfilm producers – Kodak, Agfa and Fuji - might consolidate production. It is therefore very pleasing to be able to reveal that Ilford Imaging Switzerland GmbH plan to launch a range of conventional Black and White microfilms in 2008. Ilford see an opportunity for rising sales of microfilm and not just to take market share from the current suppliers, they firmly believe that, in certain applications, the microfilm industry will expand. Ilford are a good manufacturer to welcome to the market because a) They know and understand film technology very well, b) They specialise in niche film products so they will welcome the relatively smaller volumes and will therefore be better positioned for the long

term c) They are owned by the Oji Paper Group, the largest paper manufacturer in Japan so they have a good financial backing and d) They have film production lines already in place so they are not having to consider major capital expenditure.
Already Ilford are working on a number of niche and very new uses for microfilm which will help to expand the microfilm market.

3) New Uses for Microfilm –
a) Datawitness, a Canadian company (www.datawitness.com) has developed a unique web hosted environment to allow users to pass and share documents with each other electronically, with a full audit system and an automatic write to microfilm feature. This system was initially developed for the legal market to allow contracts and negotiations to be conducted electronically with full version control, user confirmation details, audit of every communication and sign off ability. It was soon realised that the system could be used by any enterprise to gain the advantages of full electronic distribution of information with the safety of complete analogue microfilm back up. One of the big advantages of this system is that it allows people to take advantage of microfilm without having to have to process or store the films themselves. This system can be hidden behind any corporate web site to allows revenues to be gained.
b) e-timecapsule – by developing the Datawitness technology the e-timecapsule project (www.e-timecapsule.com) allows subscribers to upload information through a web portal. This information is then automatically downloaded to microfilm for ultimate storage in a time capsule that will be buried for 100 years at Stonehenge. It should provide an excellent record of everyday activity for future generations.
c) For three years now technology has been worked on in the USA to convert binary code to 2 dimensional bar codes which are then written to black and white microfilm. Although not an analogue representation of the information it allows full colour video and music, in fact anything of a digital nature to be written to black and white microfilm. It remains to be seen when this technology will be released. However it is another example of microfilm being used as a 500 year life computer storage medium
d) The Fraunhofer Institute in Germany has been working on technology to write binary code down to colour microfilm in the form of coloured wave patterns. Current research suggest that one roll of 35mm colour microfilm could hold at least 2 Terra bytes of information.

The above new technologies show that there are many emerging new uses for microfilm in the general digital preservation market but the next question to ask is why is a “different” technology like microfilm required for long term storage of digital information:-

1) The British Library estimates that Europe loses Euro 3bn per annum on current digital preservation.
2) Ms Ceeney, Chief Executive of the National Archives, says “The pace of software and hardware developments means we are living in the world of a ticking time bomb when it comes to digital preservation.”
3) We interviewed our top 20 microfilm users and the over riding consensus amongst them was “There is currently no proper alternative to microfilm for long term preservation for Archivists.”
4) End Users are still investing in new microfilm systems. In 2007 both Rolls Royce and BNFL invested heavily in new document scanning and write to microfilm systems.
5) Legislation, such as Data Protection and Freedom of Information, plays a major part in making organisations have to pay proper attention to their document handling and retention policies. Many smaller examples exist such as in Canada, the Private Careers Colleges Act 2005 requires student information to be kept for 25 years.
6) As mentioned both the UK and US 2000 and 2001 Census's are on microfilm as are the

Census records of another 30 countries.

7) The Singapore Government has decreed that all important inter governmental e-mails must be archived to microfilm – they specify the medium. They estimate this equates to approximately 5% of all e-mails.
8) In the USA over 20 States now require an eye readable copy of all important information, they say this must be paper or microfilm.
9) The Doomsday book was scanned and the images written onto 12 inch video disks in the 1980's. A lot of this information was subsequently irretrievable due to technology and software obsolescence. The irony was that the original paper version is still in tact and readable after 1000 years.
10) In the medical industry Drug Trial information has to be kept for 100 years, Paediatric information for 25 years, Mental Health indefinitely and Encology for life. Mortgage files have to be kept for life plus 6 years plus you have all the long term storage requirements of the Insurance, legal and historic etc. etc. areas to take account of.
11) Computer Expert Paul Wheatley made an interesting comment about the Doomsday Book situation - “We are lucky that Shakespeare didn't write on an old PC.”
12) Ray Kurzweil, a US Inventor said “Information lasts only so long as someone cares about it... The conclusion I've come to with regard to my DAISI (Document and Image Storage Invention) project, after several decades of careful consideration, is that there is no set of hardware and software standards existing today, nor any likely to come along, that will provide any reasonable level of confidence that the stored information will still be accessible (without unreasonable levels of effort) decades from now.”

Ray's investigations have led to another new potential use for microfilm – taking digital information and converting it to OCR text, this information being either text or database. This information is then written to microfilm in either OCR A or OCR B format making the microfilm 100% readable once scanned back. This means that microfilm could now be used to replace magnetic tape.

I have detailed many examples and reasons for the continued future use of microfilm but I would make the following comments in conclusion – Conventional Microfilm use has declined dramatically and will continue to do so. There will be a consolidation in manufacturing between the big three manufacturer's and the very welcome introduction of a new microfilm manufacturer. The use of conventional microfilm will hit a plateau in 5 to 10 years and will stay there forever. The next 5 years will continue to see a number of large microfilm scanning projects. Microfilm digital preservation will explode over the next few years and will develop into the “New Microfilm” market. There will continue to be clever and new uses of microfilm technology – one last example that I am allowed to talk about is the Swiss National Sound Archives project to high resolution digitally photograph Vinyl records. The resulting “digital picture” of the record grooves are then written to microfilm. The microfilm is then scanned to produce sound!

Microfilm is not only alive and well but may well turn out to be the missing Digital Preservation “Holy Grail” that has illuded the Archive world for the last 20 years.