MEKEL TECHNOLOGY MICROFILM SCANNERS

Delivering consistent quality images with every roll, every microfiche and every aperture card scanned

by Bob Zagami
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Service bureaus, corporations, financial institutions, healthcare and government entities and other organizations involved in converting microfilm images into digital files are continually challenged to deliver high-quality images. This is often difficult when microform (microfilm, microfiche or aperture cards) collections: a) haven't been stored properly; b) were created over many decades by many vendors or in-house processing labs; and/or c) were not filmed or processed under conditions meeting acceptable industry standards. Additionally, clients expect the value that comes with production efficiency. We are fortunate to be in an industry where emerging technology allows these challenges to be

met – often far beyond expectations. This paper will discuss the Mekel Technology brand of microfilm and microfiche scanners, featuring several organizations that have found them to offer a competitive advantage over other solutions in the market.

In an era where many practitioners of today's digital imaging technologies have never experienced microfilm, it may seem archaic to discuss bringing microform images back to life. The fact is that there are billions of images stored on microform. Why? Because – with an estimated life span of 500 years when stored properly – microfilm was and still is the most reliable preservation medium.

Even today, microfilm is included as part of many comprehensive compliance and disaster recovery plans.

These stored images contain everything from historical collections such as newspaper and personal archives to important membership, financial, land and health records to engineering and architectural renderings and more. While some may not have value to today's audience, others contain incredibly important information or enlightening historical reference materials that merit digital sharing or public access. The digitization process demands technology that can create images for importation into ever-changing line-of-business software systems, dedicated ECM and other document management solutions.

Engineering Evolution

In 1989, Mekel Technology introduced the first commercial microfilm scanner to the market, followed by the first auto-load microfiche scanner in 1991. In 2003, the firm was acquired by The Crowley Company, which sells analog and digital hardware and also uses them in their own service bureau, Crowley Imaging. The purchase of Mekel Technology added a manufacturing arm to the company and the original products have been completely re-engineered into today's market-leading MACH-series scanners. The daily use of these scanners by Crowley Imaging employees allows for continuous improvement as the service bureau reflects the same operating environment as other Mekel Technology clients. The focus is always on image quality, speed, ease-of-use, superior build quality and – ultimately – reducing the overall cost to scan.

It is typically a professional document conversion service bureau that is given the responsibility of conducting large-scale conversions of legacy information from microfilm. When security or other factors prevent organizations from outsourcing, an entity may elect to operate their own scanning department. Service providers – bureaus or in-house departments – can purchase

Mekel microfilm scanning equipment that offers the latest technology. The MACH-series scanners ship with QuantumScan™ and QuantumProcess™ – Mekel's dedicated software that can provide the images and data to exceed expectations.

The Scanners

The technology of the Mekel product line sets the standard in our industry today. The units deliver quality and efficiency that go well beyond the descriptions and specifications highlighted in the MACH-series literature. Following side-by-side demonstrations of a Mekel and a competitive unit in purchase evaluations, buyers most often remark on Mekel's ease of use and fast scan time from roll-in-hand to delivered image.

The MACH-series **microfilm** product line includes the following scanners. Each scanner uses a focused LED light source, runs on QuantumScan and QuantumProcess software, creates quality bitonal and grayscale images from microfilm in various states of composition and scans up to 1,000 footin-dividual rolls.

MACH5
Digitizes up to 700 images per minute at 200 dpi*

MACH10
Digitizes up to 1400 images per minute at 200 dpi*

MACH12
Specifically designed for production volume archival scanning, this unit scans to FADGI, Library of Congress, Metamorphoze, NARA and NDNP preservation specifications for both 16mm and 35mm film

MACH 5 and 10 have a true optical dpi range of 100-600; speeds vary depending on dpi. The MACH12 can exceed 600 dpi resolution.

It's worth noting that the units require no re-loading and no re-scanning and offer 100% accurate image capture.

This allows for minimal time out of storage; the microfilm is scanned once and returned to the owner's inventory. Additionally, the scanners are driven by an external PC which is viewed as a competitive advantage (see "Reliability").

The MACH-series product line also includes these **microfiche** scanners:

MACH6
Digitizes 100 images per minute

MACH7
Digitizes up to 200 images per minute

In addition to the high-resolution camera used for image capture, Mekel's fiche scanners employ a separate prescan and title bar camera used for image location. With this unique configuration, the scanners skip the blank spaces on a fiche that is not full, allowing for a speed not seen in competitive units. As a bonus, these microfiche scanners have an optional load-arm that allows for the scanning of aperture cards.

Both the microfilm and microfiche scanners can create bitonal and grayscale images simultaneously without impacting speed.

Productivity Improvements

Several imaging operations that use the Mekel Technology scanners are benefiting from the advanced technology.

Ryan Candela, Project Manager with Mountain States Imaging notes, "We had previously used Wicks & Wilson and nextScan equipment for quite some time. When we received a large fiche and film conversion contract, it was obvious that our present equipment would not meet the requirements. Two factors led us to select Mekel Technology scanners for this project: the ease of use and the almost non-existent learning curve for our employees." He continues, "When we factored that in with the power of the Quantum software, it was an easy decision. We were up and running in thirty minutes and employ six people scanning ten to twelve hours a day – effortlessly."

Another services company, ImageSource, Inc., had very similar comments and experiences. Conversion Service Manager Ryan Ivie recollects, "We landed a very large roll film conversion job. The scanner we were using to convert fiche and roll film was outdated and would not have enabled us to meet the deadline. We had to look for replacement scanners that could keep up with production output requirements."

As part of the search, says Ivie, "We contacted numerous vendors asking for on-site scanner demonstrations. The Crowley Company was the only vendor that could provide a demonstration unit in a timely manner and delivered a MACH10. Once we had the equipment, Crowley allowed us to use the scanner for a week. After that week, we were sold. The learning curve was very short and it was easy for our temporary staff and floor supervisors to operate the scanner."

It's not just service bureaus that are choosing the MACH-series over competitors. Timothy Baker, Acting State Archivist for the Maryland State Archives, is responsible for a department that has been microfilming and scanning for decades. Baker notes, "At MSA, we believe we are in the forefront of digitizing records and making them available online. Unlike many states, we have an enormous microfilm collection because our central archives are responsible for state, county and municipal records. We have over 300,000 rolls of

microfilm. We had used Wicks & Wilson and nextScan scanners for several years but switched to the Mekel scanners several years ago because they could handle all our requirements, especially duplex film in cine mode. We have found the throughput better and our quality control process improved with the Quantum processing software."

The Quantum Difference

When discussing post-processing requirements, Mekel customers often point to Quantum software as the reason they are replacing competitive scanners. Although the MACH-series scans a "strip" or "ribbon" (the full roll) as does its competitors, Mekel's technology scans the roll as small blocks of data while competitive units digitize the entire roll as one scan. The advantage is that Mekel's smaller data will not negatively affect network speed when images are scanned across the network. Additionally, when using Quantum, an operator can begin the quality control (QC) process while other rolls are being scanned in the background.
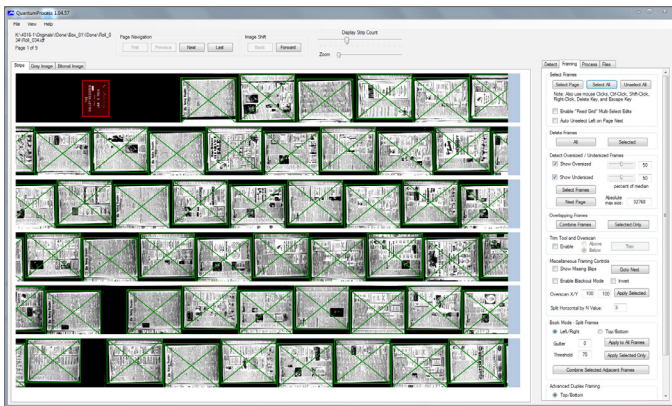
With **QuantumScan**, the scanner automatically - and with no operator intervention - locates images on the roll and marks the boundaries with a box. **QuantumProcess** saves the boxes as images using operator-defined settings. A red box is an indication to the operator that the box is a different size than the average and may need to be manually adjusted.

As of this printing Ancestry.com has purchased eight MACH5 microfilm scanners to replace twelve nextScan units for ongoing film scanning. They also own two MACH7 microfiche scanners.

In an Ancestry.com blogpost, Michael Murdoch, a senior software development manager, gives a detailed description of the benefit of Quantum scanning and processing.

"The most interesting point here is that this process is creating fixed-sized image strips. In the past, the scanners we used would segment the frames from the film as it scanned. In other words, the scanner created the frames as it scanned and you were pretty much stuck with the segmentation it gave you. But with strip scanning the scanner produces fixed-sized strips and thus defers the segmentation to a subsequent framing step that is much more accurate in the way it identifies frames. More importantly, by deferring the segmentation we can involve a human reviewer who can be much more deliberate and thus more accurate in determining how the content on the film should be framed.

You have probably never even once wished you knew more about microfilm scanning technology. Creating 35 mm rolls of microfilm is a nearly 80-year-old technology and microfilm scanners have been around for decades. But if you care (deeply) about producing high-quality images, getting this part of the process right is absolutely critical. Strip scanning is a fairly recent development, and the work we have done the last few years to do the stitching of strips into frames on our server farm has been something of a minor break-through, enabling the IPP to produce both higher volume and higher-quality images." [Editor's note: stitching is a method used by Ancestry.com; it is not a necessary procedure for Mekel scanners]

The conversion experts at ImageSource and Mountain States Imaging reported similar results when discussing the Quantum software and the competitive advantage it gave them in the marketplace.

MSI's Candela praises, "The Quantum processing software is incredible. On our COM fiche conversion project, we scan 200 fiche per day, per machine on-site. The Mekel scanners process better and faster than our former scanners because we don't need a server at-

tached to each machine. We are able to save scanned images to an external drive that is transported back to the main processing center where multiple people do the post-processing with the Quantum software. This is a tremendous competitive advantage for our company." At 270 images per standard microfiche, this equates to an impressive 54,000 images per day per scanner.

Candela continues, "It's very easy to use on the fly. You get everything at once and multiple ways to correct image quality if needed. Our old scanners did not have this capability. Our scanning operator also likes not having to go back and 'mess' with density. We have five people auditing back in Colorado so that our production staff can concentrate on efficiency. Our old nextScan units have a delay and have to be audited as we scan. This slows you down when working against a tight timeline. For this project, we would have needed twice the crew and twice the hard drive space to accomplish the same production we get from our Mekels."

Pre-MACH7 Scanners		With MACH7 Scanners	
150	scans/day	200	scans/day
x 270	images per scan	x 270	images per scan
x 3	scanners	x 3	scanners
121,500	images/day*	162,000	images/day*

Per MSI, the MACH7 technology resulted in:
• 25% more images per shift
• 25% less conversion time
• 25% more revenue

MSI, which specializes in document scanning, microfilm/microfiche scanning, eDiscovery and data entry and processing, notes that "the MACH7 vacuum automation is the primary reason for increased productivity. The vacuum auto-feeders have a very low error rate, increasing efficiency and production by 25% across the board."

MSI
MOUNTAIN STATES IMAGING

* on average

ImageSource's Ivie feels similarly. "The Quantum processing software is amazing when one considers all of the options and functionalities such as image clean-up and being able to scan once without having to reload a roll to make an adjustment to an image. The Quantum

software saves us time and money because we scan once and can have multiple workstations processing rolls in the background. With our old scanner technology, we would have had to purchase multiple scanners to achieve our current high output capabilities."

Reliability

Service companies rely heavily on their hardware and software vendors to maximize the revenue generation capabilities and deliver projects on time and on budget. The service providers we spoke to were all impressed with the responsiveness and quality of the service and technical support they received after purchasing Mekel scanners.

Candela at MSI said, "We just recently needed scanner maintenance for the first time. The tech support at Crowley was fabulous, incredible. If we have an issue they simply schedule an online meeting, troubleshoot and fix it on the spot. We don't have to send the unit back to the factory and lose revenue and customer goodwill when production schedules slip. Unfortunately, the nextScan comes with its own server and hard drive so there is no room for error. If there's an issue, the whole unit has to be shipped out for service. With Mekel, the freestanding computer is an easy fix and it reduces downtime."

When discussing Mekel service and support, Ivie noted, "We have come across some odd rolls of microfilm, such as film missing blips. We contacted Crowley and they were able to support us remotely. I've yet to find a piece of film from which the Mekels can't pull an image. Even with the original installation there was very little training needed because of ease of use. We have been using the equipment for two years without any issues."

Real ROI

The consistent performance of Mekel scanners also translates into quantifiable savings and a proven ROI for the imaging operations that incorporate this equipment into their scanning conversion operations.

Ryan Ivie at ImageSource sums it up this way, "We would have to charge double or triple the price if we were using our old equipment because we would have had to purchase more scanners and add additional staff to meet deadlines. We have also been able to cut the cost of re-scans due to the higher quality images. We are saving $144.00 per day, per person, since installing the Mekel products."

Annual Savings using Mekel MACH-series Scanners

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     22   scanning days/month (average)
x  $144   savings per day/per person
  x  12   months = $38,016 saved per person/per year
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With a typical industry technology refresh averaged at 3-5 years, this translates to an approximate $114,000 - $190,000 savings per scanner, more than paying for itself early in the cycle.

ImageSource®

The Bottom Line

Service providers and other end-users can partner with companies already using Mekel scanners or they can take another look at the opportunities that await them with microfilm scanning projects and evaluate the Mekel microfilm scanners against the competitive products that are on the market today.

Companies like Mountain States Imaging and ImageSource and large in-house scanning operations like Ancestry.com and the Maryland State Archives have proven that their decisions to purchase Mekel microfilm scanners have yielded better than expected results, improved production efficiencies and ease of use, enjoyed near trouble-free operation and are supported with

outstanding customer service during and after the sale. Ed Berkowitz, sales manager for The Crowley Company, and an experienced scanning technology professional in the imaging industry said, "The challenge today is to make the new microfilm scanning equipment easy to use and to improve the post-processing of the digital images. Our mission with Mekel Technology is to continue to set the standard by which all competitors will be judged. I don't say that as a sales representative, I say it as someone who gets to see the difference in action every day."

Ed's analysis of Mekel's success in the service provider community is validated by the companies that have replaced competitive scanners with Mekel scanners to improve the quality of the product they are delivering to their customers and to do it faster, with less equipment and with less downtime. Each factor contributes to a robust bottom line.

About the author

Bob Zagami is a senior marketing executive focusing on the ECM and RV industries. He is an international author and lecturer on document management systems and is the principal consultant at IMAGAZ by ZAGAMI. Active in AIIM (The Association for Information and Image Management International) for over 30 years, Zagami has received the Association's Distinguished Service Award, Carl E. Nelson Engineering Award, Award of Merit and is a member of AIIM's prestigious Company of Fellows. Zagami also holds AIIM's Master of Information Technologies (MIT) and Laureate of Information Technology (LIT) for Micrographics and Engineering Document Management Systems certifications. He is a Certified Document Imaging Architect (CDIA+). Zagami can be reached at 617.974.3739 or rwzagami@gmail.com

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