NanoArk CORPORATION

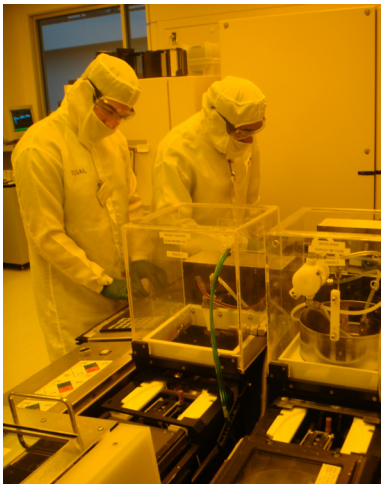
Preserving the past, Insuring the future...

Newsletter January 2010

Waferfiche™ – The Microform of the New Millennium

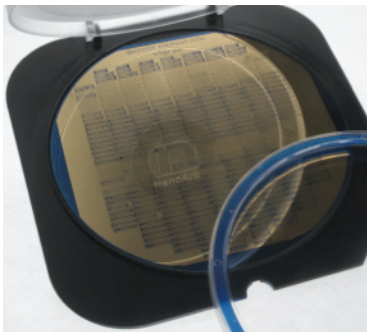
Photography using roll film was a major innovation of the 19th century, which led to the development of microfilm & microfiche for long-term preservation of documents in the 20th century.

In the 21st century, ***semiconductor technology,*** *an innovation of the 20th century, brought a major shift in micro imaging, leading to the development of* ***Waferfiche™*** *technology for long-term preservation & security of documents.*



Left: Waferfiche™ manufacturing at standard semiconbductor fabrication plant. *Top*: NanoArk Waferfiche™ inside robust & attractive packaging.

NanoArk's Waferfiche™ technology is used to inscribe information as microform images on silicon wafers using semiconductor manufacturing techniques. Silicon is a durable medium extremely resistant to water & humidity, as well as being temporarily resistant to temperatures up to 400 °C, thereby ensuring longevity. Information stored on Waferfiche™ can be retrieved easily using a high powered lens, without the need for specific hardware/software technology thereby enabling archival of data in a technology free environment. As a result these images will not become obsolete due to digital "bit rot" caused by changes in storage media or digital formats. Additionally, Waferfiche™ technology advances green living by limiting the dependence on power hungry devices such as computers & data servers, thereby providing cost & power savings.



Microform images on a silicon wafer.

Information stored on Waferfiche™ can be easily retrieved using simple optical magnification. Depending on the size of the archived image, the information may also be visible to the human eye. Additionally, near-term storage & easy retrieval in non-disaster situations is enabled by storing the digital images in flash memory embedded in the Waferfiche™, accessible via standard USB interface. Customers can utilize the easy-to-use NanoArk software embedded in the flash memory to search, review and retrieve images, or alternately browse the documents using their own choice of software. Under disaster recovery situations, customers can optically retrieve the images using high-resolution cameras, or contract NanoArk to extract images.

Longevity of Waferfiche™

Waferfiche™ is a new application of an old technology, namely semiconductor manufacturing technology. Because of this, Waferfiche™ is able to take advantage of the advances made in semiconductor manufacturing technology to provide very competitively priced service, as compared to both microfilm and digital storage.

Due to the existence of several semiconductor manufacturing facilities worldwide, the long-term support of Waferfiche™ technology is not at risk. Also, six-inch wafers are extensively used in solar cells. With the increase in use of solar cells worldwide, the production of six-inch wafers is expected to increase in the future, thereby increasing the availability of six-inch wafers, which is the basic raw material used in Waferfiche™.

Disruptive Technology

Waferfiche™, as an archival medium, is expected to displace current archiving methods such as microfilm and microfiche. Waferfiche™ also has several advantages over traditional archival storage technologies.

Waferfiche™ vs. Microfilm

Microfilm has been the most commonly used archival medium for several decades due to its many superior characteristics, such as:

- Archival quality microfilm offers reassurance that the image on the film will be legible far into the future.
- It has a potential life of 500 years, when stored under appropriate temperature & humidity controlled environments.
- Microfilm is robust, reliable, cost-effective & provides a solid foundation for scanning to other media.
- Microfilm does not require sophisticated equipment for reading & access.

Waferfiche™ meets or exceeds all the characteristics of Microfilm described above & exhibits other superior characteristics:

- Waferfiche™ does not need special temperature & humidity controlled environments for storage.
- Waferfiche™ advances the notion of green living since it does not consume energy for maintaining suitable storage environments.
- Waferfiche™ is truly resistant to disaster situations, especially flood & havoc due to water damage, which are the most prevalent kind of disasters.
- Waferfiche™ exhibits true technology independence − it is not dependent on information technology hardware/software of any kind for existence or retrieval, thereby making it a true archival medium.
- It is possible to have about 1800 letter-sized images on one Waferfiche™.

Waferfiche™ vs. Digital Storage

Digital Storage is considered a viable method for storing large quantities of images at fairly low cost. However, while there are several advantages to digital storage, this cannot be considered archival due to the fact that the images are not impervious to alternation.

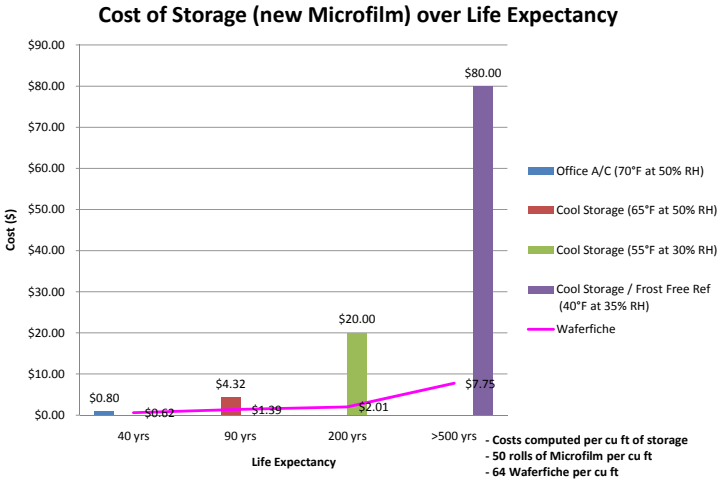
Digital storage provides several benefits, such as:

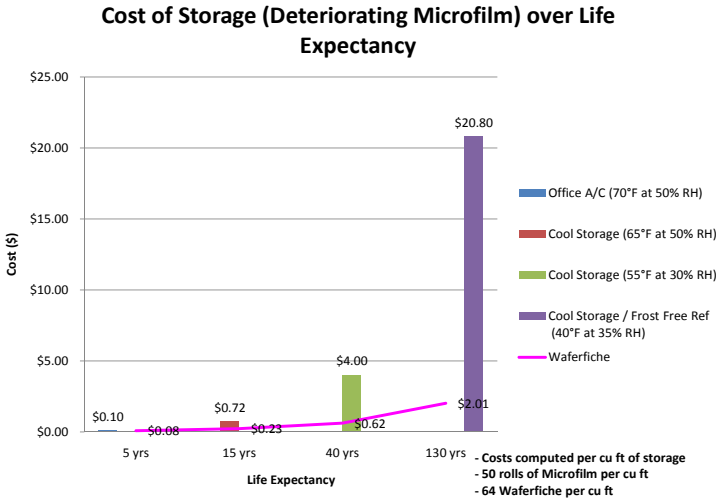
- Excellent data retrieval speed, as well as data manipulation.
- Does not need special temperature & humidity controlled environments; however, there is cost associated with some amount of power consumption.
- Relatively low space requirements.
- Relatively low impact on the health of humans (as opposed to incorrectly stored microfilm, which exhibits “vinegar” syndrome).

Digital storage has some drawbacks in terms of:

- Data loss due to “bit-rot”, which relates to changes in storage mechanism that result in date obscurity.
- Cost associated with maintaining forward compatibility & backward compatibility of application software as well as maintenance of servers & other storage equipment.
- Data loss due to water damage in situations of flooding or fire.
- Digital storage is not truly “archival” since the data is not impervious to changes.

Waferfiche™ meets most of the characteristics of Digital Storage that have been described here. In addition, Waferfiche™ is true “archival” in that the microform images, once written onto the semiconductor medium, cannot be altered in any way.





Critical Acclaim from Worldwide Press

***"La WaferFiche de NanoArk** - Cette société américane va proposer das service et des produits de coversion de documents numériques en micro-images analogiques enregistrée sur un media en silicium dans le but de les archiver à long terme."* -MOS Magazine

"Henrietta company preserves knowledge... Silicon wafer can keep data safe for centuries." - Democrat & Chronicle

"Ancient Sanskrit manuscript goes digital." - BBC News

A Message From Our CEO

I want to take this opportunity to wish you a very Happy and Prosperous 2010. In this issue, we offer details of our exciting, patent pending Waferfiche™ technology that offers a superior alternative to other means of archival. We are excited to let you know that two towns and a county government have adopted Waferfiche™ technology. Can we be of service to you? Please visit our website at http://nanoarkcorp.com and let us know how we can help you protect your vital records.

Sincerely,
Dr. P.R. Mukund

Upcoming Conferences: January 2010

January 6-7, Curation Practices for Digital Object Lifecycle, Chapel Hill, NC - http://ils.unc.edu/digccurr/institute.html

January 13, 6th IEEE International Workshop on Digital Rights Management, Las Vegas, NV - http://drm.unige.ch

January 26-27, Digital Book World, New York, NY
F+W Media, Inc. - www.digitalbookworld.com

