

IDEMA®



“Facing the Challenges through Innovation”

Monday
March 9, 2009



Impact Exhibition & Convention Center

Jupiter Room, Challenger Hall
99 Popular Road, Sub-district, Pakkred District
Nonthaburi 11120, Thailand
<http://www.impact.co.th>

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EXHIBITION & TRADESHOW
Singapore, 12 & 13 March 2009

Exhibitors listing



IDEEMA®



“Facing the Challenges through Innovation”

“Suppliers of HDDs, SSDs, and contributing technologies face their most daunting challenges in more than 20 years. Global economic problems are depressing demand and forcing prices down, but companies are forced to maintain investment, reduce cost – and to INNOVATE to meet these challenges. Innovation arising from new technology introduction has, in the past, contributed to the growth of storage by providing lower prices per gigabytes at progressively increasing capacities, improved performances and reliability. DISKCON Asia-Pacific 2009 will investigate storage in the present environment, addressing both HDD and SSD technologies and how innovations, as increased areal densities using new structures and narrower line widths using advanced equipment, will sustain industry growth.”

LIGHTHOUSE



Company Name : **Lighthouse Worldwide Solutions**

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Lighthouse Worldwide Solutions is the world's leading supplier of real time contamination monitoring Systems. Lighthouse has leveraged its superior software design, data integration ability and worldwide support offices to provide its customers with leading edge contamination monitoring solutions. The Lighthouse Monitoring System has become the standard for many companies, such as Seagate, Western Digital, TSMC, Hewlett Packard, Hitachi, Boeing, Maxtor, Micron, Abgenix, Medtronic, Fujitsu and many more.

Lighthouse has developed the industry's most advanced particle counters for air, liquid and gas and manufactures a complete line of handheld, portable and remote particle counters.

Lighthouse is the first company to develop an Open Architecture system providing its customers the flexibility they need to integrate all types of sensors into one monitoring system.

Lighthouse offers many other monitoring instruments for Electrostatic Charge, Airborne Molecular Contamination and Ultra Pure Water Monitoring. Lighthouse Particle Counters lead the industry in terms of quality, accuracy and technology.



PARK SYSTEMS



Company Name : **Park Systems Corporation**
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Park Systems is the Nanotechnology Solutions Partner for Hard Disk Drive Industry.

Park System serves the hard disk drive (HDD) industry with automated nanotechnology measurement solutions including atomic force metrology tools, software, and global service and support. Partnering with world leaders in HDD industry, Park Systems has been successfully delivering optimized solutions for the most challenging imaging and measurement needs in the industry.



TSI



TRUST. SCIENCE. INNOVATION.

Company Name : **TSI Instruments Singapore Pte Ltd**

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TSI Incorporated is an industry leader focused on the design and production of over 200 precision measurement instruments that serve the contamination control, particle research, chemical analysis, fluid mechanics research and occupational health & safety market places.

TSI AEROTRAK Remote Particle Counters offer the most features and flexibility out of any remote particle counter on the market today. Integration is easy using Ethernet (TCP/IP) or Serial Modbus TRU communications. These instruments can be powered over its Ethernet connection (Power-over-Ethernet) simplifying installation. Configuration can be done locally with a PC or remotely via a web interface.

TSI AEROTRAK Handheld Particle Counters are for customers interested in low cost and versatile particle contamination monitoring.

TSI AEROTRAK Portable Particle Counters are for customers interested in manually monitoring particle contamination at high flow rates. These particle counters can be used as stand-alone portable counters or can be integrated into a facility monitoring system.



WESTECH ELECTRONICS LIMITED



WesTech Electronics Limited

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Product Exhibit

Flexstar Technology is the world's leading manufacturer and supplier of ambient, burn-in, environmental and high altitude test systems for the data storage industries.

Flexstar's mission is to provide storage manufacturers and their customers with standardized and repeatable testing and qualification processes.

To accomplish this mission, Flexstar provides several open architecture test solutions for design validation, quality and reliability, compliance and compatibility, RMA and production applications. With an extensive product variety that ranges from simple components to turnkey systems, Flexstar has provided solutions to many leading hard disk drive manufacturers and OEMs.

Through experiences accumulated from their wide customer base and their ability to complement customers' internal testing efforts, these have allowed Flexstar to tailor their solutions to meet customer's specific requirements.

Flexstar's success is mainly attributed to their ability to consistently develop test solutions in the face of a demanding industry, where technological and market forces continuously push expectations on performance of customers' products upwards.

Being committed towards providing excellent service to their customers, Flexstar Technology enables their customers to provide value through their data storage systems in the Internet era.



Speakers' Biographies

Dr. Djitt Laowattana, Director, Hard Disk Drive Institute (HDDI), National Science and Technology Development Agency (NSTDA), Thailand

Dr. Laowattana's research interest is primarily in fundamental areas of robotic dexterity, design for manufacturing / assembly of high precision systems. He was awarded an honor with his B.Eng. from King Mongkut's University of Technology Thonburi (KMUTT). Under the Monbusho Program, he received a certificate in Precision Mechanics and Robotics at Kyoto University. He subsequently obtained his PhD. in 1994 from Carnegie Mellon University, USA under financial support from the Fulbright Fellowship Program and the AT&T Advanced Research Program. In 1996, he also received a certificate in Management of Technology from Massachusetts Institute of Technology USA. He holds two US patents for robotic devices.

He is the founding director of the Institute of Field Robotics Development (FIBO) and the first President of Thai Robotics Society. He served as an executive board member of TOT, the largest telecom public company.

Presently, he is director of Hard disk Cluster Program at National Science and Technology Development Agency (NSTDA). His responsibility is to strengthen hard disk industry in Thailand by formulating critical collaborative networks among professionals from national universities/laboratories and multi-national companies in the areas of R&D, HRD and Supply Chain Development.

Dr. Chayakrit Charoensiriwath, Researcher and Supply Chain Development Manager, HDDI, NSTDA

Dr. Chayakrit was part of a team that founded the Hard Disk Drive Institute (HDDI) as the center for research and development of hard disk technology in Thailand. He oversees the activities in Thailand's hard disk drive cluster regarding areas such as supply chain development and cluster management. His research interests span from production efficiency improvement, supply chain and logistics management, RFID and information technology standard, and technology transfer mechanism within industrial cluster. His past responsibilities include being the director of RosettaNet (Thailand) where he was responsible for driving and supporting IT standard implementation efforts in Thailand.

Dr. Chayakrit graduated with honor in Electrical Engineering from Northwestern University. He received his master degree in Electrical Engineering from Stanford University and another master degree in Industrial Engineering from University of California at Berkeley. He finally went to Georgia Institute of Technology for his doctoral degree in Industrial Engineering. He teaches on a part-time basis at various universities such as Chulalongkorn University, Mahidol University, and Assumption University.

Don Barnetson, Sr. Director – Marketing, SanDisk Corporation

Don Barnetson is the Sr. Director of Marketing at SanDisk Corporation in Milpitas, California, responsible for SanDisk's SSD and embedded SSD product lines. Don has extensive experience in the semiconductor industry, serving in senior marketing and technical sales positions. Prior to joining SanDisk, Don ran the flash product marketing organization at Samsung Semiconductor, Inc specifically involved in the launch of Samsung's SSD and Hybrid Hard Drive products; and managed field application engineering teams at Micron Technology, Inc. and PNY Technologies, Inc. Most recently, Don worked at Nanosys, Inc. on novel nanostructures to further enable flash scaling below the 22 nm node.

Don received a Bachelor of Science degree in electrical engineering from the University of Calgary and holds an MBA from the Haas School of Business at UC Berkeley.

Speakers' Biographies

Cont...

Mark Geenen, President, TrendFOCUS

Mark Geenen is President and Founder of TrendFOCUS, one of the leading providers of data storage market intelligence. With over 20 years in the disk drive industry, Mr. Geenen and his team have developed a global data-gathering strategy that delivers to customers innovative, forward-looking analyses on demand for hard drives, component technology trends, and effects on the storage ecosystem. He is frequently cited in many publications, such as the Wall Street Journal, Forbes, San Francisco Chronicle, and EE Times.

Matthew Bryson, Managing Director, Avian Securities

Matthew Bryson has been responsible for covering the Storage industry including Hard Drives since 2001 when he joined Avian Securities, a Boston based investment research boutique specializing in technology. He was influential in developing Avian's bottom up analysis of distribution channel trends, which underlies the company's work in the PC component space.

In his own storage coverage, he augments this work with information from the extensive network of industry contacts he has developed during his tenure at Avian. Prior to Avian, Matthew held a Research Analyst position at Charles River Associates, a Boston based economic consulting firm where he first honed his skills in financial modeling and company analysis working with the metals & minerals team.

Matthew graduated Cum Laude with Honors from Williams with Bachelor's Degrees in Economics and History.

Dr. Babak Heidari, Chief Technical Officer, Obducat AB, Sweden

Babak Heidari holds Ph.D. education at Solid State Physic from University of Lund and he has several years of experience in process development of micro and nano lithography, design of electron beam lithography and imprint lithography systems, fabrication methods and process development.

Babak Heidari filed 20 patent applications and he has contributed to more than 80 publications, and appeared at numerous conferences and workshops speaking on the subject. His professional experience in the past year started at Ericsson Component as Research Engineer (1989-1990), Process Integration Engineer (1991-1997), Director, (2000-2002) and from 2002, he acts as Chief Technical Officer at Obducat AB, Sweden.

He has participated in numerous national and international projects: e.g. European projects such as the EU ESPRIT NID-project "CHANIL", the former ESPRIT MEL-ARI project "NANOTECH" and in the latest NAPA, dealing with development of nanoimprint technology.

He is member in several technical societies such as IEEE Electron Device Society, Materials Research Society, and American Association for Advancement of Science, Photonics Resources for Scientists and Engineers, PHANTOMS, SPIE and Semi standards. He contributed as a reference for publication of technical papers in several conferences.

He has been working in the field of nanoimprint technology for more than 11 years and he knows many researchers who are actively involved in this field. He is an international expert in the field of imprint lithography technology.

Speakers' Biographies

Cont...

Dr. Ajit Paranjpe, Vice President of Technology, Veeco

Dr. Ajit Paranjpe is presently Vice President of Technology for Veeco's Process Equipment Group. He has over fifteen years of technology and senior management experience in the semiconductor and capital equipment industry. He joined Veeco from Media Lario where as VP, Lithography Products he introduced high precision collector optics for EUV lithography.

Prior to Media Lario, Dr. Paranjpe served as VP, Marketing & Applications at Therma-Wave where he was responsible for their critical dimension, thin film, and implant / anneal metrology products. He joined Therma-Wave from TORREX. As CTO at TORREX he led the development of their innovative CVD & ALD mini-batch tools. Earlier he was Director of Process Technology at Veeco-CVC, Inc. where he managed process technology development and customer demonstrations for their PVD, CVD, and IBD / IBE products.

He spent several years at Texas Instruments, where his technical responsibilities spanned process integration, process development, and equipment development for CMOS technology. He has broad experience related to the fabrication of semiconductor, opto-electronic & magnetic thin film devices. Dr. Paranjpe has co-authored over 30 publications and holds 44 patents. He obtained a B.Tech. degree from the Indian Institute of Technology, and M.S. and Ph.D. degrees from Stanford University.

Henry Patland, President & CEO, Integral Solutions International

Henry Patland has 20 years experience in the Data Storage industry in the Test Equipment design area.

In 1995 Henry co-founded Integral Solutions International, which is the leading Quasi-Static Test Equipment manufacturer. Since its inception Henry has been the President & CEO of ISI, which is one of the fastest growing companies in the disk drive test equipment area. He is a prominent figure in the development and standardization of head tests commonly utilized in the data storage industry. ISI has equipment installed at every major Drive and Head manufacturing facility.

In 1994 Henry worked at Akashic Memories as the lead Software Architect for the new Media Certifier jointly developed with Hewlett-Packard. Prior to that Henry had worked at Guzik Technical for 6 years as Software/Test Engineer and was involved in many projects including Dynamic Head Tester, Flying Height Tester, Media Certifier, and other projects. Henry received a BS degree from U.C. Santa Cruz in 1988 with major in Computer Engineering and minor in Mathematics. Henry has been awarded 2 patents, with 6 others pending, in the area of testing of Magnetic Heads.

Dr. Tony Lavia, President & CEO, Flexstar Technology

Tony Lavia has over 25 years of experience in the high technology and telecommunications industry. He has served in executive positions with public companies and has been CEO of several startup companies, in the U.S., Canada, and Europe. At present he is the President and CEO of Flexstar Technology, a private company that leads in the development of QA test systems for the storage industry.

Tony recently launched a company to develop telecom services for underdeveloped countries such as Vietnam, using the latest wireless and converged technologies. Up until June of 2005, he had been at Symmetricom in San Jose, California, where he served as the Executive Vice President and General Manager of the Broadband Network Division and as the Chief Technology Officer of the Company. There, he successfully incubated a new business venture in the broadband access space; established distribution and vendor partnerships, and launched a new break-out business for Symmetricom.

Speakers' Biographies

Cont...

From 1999 to 2000 he was the Chairman, President and CEO of Zaffire, a startup company in "Silicon Valley" developing advanced DWDM-based photonic systems for metropolitan core carrier networks. Prior to this he served as President and CEO of Ironbridge Networks, a startup company in Boston's "128 corridor" dedicated to developing terabit-level core-network routers.

From 1994 to 1998 Tony worked in the GM capacity at Nortel and Newbridge. As VP and GM he led the ATMnet business at Newbridge Networks into the number one market position for ATM switches. As VP and GM of broadband switching at Northern Telecom he positioned Nortel in the broadband switching sector and forged the partnership with Fore Systems. Tony had a variety of senior P&L positions in Bell Canada, where he took a turn as the GM of all of the then operational divisions, including Business Networks, Enterprise Data/Network Equipment, and the Consumer Division.

In addition, Tony worked in Canada at the Bell Northern Research labs, in Germany as a consultant to Deutsche Telekom, and as a lecturer in Computer Science at the University of Auckland, New Zealand.

Tony holds a Master and Ph.D. in Computer Sciences from the University of Waterloo, and an Honors B.Sc. in Applied Mathematics and Theoretical Physics from McMaster University.

Dr. Young-Kook (Ryan) Yoo, Global Sales and Marketing Director, Park Systems

Dr. Young-Kook (Ryan) Yoo is the Director of Global Sales and Marketing at Park Systems. Since he joined Park Systems at the beginning of 2005, he has new business developments in the industrial sector, capturing and expanding the market potential of the inline industrial AFM products and solutions offered by the XE technology.

At Intematix, his first and previous employment, he was a founding scientist and VP of research and development, responsible for design and development of new combinatorial thin film deposition/screening tools and new nanomaterials discovery projects.

Dr. Yoo has a Ph.D. in Physics from University of California at Berkeley and B.A. in Physics from University of Chicago.

Hank Pselos, Senior Director, Lighthouse Worldwide Solutions

Hank Pselos is Senior Director of HDD Business for Lighthouse Worldwide Solutions, a leader in contamination control and monitoring systems. He works out of their Corporate Office in Fremont, CA and is responsible for the marketing, sales and support to the Data Storage Industry worldwide.

He joined Lighthouse in 2008 after spending over 20 years working in the HDD industry in various senior management positions. His product experience ranges from components to capital test and process equipment. Prior to Lighthouse, he held business and technical positions with Magnecomp, Xyratex, Phase Metrics and Applied Circuit Technology. Hank has spent over 7 years in Asia residing in Japan, Singapore and Thailand. During that time and subsequent to his return to the USA, he has been an active committee member of IDEMA A/P and now IDEMA USA. He holds a Bachelors Degree in Business Administration from Trinity University, Louisiana, USA.

Monday, March 9, 2009

0900 – 0910 **Opening Remarks**
Dale Schudel, Chairman – IDEMA Thailand Management Committee
Mark Geenen, Chairman – IDEMA Global Board of Directors

Session Chair: Dale Schudel

0910 – 0940 **Keynote Speakers – Dr. Djitt Laowattana, Director, Hard Disk Drive Institute (HDDI), National Science and Technology Development Agency (NSTDA), Thailand**

Dr. Chayakrit Charoensiriwath, Researcher and Supply Chain Development Manager, HDDI, NSTDA, Thailand

“Strengthen Supply Chain via Collaborative Innovation: A Case of HDD Cluster in Thailand”

0940 – 0950 *Q & A Session with HDDI Speakers*

Session 1 – The Role of Innovation

0950 – 1020 **Don Barnetson, Sr. Director – Marketing, SanDisk Corporation**
“The SSD Market – Innovating to drive improved value and reduced costs”

1020 – 1050 *Coffee Break – Browse Exhibits - Networking*

Session 2 - Market Analysis - Challenges and Opportunities

Session Chair: Gary Davis

1050 – 1115 **Mark Geenen, President, TrendFocus**
“The Netbook and the Future of Storage in PCs”

1115 – 1140 **Matt Bryson, Managing Director, Avian Securities**
“Boom to Bust and Back Again? An Industry’s Tale”

1140 – 1230 **Panel Discussion and Q&A**

1230 – 1330 *Lunch - Browse Exhibits – Networking*

Session 3 - Advanced Storage Technologies & Future Lithography in Storage

Session Chair: Chan Leng Wai

- 1330 – 1355 **Don Barnetson, Sr. Director – Marketing, SanDisk Corporation**
“The Evolution and Promise of Future Storage Technologies”
- 1355 – 1415 **Dr. Babak Heidari, Chief Technical Officer, Obducat AB, Sweden.**
“Manufacturability of Pattern Media”
- 1415 – 1435 **Dr. Ajit Paranjpe, Vice President of Technology, Veeco**
“Exploring Options for Patterned Media Processing”
- 1435 – 1455 **Henry Patland, President & CEO, Integral Solutions International**
“Advanced Characterization Techniques for PMR heads”
- 1500 – 1530 *Coffee Break – Browse Exhibits - Networking*
- 1530 – 1550 **Dr. Tony Lavia, President & CEO, Flexstar Technology**
“QA Testing: SSD versus HDD”

Session 4 -- Metrology & Test & Contamination

Session Chair: Hank Pselos

- 1550 – 1610 **Dr. Ryan Yoo, Global Sales and Marketing Director, Park Systems**
“Advanced Inline Slider Metrology with Non-Contact AFM”
- 1610 – 1630 **Hank Pselos, Senior Director, Lighthouse Worldwide Solutions**
“Achieving Cost Savings through On-line Particle Monitoring”
- 1630 – 1640 **Conference Conclusion**

∞ End of Conference ∞



CONFERENCE SCHEDULE

Monday, March 9, 2009

- 0900 – 0910 **Opening Remarks**
Dale Schudel, Chairman – IDEMA Thailand Management Committee
Mark Geenen, Chairman – IDEMA Global Board of Directors

Session Chair: Dale Schudel

- 0910 – 0940 **Keynote Speakers – Dr. Djitt Laowattana, Director, Hard Disk Drive Institute (HDDI), National Science and Technology Development Agency (NSTDA), Thailand**

Dr. Chayakrit Charoensiriwath, Researcher and Supply Chain Development Manager, HDDI, NSTDA, Thailand

“Strengthen Supply Chain via Collaborative Innovation: A Case of HDD Cluster in Thailand”

The Hard Disk Drive Institute (HDDI) was established 3 years ago in Thailand Science Park with a vision to be the center of collaborations and R&D activities between local researchers and the HDD industry. Over the last few years, the scope and activities of HDDI has expanded to cover 4 main areas: Human Resource Development, Technology Development, Supply Chain Development, and Policy Development. The institute has proved to be a very successful model as the number of government-university-industry collaborative projects in various fronts of HDD technology increases exponentially since the institute was established. In this talk, Dr. Djitt will give an overview of the recent achievements, challenges, and future plans of the institute. Later, Dr. Chayakrit will present the supply chain development project which will be the next step forward to strengthen the local HDD cluster.

- 0940 – 0950 ***Q & A Session with HDDI Speakers***

Session 1 – The Role of Innovation

Session Chair: Dale Schudel

- 0950 - 1020 **Don Barnetson, Sr. Director – Marketing, SanDisk Corporation**

“The SSD Market – Innovating to drive improved value and reduced costs”

“2009 is the first year that solid state drives will ship in more than 1% of notebook computers; but by 2012, Garter predicts this will grow to over 20% of notebook computers. What is driving this massive growth is wealth of innovation – improving the value of SSDs to users by making them faster, smaller and more reliable while simultaneously driving down the cost of SSDs down by migrating from SLC to MLC and beyond and from 56nm in 2008, to 43nm in 2009 to 32nm in 2010. To help users understand SSD technology in the context of HDDs, SanDisk has previously introduced two key SSD metrics – virtualRPM (vRPM) and Longterm Data Endurance (LDE). However, SSDs offer opportunities to innovate in ways that are simply not possible in

Session 1 – The Role of Innovation

Cont...

rotating media – by understanding how storage is used in various segments, significant further improvements can be made.

The client SSD market has been rapidly developing in two key segments: performance SSDs designed to be as dense but much faster than HDDs for the high end notebook & desktop market; and modular SSDs designed to be less expensive than HDDs for entry level markets. Both of these client SSD markets are going through dramatic shifts – while 1st generation modular SSDs were often outperformed by HDDs, SanDisk's 2nd generation picoSSD (pSSD) offers significant gains over HDD performance to cost sensitive segments such as Netbooks & entry level corporate notebooks and desktops. The performance SSD market is pushing the boundaries of what was thought possible in a client storage device – SanDisk's G3 delivers dramatic improvements in system level performance that SanDisk research indicates users will actually pay for."

1020 – 1050 *Coffee Break – Browse Exhibits - Networking*

Session 2 - Market Analysis - Challenges and Opportunities

Session Chair: Gary Davis

1050 – 1115 **Mark Geenen, President, TrendFocus**

“The Netbook and the Future of Storage in PCs”

"Steering away from the current emotion and negative outlook, this presentation will examine how the netbook is changing the face of both personal computing and client storage. Today's netbook -- perhaps the only area of demand growth for HDDs in 2009 -- represents seismic shifts in mobile computing, mobile storage cost structure, and the role of external storage. SSDs were the original storage of choice in netbooks, but user requirement for storage combined with PC makers' quest for profitability compelled the change to HDDs. But SSDs may yet play a pivotal role in netbooks, particularly as mobile computing devices evolve in the coming years.

Topics to be covered in this presentation include the fundamental changes (price, cost/performance, size) underway in mobile PCs, the HDD-SSD ratio in netbooks; and a new axiom, "The \$35 Storage Budget."

1115 – 1140 **Matt Bryson, Managing Director, Avian Securities**

“Boom to Bust and Back Again? An Industry's Tale”

“Last year at this time, the HDD industry was enjoying one of its most fruitful periods as stable pricing, strong demand, and capacity constraints all combined to lift margins and profits. While SSDs were perceived as a potential threat, disappointing initial product roll-outs had pushed any real displacement into the future with rising commodity prices presenting a much more immediate concern.

Conditions have changed dramatically in the last 12 months. The banking crisis that began in the US has spread creating a global recession. Resulting declines in demand for electronic equipment have been severe with the shock to HDD makers and their component suppliers with the impact

Session 2 - Market Analysis - Challenges and Opportunities

Cont...

exacerbated by inventory reductions throughout the technology supply chain as suppliers and end consumers look to manage risk and/or are hampered by credit contraction.

This presentation will explore current industry fundamentals including inventory and price conditions as well as providing some thoughts around the depth and breadth of the downturn. In addition, Avian will examine what actions might best position industry participants to survive the difficult current environment and ultimately take advantage of an eventual recovery, keeping in mind changing end market conditions including the rise of the netbook and a continued push by SSD vendors to enter the HDD market.”

1140 – 1230 **Panel Discussion and Q&A**

1230 – 1330 ***Lunch - Tour Exhibits – Networking***

Session 3 - Advanced Storage Technologies & Future Lithography in Storage

Session Chair: Chan Leng Wai

1330 – 1355 **Don Barnetson, Sr. Director – Marketing, SanDisk Corporation**

“The Evolution and Promise of Future Storage Technologies”

“Today’s storage products are the result of intensive development activities in materials, structures and designs which have yielded capacities, performances and reliability to provide customers with a maximum in data retention at a minimum in cost. Major technological advances in HDD magnetic products arise from areal density growth which has resulted from: 1) head design, from GMR to TMR read technologies and PMR write designs, 2) media design using multilayer configurations relying on antiferromagnetic coupling, 3) HDD mechanical design in which small diameter and/or high RPM disks comprise an increasing portion of the market. In flash SSD designs, both NOR and NAND technologies rely on progressively narrower linewidths as well as the development of newer insulators for improved reliability.

This presentation will address future HDD advances as DTR and PBM and the possibility of their implementation as well as dependencies on lithography. The production challenges of these new magnetic structures will also be discussed in the context of today’s processing. For SSD, the development of multilevel storage in which multiple bits are retained in each cell could be the future direction for all flash designs provided that insulator stability and sensing electronic capability continues their current progress. This presentation will appraise the evolutions of these technologies and how each, and their follow-ons, could be implemented in future products.”

1355 – 1415 **Dr. Babak Heidari, Chief Technical Officer, Obducat AB, Sweden.**

“Manufacturability of Pattern Media”

“The increased requirement for more storage capacity in both optical discs as well as hard drives the need for a shift in manufacturing technology. Current magnetic media technology is facing difficulties to continue to higher surface densities due to the super-paramagnetic limitations. By using isolated magnetic domains to store the data makes it possible to overcome these limitations. Both Discrete Track Recording (DTR) and Bit-Patterned Media (BPM) approaches are expected to enable storage densities well beyond 1 Tbits/in².

Session 3 – Advanced Storage Technologies & Future Lithography in Storage

Cont...

The high volume Pattern Media manufacturing consist of direct-write, electron beam on a rotating substrate, lithography system to create a patterned master disk, which can be used as a mold in replication of final disks by imprint lithography. The imprint process replicates the original pattern exceptionally cost efficient, making mass production of magnetic media possible. The imprint process adopts an Intermediate Polymeric Stamp (IPS) as a replica from the mold and uses the IPS to reproduce the pattern on the final disk. However, realization of these new technologies offers challenges.

This talk discusses the infrastructure required to enable an HVM solution, from fabrication of master mold to high-volume double-sided imprinting.”

1415 – 1435 **Dr. Ajit Paranjpe, Vice President, Veeco**

“Exploring Options for Patterned Media Processing”

“Patterned media and in particular Discrete Track Media (DTM) or also referred to as Discrete Track Recording (DTR) is the next significant technology transition in hard disk drive (HDD) technology to keep the HDD industry on the areal density growth curve. Products incorporating this technology are anticipated in 2009 with over 20% adoption in the 2010 – 2011 timeframe.

Patterned media requires the introduction of at least four new steps: nano-imprint lithography, an etch of the storage layer to magnetically separate the data tracks, gap-fill to fill the trench between adjacent data tracks, and planarization / etchback to remove the excess gap-fill material over the tracks resulting in a planar topography of the finished disk. The induction of patterned media presents a significant manufacturing challenge since high throughputs (500 – 1000 dph / tool) and low incremental costs (< \$1 / disk) combined with mature manufacturing technology must be available by 2010 for DTM to become a reality. In this talk, we will examine the processing requirements for each of these steps, and the suitability of production-proven vacuum process technologies to meet these goals.”

1435-1455 **Henry Patland, President & CEO, Integral Solutions International**

“Advanced Characterization Techniques for PMR heads”

“Modern high density perpendicular head is a complicated structure with nanometer-size features. **Writer** : Recent developments in high density and high data rate recording create multiple challenges for write head manufacturing related to tight geometric control of the recording pole and well-defined yoke magnetic structure. Significant variations of write head performance are usually observed during dynamic testing, however early production screening for wafer, bar or slider levels is currently not available.

Our approach is based on high resolution inductance measurement combined with yoke saturation by external magnetic field and DC write current. Changes of magnetic yoke saturation caused by combination of external magnetic field and write current provide information about overall head efficiency, coil-to-yoke coupling, pole corrosion, magnetic yoke anisotropy and defects, yoke domains, hysteresis and data rate performance. These tests can be used for early production screening of write heads.

Reader: As the read sensors become smaller, the design and alignment of hard bias magnets becomes difficult. Variations of the permanent magnet shape, magnetic properties, edge domains

Session 3 – Advanced Storage Technologies & Future Lithography in Storage

Cont...

and potential problems with initialization and stability translate into multiple read sensor defects, such as variation of sensitivity, instability and hysteresis.

Our approach is based on thermal Ferromagnetic Resonance measurement combined with external magnetic field. Changes in Ferromagnetic Resonance peak can provide information about the permanent magnet defects, free and pinned layer defects as well as many other critical parameters of the reader.”

1500 – 1530 *Coffee Break – Browse Exhibits - Networking*

1530 – 1550 **Dr. Tony Lavia, President & CEO, Flexstar Technology**

“QA Testing: SSD versus HDD”

“The testing of HDD’s has evolved over several decades to be a sophisticated process. There are automated procedures which can pinpoint potential points of weakness in reliability and performance.

The SSD’s comprised a very different technology, but present a very similar product function: namely, digital storage. Should then QA testing for SSD’s be the same as for HDD’s? The end system attributes are the same – capacity, reliability, access speed – but the failure modes are different. We will examine how testing methodologies compare and contrast between SSD’s and HDD’s. And, also propose the most effective testing procedures for SSD storage systems.”

Session 4 -- Metrology & Test & Contamination

Session Chair: Hank Pselos

1550 – 1610 **Dr. Ryan Yoo, Global Sales and Marketing Director, Park Systems**

“Advanced Inline Slider Metrology with Non-Contact AFM”

“Atomic Force Microscopy (AFM) is emerging as an essential tool in hard drive industry. Its ability of nanoscale measurement found powerful applications in slider manufacturing. In measuring the Pole-Tip Recession (PTR), the new automated AFM overcomes the intrinsic background curvature of a piezotube based AFM to provide adequate repeatability and reproducibility for precise manufacturing control. We found that non-contact AFM, rather than tapping mode AFM, is a critical requirement for accurate measurement of PTR since the impact from tapping force can depress the pole tip region and make PTR values appear larger than they actually are. More importantly, the linear and non-destructive scan enabled accurate angle measurements of the vertical sidewalls of various ABS structures, critical control process in slider manufacturing. Combined with throughput-efficient programmable data density, the new automated AFM constitute of a production scalable metrology solution in control of slider manufacturing processes, from PTR to writer pole to sidewall angle measurements.”

Session 4 -- Metrology & Test & Contamination
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Cont...

1610 – 1630 **Hank Pselos, Senior Director, Lighthouse Worldwide Solutions**

“Achieving Cost Savings through On-line Particle Monitoring”

The Hard Disk Drive Industry including its respective suppliers is driven by cost. This has been a survival factor since the inception of the low cost HDD in the early 1980s and is even more critical today. Steps can be taken in the manufacturing process that will provide the necessary data to ascertain an advanced view into the quality of the products built. This data can then be used proactively (i.e. by using SPC) and reactively (i.e. by using an Auto-shutdown Process). These steps will result in reducing the number of contaminated parts that get built into products, minimizing scrap, optimizing process yields, minimizing production costs and creating an overall higher quality product.

1630 – 1640 **Conference Conclusion**

❧ End of Conference ❧



Who is IDEMA?

IDEMA is the not-for-profit trade association serving the data storage industry's growth worldwide with the international trade-shows, technical conferences, industry standards programs, dinner programs, and industry assessments.

Who are IDEMA Members?

IDEMA corporate members are the companies that comprises the over \$130 billion data storage industry (HDD and NAND Flash) and its robust, dynamic supply chain, including the designers and manufacturers of hard drives, heads, media, substrate, process and test equipment, materials and other parts used in data storage devices, including solid state drives, and other alternative forms of storage. All employees of IDEMA corporate member companies are IDEMA members and are entitled to full member benefits including discounts on conferences, symposia, DISKCON tradeshows and all other IDEMA activities offered worldwide. Complete details are available at www.idema.org.

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