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Bangkok, Thailand 6th March 2006

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DISKCON Asia Pacific 2006

March 6, 2006

Rama Gardens Hotel, Bangkok, Thailand

99 Vibhavadi Rangsit Road, Laksi, Bangkok 10210, Thailand

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The Technology of HDD Production – Maximizing Productivity While Minimizing Costs

This year's DISKCON Asia Pacific will address the many complex aspects of today's HDD production; including manufacturing equipment and systems, measurements and characterization, yield and production management, automation and finally an overall technology assessment of production with respect to emerging technologies and products. The continual introduction of new technologies and their related processes places significant demands on production systems to control yields and output. The latest designs as PMR and TMR head structures, advanced media, and SFF HDDs are only of value if they can be economically produced in volume. The AP region is the location of virtually 100% of Hard Disk Drive production as well as most of the components used in them. This conference will call on experts from the region as well as throughout the HDD world to address the high volume evolution of HDD manufacturing. In addition, new markets for hard disk drives are evolving rapidly. Manufacturing technology will be driven by these markets and their individual demands. What are these markets, how fast are they expected to grow, and what new metrics will the hard drive industry perform against. A panel of experts has been convened to address these subjects and more.



2006 Conference Theme:

**"The Technology of HDD Production –
Maximizing Productivity While Minimizing Costs"**

Quick View of Scheduled Events

Monday, March 6th, 2006

<i>8:00am</i>	<i>Registration and Coffee</i>
9:00 – 9:10am	Welcome Remarks – Joe Bunya , Thailand IDEMA Management Committee and Vice President, Western Digital Corporation
9:10 - 9:30am	Keynote Address – Mr. John Coyne , COO, Western Digital Corporation
9:30 -10:10am	Session 1 - The Business and Economic Status of the HDD Industry
<i>10:10 -10:40am</i>	<i>Coffee Break & Table Top Exhibits</i>
10:40 -11:30am	Session 1 - (cont'd)
11:30 – 11:50am	Session 2 - Production System Technology – Manufacturing Control Systems and Equipment
<i>11:50 - 1:00pm</i>	<i>Lunch & Table Top Exhibits</i>
1:00 - 1:40pm	Session 2 - (cont'd)
1:40 – 2:40pm	Session 3 - Testing and Measurement for Present & Future HDD Production
2:40 - 3:00pm	Session 4 - Materials Supply for HDD Production
<i>3:00 - 3:30pm</i>	<i>Coffee Break & Table Top Exhibits</i>
3:30 - 4:10pm	Session 4 - (cont'd)
4:10 - 5:10pm	Session 5 - Proliferation of Applications and Customer Requirements



Bangkok, Thailand Full Agenda

Monday, March 6th, 2006

9:00 - 9:10am **Welcome Remarks & Introduction - Joe Bunya**, Thailand IDEMA Management Committee and Vice President, Western Digital Corporation

9:10 - 9:30am **Keynote Address – John F. Coyne**, Chief Operations Officer and Executive Vice President, Worldwide Operations, Western Digital Corporation
"The HDD Industry at 50 : Opportunity, Change and Continued Competition"

Biography: *John F. Coyne, chief operations officer and executive vice president, worldwide operations, is responsible for business operations, materials and magnetic head operations, as well as the development and execution of Western Digital's overall manufacturing strategy. Coyne originally joined WD in 1983 to start the company's PCBA operations in his native Ireland. Based in Malaysia since early 1997, he planned and implemented WD's consolidation of all worldwide hard drive manufacturing into Malaysia in January 2000, the expansion of the company's drive operations into Thailand in January 2002 and manufacturing operations related to the acquisition and integration of the Read-Rite magnetic head business in Thailand in August 2003. Throughout his more-than-three decade's career, Coyne has progressed through positions of increasing responsibility in engineering, manufacturing, materials, marketing and general management, primarily in the electronics industry. A native of Dublin, Ireland, Coyne received his bachelor's degree in mechanical engineering from University College Dublin in 1971. Coyne currently serves as chairman of the International Disk Drive Equipment and Materials Association (IDEMA) Asia-Pacific and is a member of the IDEMA global board.*

Session 1

The Business and Economic Status of the HDD Industry

This session is a tradition at DISKCON Asia Pacific and gives attendees a first hand and up-to-date glimpse of the financial status of the HDD industry from the perspectives of key Wall Street and HDD business analysts. A blue ribbon panel can be expected to relate a candid and forthright view of the HDD industry, its member companies and their financial progress to date. Only IDEMA's DISKCON could assemble this panel and charge them with giving the attendees a sound summary of progress to date based on revenues, mergers and acquisitions, and industry growth in general. The experts will be encouraged to provide predictions on future performances of the HDD industry as well as its individual companies and also to make recommendations on how to improve these performances in view of the overall economic climate.

Moderator : **Hank Pselos**, MPT Sales Director, Magnecomp

9:30 - 9:50am **Mark Geenen**, President, **TrendFOCUS** -
"Dynamic Interferometry for Media Shape Characterization"

Biography: *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.*

Session 1 (cont'd)

9:50 - 10:10am

John Monroe, Research Vice President, Gartner Dataquest - “Nothing but Good Times Ahead” : Re-Engineering Profits in the HDD Industry

Abstract: The Navajo Indians in the United States used to say that coyotes were too wise to engage in hopeless competitions. For much of the last decade, most hard disk drive makers, from a fiscal perspective, have been too foolish to engage in anything but hopeless competitions. Much has changed in recent years: Consolidation, component constraints, explosive demand from new applications, and increasingly difficult technology transitions have engendered far more demanding -- and, potentially, far more lucrative -- market metrics. The need for more storage in new and old form factors will continue to expand, and it now appears that the surviving HDD makers, with a freshly minted balance of operational excellence and fiscal wisdom, are poised and determined to engage in consistently profitable competitions.

Biography : *Mr. Monroe is a Research Vice President in the Storage Group at Gartner and also serves as chair of the annual Gartner Storage Summit conference. He is responsible for tracking all aspects of the hard disk drive industry, including technology and market trends as well as financial results. Mr. Monroe has established a reputation as an eloquent, imaginative industry spokesperson, has been quoted in many newspapers and magazines, including Forbes, the Wall Street Journal and the New York Times, and has been an invited speaker at conferences in Japan, Singapore, Thailand, China, France and the United States. Mr. Monroe has been involved with disk drive sales, product management and market analysis for more than 25 years. Prior to joining Gartner in October 1997, Mr. Monroe spent seven years at SYNEX Information Technologies, Inc. (formerly COMPAC Microelectronics), where he was vice president of all storage products, managing both distribution and OEM product lines. He grew storage revenue at SYNEX from \$28 million to more than \$400 million, eventually coordinating the flow of more than two million hard disk drives per year. Before his tenure at SYNEX, he was director of North American Sales and Marketing for Kalok Corporation and was also vice president of OEM Products and Sales for Media Distributing / Media Winchester Ltd. From 1980 to 1982, Mr. Monroe served in various positions and eventually became general manager at Electrolabs, a small distribution company, where he began his electronics career by selling EPROMS, hybrid ICs, and Qume and Shugart 8-inch double-sided, double-density (DS/DD) floppy disk drives. Mr. Monroe earned a bachelor's degree Phi Beta Kappa, summa cum laude from Amherst College in 1976 and also earned a master's degree in fine arts with honors from Columbia University in 1980.*

10:10 - 10:40am

Coffee Break & Table Top Exhibits

10:40 - 11:00am

Dave Reinsel, Program Director, Storage Research, IDC “The Increasingly Attractive HDD Market: Will it Turn Ugly?”

Abstract: The disk drive market turned around in 2003 and continues to exhibit positive signs of health and robustness. All the ingredients exist to make for several years of growth and prosperity; but, will it happen? Similar signs existed during the late 1990's, but the industry faltered and struggled for several years. Are the circumstances the same today? What has changed and how must the industry respond to keep from repeating history and the doldrums from 1998-2002. Join IDC as it lays out its optimistic prediction for the hard disk drive industry and why.

Biography: *Dave Reinsel is program director of IDC's storage research. Mr. Reinsel and his team of analysts provide insight and analysis for IT professionals, investors, reseller, distributors, and manufacturers. His research team is responsible for delivering forecasts and analyses on disk storage systems and hard disk drives and component technologies, as well as for providing quarterly tracking and analysis on numerous metrics related to these same markets. Mr. Reinsel has more than 12 years of experience within the IT industry.*

11:00 - 11:20am

Harry Blount, Senior Vice President, IT Hardware & Storage Networking, Lehman Brothers

Biography: *Harry Blount, with Lehman Brothers since November 2000, has over 19 years of experience as a sell-side analyst with a variety of firms including Oppenheimer, Donaldson Lufkin & Jenrette, and Credit Suisse First Boston. Mr. Blount has provided in-depth research coverage on over 100 companies in a variety of industry disciplines including – enterprise hardware, wireline and wireless telecommunication services, wireless distribution, competitive local exchange services (CLECs), internet infrastructure, enterprise storage networking, hard disk drives, environmental services, restaurants, hotels, entertainment, and consumer products. In 2002, Mr. Blount received his third Wall Street Journal award, when he was named a top stock picker in the Computer Hardware sector. Mr. Blount was named to the Institutional Investor All-American analyst teams in 2000 and 2001 for the Internet Infrastructure Services category. He has appeared on CNBC, Bloomberg, and Reuters and been quoted in numerous publications including the Wall Street Journal, Barrons, Forbes, Fortune, and Business Week. He earned a bachelor's degree in finance from the University of Wisconsin – La Crosse in 1986.*

11:20 - 11:30am

Q&A

Session 2

Production System Technology – Manufacturing Control Systems and Equipment

Moderator : Gary Davis, Executive Director, IDEMA and Managing Director, Davis Consultants Asia

11:30 - 11:50am **Bill Abeyta**, Product Marketing Manager, Dicing Saw Products, Veeco Instruments “Advance Slider Shape Control”

Abstract: Controlling sensor height alone is insufficient when producing PMR head designs. Perpendicular recording heads (PMR) not only require measures to control stripe height but the added control parameters for throat height and reader/writer offset. To mitigate precise angle adjustments between the writer ELG and reader ELG, perpendicularity between the backsides of slider to the overcoat must be established prior to ELG lapping operations.

Biography: *Bill's technical background includes micro machining of miniature electronic ceramic devices beginning in 1969. His technical and volume manufacturing expertise allowed him to serve in the capacity of advance development engineering as well as Slider FAB manufacturing manager in the Date Storage industry for both Applied Magnetics Inc. and Digital Equipment Corporation's Northeast Technology Center in Shrewsbury, MA. He has held both technical and manufacturing management positions in Data Storage, beginning with Applied Magnetics Inc. in 1982 and Digital Equipment Corporation through 1991. Since then, Bill has maintained his relationship with Data Storage as Asia Pacific Sales Manager for Manufacturing Technology Inc., (MTI) and Product Marketing Manager of Veeco's dicing saw products since their acquisition of MTI in October of 2004.*

11:50am - 1:00pm **Lunch & Table Top Exhibits**

1:00 - 1:20pm **Morgen Polen**, Vice President, Application Technology, Lighthouse Worldwide Solutions, “A New Approach To Controlling Contamination”

Abstract: Automated manufacturing has become commonplace in HDD production. The reduction of manual assembly has helped reduce costs, reduce contamination and increase productivity. However, at the same time products are more sensitive than before. A new approach to controlling contamination must be created for the cleanrooms these products are produced in, as well as where manufacturing is going in the future.

Biography: *Morgan Polen is the vice president of application technology for Lighthouse Worldwide Solutions. He has been involved with contamination control since 1984 and been involved with projects ranging from cleanroom design, cleanroom construction, bulk chemical delivery systems, photolithography, particle counter design, ESD program implementation and currently is responsible for developing contamination monitoring programs for customers worldwide. He has a degree in Electro-Mechanical Technology from Hennepin Technical College in Minnesota, and is an internationally recognized speaker on contamination control and cleanroom monitoring, presenting papers in over 30 countries.*

Session 2 (cont'd)

1:20 - 1:40pm

Steve Adamson, Market Manager-HDD, Asymtek, *with*
Michael Peterson, Director Advanced Engineering, Belton Technology, Inc.
“Underfilling Flip Chips on Hard Disk Drive Preamp Flex Circuits and SIP’s
on Substrates Using Jetting Technology”

Abstract: Hard Disk Drives (HDD) and products using System In Packages, (SiPs), like all other forms of consumer electronic (CE) devices, have to be small, lightweight and portable for convenience of the user. At the same time, new features and functions are being added to designs of HDD and SiPs that put tremendous pressure on the use of the substrate area. Flip chip devices and micro-BGA devices are being used as preamplifiers on flex circuits and substrates for these markets. Underfilling these devices on flex circuit and PCB substrate presents some fundamental problems for needles that Jet dispensing can eliminate.

Biography (S. Adamson) : *Steve Adamson is Market Manager for Asymtek presently responsible for worldwide marketing to the data recording industry. Prior to this he worked extensively in semiconductor packaging and assembly. He has delivered technical papers on wirebond encapsulation, CSP / Flip Chip assembly, design rules and reliability at HDI, IMAPS, IPC, IEEE, Diskcon meetings and other conferences. Mr. Adamson has been published in Advanced Packaging, SMT, Chip Scale, Meptec and Electronic Production and Test magazine and several of his papers have been translated and published in China, Korea and the EU. He has also authored papers on transaction card applications and has been awarded five US and two UK patents. In 2005 he was recognized and presented with an award by the San Diego Engineering Council for “Outstanding Service to Electrical Engineering” Steve has over twenty years experience in microelectronics assembly, previously holding positions with Kodak, Motorola, Plessey and International Computers Ltd in the U.K. During this time, he designed MCM's, hybrid circuits, PCB's, thermal printed heads and magnetoresistive head assemblies. Steve is originally from the U.K. and has a Higher National Certificate in Electrical Engineering from Stockport College of Technology. He is the currently the Chairman of the San Diego chapter of IEEE –CPMT. He is also the 2006 Chairman of IMAPS Symposium and is a member of the IMAPS Global Business Council.*

Biography (M. Peterson) : *Michael Peterson is the Director of Advance Engineering for Belton Technology. Mr. Peterson holds an undergraduate degree in Industrial Engineering from the University of St.Cloud and a Masters Degree in Manufacturing Systems Engineering from the University of St. Thomas both in the United States. Mike’s career has evolved and concentrated in the field of Manufacturing Development of SMT and parallel processes for over 22+ years. During this time Mike has worked in both engineering and management roles: Unisys in Semiconductor manufacturing development and Aircraft carrier communication Systems design, Control Data, Performing Military SMT process engineering development work and QA functions, Coors Ceramics, performing ceramic process development and SMT introduction for high end military MIBs for Airforce communication system requirements, Honeywell, Designing and introducing one of the industry’s pioneering SMT lights out factory line installs and at Seagate, concentrating on Flip Chip on Flex design and processes resulting in what is today’s primary usage for the HDD product market. Mike over his career has received many awards from the industry and companies from which he has worked for. Mike was awarded 6 recognized patents he obtained while working within HDD process development project scopes. Mike has given several presentations over the years on SMT process techniques and advance development projects. Over the course of his career, Mike has held numerous high level management positions.*

Session 3

Testing and Measurement for Present & Future HDD Production

Moderator : Joe Viglione, Vice President, Western Digital Corp., Thailand

- 1:40 - 2:00pm **Dr. Adrian Devasahayam**, Senior Process Engineer, Veeco Instruments -
“Challenges in ABS Etch and Overcoat Deposition for Femto Sliders”
- Abstract:** As the magnetic recording industry trends towards SFF HDDs with femto sliders utilizing PMR and TMR technology, greater pressure is being placed on the technological performance of the ABS etch and the slider overcoat processes. At the same time strong emphasis is being placed on reducing the cost of ownership of the etch and deposition toolsets associated with these advanced processes. In this paper, the speaker will briefly review the current industry practices for slider etch and overcoat following with a description of next generation toolsets that achieve the goals of improved technical performance at a reduced cost.
- Biography (A. Devasahayam) :** *Dr. Adrian Devasahayam received his Ph.D. degree in electrical and computer engineering from Carnegie Mellon University in 1998. He joined Veeco Instruments in 1998 as a Senior Process Engineer working on Ion Beam Deposition of data storage materials. He later worked on process development of dielectric coatings for the optical telecommunication industry as Principal Process Engineer. He is currently the Director of Process Development in charge of Ion Beam Deposition and Etch processes at Veeco. He has authored over twenty papers and holds several patents.*
- 2:00 - 2:20pm **Richard Orstad**, Market Segment Manager, Accuplace -
“Cleanroom Automation of Pressure Sensitive Adhesives”
- Abstract:** Almost every manufacturer struggles to increase throughput and quality, while simultaneously eliminating waste to minimize costs. Lean Manufacturing Techniques (including the appropriate use of automation and standardization of processes) are critical in identifying bottlenecks, decreasing or eliminating waste and improving productivity. It often takes a radical change in thinking to suddenly see what was in front of you the whole time. Changing the concept of the placement of adhesive components from simply an afterthought to an integral part of the HDD manufacturing process will result in much greater cleanroom cost utilization, lower overall process costs and increased throughput. In the HDD Industry, it's not good enough to be 'Lean and Mean' anymore; it's more important than ever to become 'Lean and Clean'.
- Biography:** *Richard Orstad is the Market Segment Manager for AccuPlace focusing on Computer & Peripheral applications. AccuPlace is the recognized leader in film adhesive placement technology, with Operations in both the United States and Singapore. AccuPlace supplies assembly solutions to the Market Leaders in the Storage, Computer Peripheral, Mobile Communications, Medical, and Automotive industries. Richard joined AccuPlace in October 2004 after 15 years experience in the Electronics and Semiconductor Industry, having worked for AMP Incorporated, Thomas & Betts, and O'Brien/Cardinal UHP. He holds several patents in connector design, and brings his Engineering background to drive AccuPlace toward innovative solutions within the Hard Disk Drive and Computer Peripheral market. Richard holds a B.E. in Mechanical and Materials Engineering from Vanderbilt University and his M.B.A. from the University of North Carolina in Greensboro.*
- 2:20 -2:40pm **Adam Wray**, Vice President, Xyratex -
“Process Challenges in the HDD Industry”

Session 4

Materials Supply for HDD Production

The HDD industry consumes enormous amounts of materials for the production of hundreds of millions of units per year. Attendees can expect to learn about new materials and processes resulting from technological advancements which will significantly assist in HDD production, and advance our product capabilities.

Moderator : Colin Thomson, Director, Asia Pacific, Xyratex

2:40 - 3:00pm **Bob Evans**, Manager of Technical Support, Japan & Korea, Hutchinson Technology - [“Suspension Design for Customer Manufacturability”](#)

Abstract: New technologies and processes such as solder head attach, FEMTO/PEMTO sliders, flyheight control, and dual stage actuation are creating new requirements that didn't previously exist in the industry. As HDD areal density and data rate continues to progress, suspensions are becoming more complex with added features often placed in smaller areas. At the same time, tolerances on key attributes are becoming tighter at all manufacturing levels, including suspension, HGA and HDD. This presentation shows the progression of suspension designs and performance, and offers a look into the future for continued improvements in downstream manufacturability.

Biography: *Bob Evans received a B.S. degree with honors in mechanical engineering from Brigham Young University in 1978 and an M.S. degree in engineering mechanics from Iowa State University in 1982. He is currently a Staff Engineer and Manager of Technical Support – Japan for Hutchinson Technology Incorporated (HTI). Mr. Evans joined HTI in 1995 following seventeen years of work in the aerospace industry. Since joining HTI, Mr. Evans has served as both an individual researcher, supervisor of the Product Technology Development group, and as the Manager of Technical Support for the company's Japanese and Korean customers.*

3:00 - 3:30pm **Coffee Break and Table Top Exhibits**

3:30 - 3:50pm **Chris Schreiber**, Component Development Engineering Manager, Magnecomp - [“Novel Solutions for ESD sensitive devices”](#)

Abstract: The dramatic increases in emerging HDD storage capacities enabled by TMR, CPP and DSA mandate novel approaches addressing tribocharge in these sensitive devices. The low breakdown voltage of the next generation products will require additional ESD protection, however, it is still unclear whether Flexure, Head or Alternative based solutions will prevail. Various circuit based approaches will be contrast for dissipating the static charge within the polyimide dielectric of the suspension flexure including; Thin Sputtered Metal Films, Conductive Polymers and Diamond Like Carbon coatings. The properties and integrity of the various options such as surface resistance, transparency, LPC, and resistance to highly accelerated stress tests will be presented in detail.

Biography: *Chris Schreiber is the Component Development Engineering Manager at Magnecomp Precision Technology where he is responsible for developing new electro-mechanical component technologies for data storage. Mr. Schreiber has 35 years experience in electronics packaging resulting in 38 United States Patents, dozens of technical publications and both the Plunkett and Crystal Awards for innovation from Dupont.*

Session 4 (cont'd)

3:50 - 4:10pm

Dr. Greg Galvin, President & CEO, Kionix -
“Inertial Sensing Comes of Age in HDD Protection”

Abstract: This presentation will review the concepts behind active HDD protection, the state-of-the-art in silicon accelerometer technology, and what the future may hold for this rapidly emerging new requirement on HDD manufacturers. During the past twelve months we have witnessed an amazingly rapid evolution in the state-of-the-art in active hard disk drive protection using silicon micromachined accelerometers. The proliferation of small form factor HDD's in ever more portable electronic products is providing a strong driving force for industry-wide adoption of this new technology.

Biography: *Greg Galvin is President and CEO of Kionix, Inc. of Ithaca, NY. He founded Kionix in 1993 to commercialize a novel micromechanical technology pioneered by researchers at Cornell University. Prior to this, he served Cornell for nine years, first as Deputy Director of the Cornell Nanofabrication Facility in which micromechanical research was conducted and later as Director of Corporate Research Relations, focusing on technology transfer. Dr. Galvin has a B.S. from the California Institute of Technology in Electrical Engineering, and a Ph.D. in Materials Science and an M. B. A. from Cornell University. Dr. Galvin's graduate research was in the areas of thermodynamics of silicon under ultrafast melting, ion beam analysis, and thin film technologies. He has published over 20 technical papers, holds 15 patents, and is a member of several scientific societies.*

Session 5

Proliferation of Applications and Customer Requirements

HDD products are rapidly finding new applications beyond the traditional IT industry, and these are expected to have some impact on production and unit availability. This session explores these new applications, specifically consumer-based, to review how disk drive products are evolving to meet consumer demand, and what impact this demand will have on HDD production. This session directly addresses HDD design for high volume production and alerts attendees to the challenges of these new markets.

Moderator : **Tom Coughlin**, President, Coughlin Associates

4:10 - 4:30pm

Jon Elerath, Manager of Reliability Engineering, Network Appliance –
“Field Reliability Impact from Post-GA Manufacturing Process & Design Changes”

Abstract: This presentation includes analyses of actual field data that show the impact post-GA design and process changes can have on reliability. These design and process changes are assessed in terms of manufacturing vintage, where vintage is defined by either events or time periods. An event based vintage includes the subpopulation of HDDs manufactured between significant process or design changes (events). Time based vintages include the subpopulation of HDDs manufactured during a specific time period (e.g., month) irrespective of the events that occurred in the time period.

Biography: *Mr. Elerath is the Manager of Reliability Engineering at Network Appliance. He has 30 years experience in all aspects of reliability and 20 years experience with computers and storage products. He has also worked for General Electric, Tandem Computers, Compaq and IBM Storage Products. He has a BSME and MSME (Reliability Option) from the University of Arizona and is currently pursuing his Ph.D. at the University of Maryland. Mr. Elerath has written over 23 papers on reliability.*

Session 5 (cont'd)

4:30 - 4:50pm

Tom Coughlin, President, Coughlin Associates -
“Developments of Disk Drives in Consumer Applications”

Abstract: By the next decade there will be more digital storage used for the creation, distribution and reception of digital entertainment and personal content than for any other use. The growth of these markets will change the characteristics of the storage devices in many ways. This talk will focus on some of the trends for disk drives used in the consumer electronics industry with projections for the future.

Biography: *Tom Coughlin, President, Coughlin Associates has been working for over 25 years in the data storage industry at companies such as Ampex, Polaroid, Seagate, Maxtor, Micropolis, Syquest, and 3M. He has over 50 publications and six patents to his credit. Tom is active with IDEMA the IEEE Magnetics Society, IEEE CE Group, and other professional organizations. He is the founder and organizer of the Annual Storage Visions Conference and co-organizer of the annual Network Storage Conference. Coughlin Associates provides market and technology analysis as well as data storage technical consulting services.*

4:50 - 5:10pm

Dr. Ed Grochowski, Executive Director, IDEMA USA -
“HDD Dynamics : Interfaces, Electronics, Architecture, and Reliability”

Abstract: Today's HDD is a unique and complex product which relies on many synergistic components to deliver a maximum performance, capacity and reliability to meet the demands of evolving storage applications. On December 6th, 05 an IDEMA Symposium was organized and which addressed topics which included the various emerging interfaces, new electronic designs for increased levels of integration, sector architecture and long data blocks for ECC efficiency, and finally factors which determine HDD reliability. Individually, each topic would constitute a symposium of maximum importance, but the speaker has designed this presentation to summarize all of these in one concentrated review. The impact of the presented data on HDD design and development will be summarized in this review.

Biography: *Dr. Grochowski began his career at IBM in New York where he helped develop the company's microelectronic silicon activity and later joined IBM in San Jose where he held technical and management positions, including participating in storage research at the Almaden Research Center. Dr. Grochowski has filed nine patents and has authored numerous articles on semiconductor processes, magnetic hard disk drives, storage trends, computer storage technology, and nanostructures for storage. Dr. Grochowski holds both undergraduate and graduate degrees in chemical engineering from the universities of Delaware and Michigan. He earned a Ph.D. in chemical and material engineering from New York University.*

5:15 pm

Wrap Up





REGISTRATION FORM



Monday, 6 March 2006
Grand Hall 2 (Lobby Level)
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- C – Floppy Drives
- D – Optical Devices
- E – Media/Substrates
- F – Heads/Sliders
- G – Production/Test Equipment
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Member Non-member

Full-Day Conference Fee THB 1,500 (S\$62) THB 2,500 (S\$102)
- Price is inclusive of luncheon & proceedings -

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Cancellation Policy: Full refund for cancellation can be arranged with written notice to organizer no later than 28 Feb'06. No refunds will be given, however, after this dateline (including no-shows). Replacement can be arranged, but with written consent from original registrant by fax to : (65) 6481-4866.