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THE ART AND TECHNOLOGY OF LASER DISPLAYS

CONTENTS

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It's Lasers in Las Vegas at ILDA 2004

ILDA members celebrated their annual conference in Las Vegas Oct. 21-24, meeting in combination with America's largest entertainment trade show, the Entertainment Technology Show-LDI (ETS-LDI).

ILDA members hosted technical and educational seminars for laserists and the general lighting community, and also produced a high-profile Lase-Off that was open to all ETS-LDI attendees.

In association news, members elected **Alberto Kellner** of **Laser Entertainment srl** as the association's new president. Kellner, from Milan, Italy, is ILDA's first president from outside the US. He said it was a "double honor" to be the first non-US president, and thanked the many American ILDA members who supported him.ILDA members also elected **Craig Nelson**, head of **ConQuip, Inc./Logic Systems, Inc.** in California, to the ILDA Board of Directors. **William Benner,** president of **Pangolin Laser Systems** in Florida, was reelected to the board.

In other actions, members voted in favor of a new initiative to create a "Professional" category of ILDA membership, approved preliminary technical standards and discussed safety issues.

ILDA's new president, Alberto Kellner (left), holds his ILDA artistic award, joined by Alexander Timofeyev of Orion Art Production and Patrick Awouters of Laser System Europe.

This issue features in-depth coverage of the Advanced Technology Workshop (p. 5), ILDA's Product of the Year and Fenning Awards (p. 5), the Career Achievement Award won by Patrick Murphy (p. 9), ILDA's artistic awards (p. 7), plus information about the Lase-Off and the many sponsors and volunteers who contributed to the Las Vegas conference (p. 9).

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ILDA Pushes for Pilot Training

Recent Incidents Highlight Need For Information Program

Amid a flurry of media reports about pilots being exposed to dangerous laser beams, and the US government's dire warning that terrorists might use relatively inexpensive lasers to attack aircraft, ILDA continued to represent the voice of the laser entertainment industry before government officials.

Thanks to the help of Pangolin Laser Systems, ILDA sent former ILDA President Patrick Murphy to attend the recent meeting of the foremost aviation group addressing issues of lasers and air safety. Murphy reported that a new pilot education program is underway that promises to better familiarize pilots with the hazards unregulated lasers pose and help pilots cope with the visual distraction they can cause.

The other good news from the recent SAE G-10T committee meeting, said Murphy, was that committee members saw no need for increased regulation of laser shows or laser pointers, despite the spate of recent reports regarding pilot exposure. "But people doing outdoor shows should be more careful than ever, as the recent arrest of a New Jersey man who pointed a laser at an aircraft shows the government wants to send a message," said Murphy

SAE G-10T is the premier aviation group working on problems relating to lasers and aircraft. It includes pilots, federal officials, military personnel, safety experts and industry representatives such as ILDA. Murphy, along with other ILDA members such as Greg Makhov, have worked with the committee in the past. More recently, Roberta McHatton has attended meetings with support from LFI International.

Pilot Information Program a Priority

ILDA for years has pressed for pilot information and simulator training programs. "We felt it was the last line of defense and a relatively inexpensive one," said Murphy, as preliminary work with simulators shows that pilots become familiar with laser light after only two or three exposures and find they can concentrate much better once they understand the nature of the effect. A draft of the proposed training program should be available when the committee meets this summer. The program is reportedly on a fast-track development schedule, with the hope of launching it within a year.

None of the recent aircraft incidents involved laser entertainment displays, which are governed by a set of rules developed through ILDA's past work with SAE G-10T. After the 1996 incidents of pilot exposure by Las Vegas entertainment displays, ILDA helped draft regulations used by FAA, Transport Canada and European safety organizations to regulate outdoor laser shows. It is safe to say that outdoor shows might have been shut down if ILDA had not participated.

New ILDA Tech Standards Coming

The ILDA Technical Committee recently gave its approval to new and revised preliminary standards that promise to make it easier for laserists to exchange shows and specify diffraction gratings. The committee is also working on a new standard to help third-party software products interface with existing laser systems in real time.

Matt Polak of Raven Systems Design, the new ILDA Tech Committee Chair, reports that committee members gave a thumbs up in Las Vegas to preliminary changes to the ILDA Standard Projector (ISP) standard that clarify ambiguous wording and offer better guidelines for proper grounding and decoupling of data signals.

The committee also approved proposed updates to the ILDA File Interchange Format that provide for true 24-bit color table integration. This change will allow true-color RGB data to be saved in the standard ILDA file format, making it easier for newer laser software to exchange data without sacrificing color quality.

New Grating Standard Proposed

A proposed ILDA Grating Standard was also approved that will allow laserists to specify diffraction grating effects based on notation developed by Peter Mayer of Creative Laser Production. It's hoped that the new standard will offer a consistent method to specify how diffraction gratings, which use transmissive and reflective optics to create laser imagery, are used in different projectors.

The next step in the process of creating standards is up to ILDA members and other interested parties. The proposed and revised standards are now open for review, and all comments should be sent to the technical committee. The standards will continue to be designated as "preliminary" for at least one year, giving the committee time to respond to comments and make any needed revisions. Copies of the proposals can be found at *www.laserist.org/standards.htm.*

Third Party Interface

The next standard on the horizon is the ILDA API (Application Programming Interface). The proposed standard, still under study by the committee, would allow third-party software products to interface with existing laser hardware in real-time, rather than having to render a file and then load it, or sending data to a hardware system's proprietary interface. The proposed API would function as a standardized front-end, offering instant software compatibility. "The end user would have the ability to use any platform with any add-on. It's a real win-win situation for everyone," said Polak. If you would like to comment on the proposed API standard or the preliminary standards, contact Matt Polak, *polak@lasers.org,* (+1) 440-248-7283. "The more input from the users, the better, so speak up," said Polak.

ILDA Acts on IEC Safety Guidelines Review

ILDA is encouraging members to provide input to an upcoming review of international safety guidelines for laser entertainment displays.

The IEC (International Electrotechnical Commission) guide for the Safety of Laser Products, IEC TR 60825-3, was approved by many European nations, plus the USA and countries in Asia in 1995, but has not been reviewed since that time.

John O'Hagan of the UK's National Radiological Protection Board *(john.ohagan@nrpb.org)* has offered to forward the comments of ILDA members to reviewers, and suggests now is a good time to update the standard and perhaps add new sections on safety issues not of concern in 1995 (such as air safety).

A copy of the existing EIC guidelnes (which follow US rules) and more information will be posted on the ILDA Website at: *www.laserist.org/Laserist/Safety.html*

New ILDA Members

Please welcome the following companies and individuals to ILDA. More details can be found in the online membership directory at the ILDA Website: *www.laserist.org.*

Arctos Showlasertechnik, Saaldorf-Surheim, Germany
Artistic Laser Productions, Escondido, Calif., USA
Bocatec Video-und Lasertechnik GmbH, Hamburg, Germany
Build, Inc., Tokyo, Japan
Clandestine Systems, Orlando, Fla., USA
ConQuip, Inc./Logic Systems, Inc., Sacramento, Calif., USA
Theo Dari, Laserman, Argenteuil, France
Foxwood Resort Casino, Mashantucket, Conn., USA
Kvant Ltd, Bratislava, Slovakia
Laser Dreams: Kenwood, Calif., USA
Laser Elektronik, Oslo, Norway
Laser Quantum, Ltd, Stockport, Cheshire, UK
LaserRent: Broechm, Belgium
Laser Scanning, Inc., Wakoh-City, Japan
Laserfabrik Showlaser GmbH, Hürth, Germany
Mueller Elecktronik, Spaichingen, Germany
RGB Laser System International Ltd., Kecskemet, Hungary
Saturn Communications, Aventura, Fla., USA
Spectra-Physics, a division of Newport Corp. Manalapan, N.J. USA
Stuart Technologies, Tuscon, Ariz., USA
YaTai Co., Ltd., Anhui, China

New Individual, Student Members:

Robin Adams (s), Frankfurt am Main, Germany
Carol Chan (s), Edmonton, AB, Canada
Ron Cocco (i) Wallace, Mich.,USA
Lee Strom (i), San Leandro, Calif., USA

How to Join

Interested in joining the world's leading association dedicated to advancing the art and technology of laser displays?

Membership is open to organizations, individuals and students who pledge to uphold ILDA's bylaws and abide by the code of ethics. Download an application at *www.laserist.org/join.htm.*

New Technology at ATW

By Matt Polak
Chair, ILDA Technical Committee

As the new ILDA Technical Committee Chair, I'd like to welcome you to an in-depth recap of the Advanced Technology Workshop (ATW) that took place at ILDA's Las Vegas conference.

The ATW was, once again, a very successful and highly attended event. Generously sponsored this year by Cambridge Technology, Inc., twelve presenters from around the world showed off the latest advances in laser-show hardware, software, and solid-state devices.

In the software category, we saw new artwork-creating products and new concepts for show control and laser safety. In the hardware category, we saw new control system components and interfaces, many aimed at integrating laser entertainment into the theatrical lighting realm. In the laser category, we saw new solutions for high-power red and green projectors as well as several DPSS RGB whitelight solutions.

Software

• William Benner of Pangolin Laser Systems presented **Lasershow Converter FLASH**, a program that converts artwork created with Macromedia Flash directly into high-quality laser frames and animations. The conversion process typically involves only a few mouse clicks. **Lasershow Converter FLASH** also provides users with a complete laser working environment.

• Pangolin also presented **Lasershow Converter ADAT**, which quickly and easily converts shows recorded on ADAT into Pangolin's LDS/SHS show format.

• Patrick Dietzel from Laserlight Showdesign presented the newest version of **ShowControl v3.0**, which includes an improved frame pre-loading mechanism for fast show access. Full automation of these commands is achieved through a new DMX-512 USB input-dongle. Pre-loaded shows, play lists and macros can be executed directly from any DMX lighting desk.

Awards Honor Products, Technology

ILDA's new Product of the Year Awards, unveiled during the annual conference in Las Vegas, honored a trio of companies for outstanding laser, software and hardware products.

A new laser safety measurement software program by Laser Visuals Ltd. took both the software Product of the Year award and the prestigious ILDA Fenning Award for technical achievement. The program, **Scanguard Laser Show Analyzer**, allows laserists to quickly analyze laser exposure levels in accordance with international safety guidelines.

The Hardware Product of the Year Award went to Cambridge Technology for their **Model 6215H Scanner and True 60K Scanner Amplifier.** The new technology allows laserists to scan at faster speed or at wider angles.

The Laser Product of the Year was presented to Laser Entertainment SRL and Laser System Europe for their 5-watt **DPSS Flash Whitelight Laser**. The new air-cooled laser has two wavelengths of red light for a broader color palette.

The Product of The Year Awards were voted on by attendees of the ILDA Advanced Technology Workshop (ATW). Only products presented at the ATW were eligible for awards. The Fenning Award, which honors outstanding technical achievements that advance laser show technology, was awarded by a three-person judging panel.

James Stewart of Laser Visuals Ltd. with the Product of the Year and Fenning Awards.

Matt Polak, ILDA's Technical Committee Chair, noted that a number of people in the ATW said the simplicity of the Scanguard program was one of its strongest points. "The software is easy to use and will hopefully encourage more laserists to undertake what were previously very complex calculations," he said.

More information about the winning companies is available on-line at: www.laserist.org/Laserist.

• Michael Sollinger of Laser-Animation Sollinger presented **DeeMagiX** and **DaeMoniX**, programs that run on a Lasergraph DSP to control a laser projector using a DMX lighting console. The programs are intended for lighting designers who lack laser show experience. The programs make laser projectors act like extremely versatile lighting fixtures.

• James Stewart of Laser Visuals Ltd. presented a suite of programs known as **Scanguard Laser Show Analyzer**. ScanGuard allows users to quickly assess how much laser energy is present in laser effects. With its easy-to-use interface and clear presentation of results, laserists no longer have to possess the skills of a mathematician to get detailed safety data.

Hardware

• William Benner of Pangolin Laser Systems presented **New Networking Options for LD2000,** which allows LD2000 users to use Ethernet signals to simultaneously control multiple remote projectors, even when the remote projector lacks its own computer.

• Benner's second hardware presentation, **Flashback Controller With USB Connectivity,** discussed improvements to Pangolin's Flashback Controller, a credit-card-sized show controller that can be embedded in a laser projector. Flashback provides high quality output, including four individual color channels.

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ILDA Awards Honor Artists from Six Countries

Members of the International Laser Display Association honored the best and brightest in their industry with awards for outstanding artistic achievement at ILDA's annual awards banquet, held Oct. 23 at the Venetian Hotel in Las Vegas.

Companies from America, Belgium, Germany, Italy and Russia received the industry's equivalent of Hollywood's "Oscars" for shows that included outdoor festivals, corporate productions, theme park installations and special events.

This year saw the addition of three new categories recognizing laser displays in nightclubs and discos, laser displays used in video and film productions, and laser displays used in live stage performances. There was also a new "Best of Show," won by **LFI International** and **Fischer Media Group**, honoring what the judges considered to be the most outstanding laser display from among all the winning entries. A total of 16 companies, representing six nations, took home awards in a dozen categories.

ILDA artistic awards were given in twelve categories, with a panel of judges reviewing live laser presentations whenever possible. A unanimous vote was required to award the "Best of" in each category.

LOBO electronic of Germany took the most awards, winning three categories (Best Beams/Atmospherics-multiple scan heads; Best Entertainment Graphics Show, and Best Use of Lasers in Film or Video), and taking Finalist awards in another seven categories. **HB-Laser Komponenten**, also of Germany, won the Best Beam/Atmospherics-single scan head category and, the Best Nightclub Disco Laser Display category, while **Laser Entertainment srl** of Italy took top honors in the Multimedia Show and the Static Composition categories.

LFI International and **Fischer Media Group** won Best use of Lasers in a Live Stage Performance for its *Surpraser* show in a Korean theme park. The same show also won the new "Best of Show Category."

Attendees at the Las Vegas awards banquet were treated to live laser versions of almost every piece.

A complete list of award winners appears below, with more information online at *www.laserist.org/Laserist.*

2004 ILDA Winners, Artistic Displays

Best Beams/Atmospherics Laser Show (Multiple Scan Heads)

Winner: LOBO electronic, *Massive Impact*
Finalists: LM Productions, *Elecktronika*
HB-Laserkomponenten, *Hair*

Best Beams/Atmospherics Laser Show (Single Scan Head)

Winner: HB-Laserkomponenten, *Team X Treme*
Finalists: Laserlight Showdesign, *Hurricane*
LOBO electronic, *Night Flight*
Pangolin Laser Systems, *Music*

Best Entertainment Graphics Laser Show

Winner: LOBO electronic, *Billabong*
Finalists: Laser Entertainment srl, *What is the Light?*
LaserAnimation Sollinger, *The Tricky Book*
LOBO electronic, *The Circus*

Best Corporate Graphics Laser Show

Winner: Orion Art Production Intl., *Panasonic Casino*
Finalists: LOBO electronic. *Holiday Park Trailer*
Strictly FX, *7th Annual Chicago Bears Fan Convention*

Best Abstract Laser Show

Winner: Audio Visual Imagineering, *Setting Sun*
Finalists: LOBO electronic, *Mode of Motion*
Strictly FX, *I Can Only Imagine*

Best Static Laser Composition

Winner: Laser Entertainment srl, *Fantasy 2004*
Finalists: Audio Visual Imagineering, *Poison Symmetry*
LOBO electronic, X15 *Scanline*

Best Multimedia Show

Winner: Laser Entertainment srl,
History: Graphic & Multimedia Show
Finalists: Laser System Europe, *SEA Games*
LM Productions, *StratoFantasia, Hong Kong Tourism Board*
LOBO electronic, *Europapark Halloween Show 2003*

Most Innovative Laser Display Application

Winner: Laser System Europe, *Flying Laser*
Finalists: LM Productions, *Death of the Red Baron*
Laserpromotions B.V., *LaserStrike*

Best Nightclub/Disco Laser Display

Winner: HB-Laserkomponenten, *Barbie Pop Party*
Finalists: Laser System Europe, *Radical Disco*
LOBO electronic, *G-Fiedel*

Best Use of Lasers in a Video or Film Production

Winner: LOBO electronic, *SWR Station ID*
Finalists: TLC-Creative Productions, *Usher, "Yeah"*

Best Use of Lasers in a Live Stage Performance

Winner: LFI International and
Fischer Media Group, *Surpraser "Changes"*
Finalists: Manick Sorcar Productions,
Dancing with My Soul,
Matrix-Laser, *Origins FIRE*

Best in Show

Winner: LFI International
and Fischer Media Group, *Surpraser "Changes"*
Finalists: LOBO electronic, *Billabong*
Laser Entertainment S.R.L.,
History: Graphic & Multimedia Show

ATW Presenters

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• Jim Hardaway presented the **I-2000 YAG Controller**, a new product from LFI International that uses an Ethernet connection for remote control of a laser power supply. Operators can control on/off functions, system and projector interlocks, lamp current, and more.

• Steve Krusemark of Cambridge Technology, sponsor of this year's ATW, impressed everyone with new scanner technology. The **Model 6215H** Scanner and the new **True 60K** driver amplifier set allow laserists to scan twice as fast or twice as wide. Steve also gave an update on the **DC900** digital servo and changes to other amps.

Paper Presentations

• Alex Hennig from LOBO electronic discussed the **LOBO DDL2 Protocol**, an improved communications protocol that seeks to enhance creative possibilities, reliability, and servicing of laser systems. The award-winning DDL-system is a high-speed optical data bus that connects all components of a laser system.

• Steve Heminover of Aura Technology presented **Teaching An Old Laser New Tricks,** a fascinating look at automating a Spectra 171 by retrofitting a digital control system to the existing power supply.

Lasers

• William Benner of Pangolin Laser Systems presented **New High-Power Solid State Red Lasers**, a configuration of 650nm red laser diodes resulting in a series of lasers with 2mm beam diameter and 0.7mRad divergence. Power ranges from 100mW to 1.5Watts. Beam quality is excellent and the lasers are modulated directly.

• Casey Stack, on behalf of Lumalaser, presented the new **Lumalaser Blitz Projector**, a 5-Watt DPSS 532nm system. The air-cooled projector can provide beam effects for arena-sized events, in addition to high-speed scanning. The Blitz is directly modulated, resulting in 100% efficiency of laser brightness.

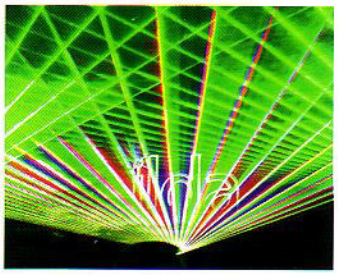
• Jake Rigby of Laser Quantum presented the **Astra 1500**, a laser that offers excellent color balance in a compact, efficient package. The 1.5-Watt RGB laser has digital blanking.

• Concluding the ATW with a joint laser presentation, Alberto Kellner of Laser Entertainment SRL and Patrick Awouters of Laser Systems Europe presented the 5-Watt **DPSS Flash Whitelight Laser** and projector. The unit costs significantly less than many competing solutions and uniquely offers two sources of red (632nm and 655nm) for increased brightness as well as a broader color range.

More information about the presenting companies is available on-line at www.laserist.org/Laserist.

Lase-Off Dazzles Crowds in Las Vegas

ILDA transported onlookers to a new dimension of sight and sound at the recent Lase-Off and Awards Banquet in Las Vegas, using a stunning array of high-tech laser equipment to project laser shows created by artists from around the world. The shows were also major technical achievements, as they marked the first time the events had been produced entirely with air-cooled lasers. That's right—the ballroom at the Venetian hotel was filled with over 20 watts of laser power without the need for a single water hookup.



ILDA's Lase-Off: Great colors, no water or three-phase power.

Unlike past years, the ILDA conference did not have a local host company, and instead companies from Europe and the United States contributed laser gear and personnel. **Melissa Chisholm** headed a volunteer laser production crew consisting of **Eduardo Capriles, Hayden Hale, Chuck Rau** and **AJ Seabeck**.

Theatrical lighting and video effects were also used extensively, thanks to contributions from lighting companies and a volunteer crew headed by **Marsha Stern**. Complete details can be found below, with links to the sponsoring companies posted on-line at *www.laserist.org/Laserist/Industry-News.html.*

Thanks to Conference Sponsors

ILDA's 2004 Conference in Las Vegas generated a record-level of financial sponsorship and in-kind support. The major financial sponsors were:

- **Cambridge Technology**, sponsor of the Advanced Technology Workshop;
- **MediaLas Laserproducts**, sponsor of the ILDA booth at ETS-LDI;
- **Spectra-Physics**, sponsor of the conference brochure;
- **Pangolin Laser Systems**, financial support for the Lase-Off and Banquet; and
- **Lighting&Sound America**, sponsor of conference lanyards.

ILDA would like to thank the following companies, in alphabetical order, for their significant help in furnishing equipment and services for the Lase-Off, Awards Banquet, and awards judging:

Jenoptik: provided the JenLas Whitelight 10-watt RGB laser used for the main beam display during the Lase-Off and Banquet. **Laser Production Network**: safety show variance plus technical assistance for the Lase-Off and Banquet. Provided facilities for judging the ILDA artistic awards. **LaserAnimation Sollinger:** supplied two Accurate Blitz projectors, one Accurate projector fiber fed by the Jenoptik Whitelight RGB laser, one Lasergraph DSP compact, and technical assistance. **LM Productions**: two 1.8 Watt RGB DPSS lasers projectors for graphics during the Lase-Off and Banquet and technical support. **Lumalaser**: coordinated, import/export, customs clearance, and transportation of many of the lasers used in the Lase-Off and Banquet. **LOBO electronic** provided Modula-5 unit for playback of laser shows. **Pangolin Laser Systems:** supplied laser equipment, video equipment and custom software programming for the awards judging, and provided staff and computer servers for the Lase-Off and Banquet, as well as hiring actor **Dave Wittenberg** to perform the role of Panogolin's interactive laser character, "Sparky."

Many thanks go to the laser technical crew, in alphabetical order: **Eduardo Capriles, Melissa Chisholm, Hayden Hale, Chuck Rau, Aj Seabeck.**

Crew for non-laser lighting: **Marsha Stern, Sally Gavin, Diana Ades, Andrew Giffin, Ross Berger, Hillary Knox, Craig Caserta, Kandi Bloomquist.**

Theatrical lighting for Lase-Off and Banquet donated by: **ETC, 4Wall Entertainment, Vari*lite, HighEnd Systems, Martin Professional, VLPS PRG Lighting, a division of Production Resource Group, Mode Studios, and Apollo Design Technology, Inc.**

Patrick Murphy Honored For Career Achievement

Patrick Murphy, founder of Pangolin Laser Systems, was honored with the ILDA 2004 Career Achievement Award. The award, presented at the Oct. 23 ILDA Awards Banquet in Las Vegas, recognizes the career of an individual who has made an outstanding contribution to laser displays.

Patrick Murphy, founder of Pangolin, received ILDA's Career Achievement Award.

Murphy, as founder and 15-year president of Pangolin, played a key role in making it possible for just about anyone to create affordable, professional-quality laser shows. Murphy was a pioneer in laser computer graphics. His first computerized laser graphics were done in 1979, using a mainframe computer at Oberlin College. In 1981 he earned a B.A. degree in Laser Art and Technology and worked for the next five years to improve his software. He founded Pangolin Laser Software in 1986 to market the Lasershow Designer program, the first laser software that worked like standard computer graphics paint programs.

In 1988, Murphy and William Benner began a close collaboration to improve Lasershow Designer, which eventually won more awards for Pangolin and it's clients than any other laser software and became a worldwide market leader.

Murphy left Pangolin in 2001 to pursue other interests, although he frequently assists laser display companies and ILDA.

Murphy was a strong supporter of

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Murphy Honored

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ILDA, working to create standardized equipment and shows. He served on the ILDA Board of Directors from 1994-1996, was elected ILDA President in 1995, and served as ILDA Airspace Issues Coordinator from 1996-1999.

Efforts by Murphy and others to prevent US regulators from banning outdoor laser shows were finally successful—Murphy even helped write some of the regulations and forms used by the US government.

Murphy was one of the three inventors of an entirely new style of laser display, raster graphic frames. He and Benner were co-winners of three ILDA Technology Awards and two Brewster Awards.

Murphy also won an ILDA Technology Award for his renumbering algorithm, and won two ILDA Artistic Awards for his laser art creations.

Although Murphy was unable to attend the Las Vegas ceremony, you can read his acceptance speech on-line at *www.laserist.org/Laserist*.