



IFAI EXPO
 REPORT
 from
ORLANDO



HANDS ON

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SHOW PHOTOGRAPHY

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Thousands of industry professionals joined the Industrial Fabrics Association International (IFAI) in Orlando last month to keep current in the areas of special fabrics, shade products and advanced textiles and their expanding applications. The heart of the show: seminars, exhibits, workshops, market roundtables, show-floor “campfire” sessions, special events and four days of concentrated networking. From innovation to application in everything from fiber to finished product, IFAI Expo brings the industry face to face, to solve current problems and create new business plans for the future.

In 2020, IFAI Expo will celebrate its 100th anniversary in Indianapolis, Nov. 3–6. And as we continue to focus on what’s new, we’ll take a look back at our beginnings as well. See you there!

HIGH POINTS AND HIGHLIGHTS

From theory to practice, every attendee at Expo 2019 was looking for something different. From Industry 4.0 discussions to hands-on demonstrations, attendees and exhibitors at Expo 2019 could access abundant education and sourcing opportunities. Demonstrations on welding and other hands-on topics were packed with interested practitioners—all of whom were generous in sharing tips on better ways to be efficient. Nowhere was this more apparent than at this year's Manufacturing for Good booth (see page 68).

Collaboration, as always, was a key part of interaction between suppliers and manufacturers (and manufacturers and manufacturers). Networking is always the point of Expo, highlighted at the keynote address, the opening reception and the awards breakfast, as well as throughout the show. "What's new?" was on everyone's mind.

In the bag

Recycled seat belt bags were a popular give-away at the show this year, the result of a collaboration among Tennessee Webbing Products, Enkad Sciences and IFAI.



Tennessee Webbing procures millions of pounds annually of off-spec seat belt webbing for secondary uses. Enkad Sciences made these recycled seat belt bags for IFAI exhibitor Tennessee Webbing, and put the company and IFAI together to create the striking bags for enthusiastic attendees.

Enkad Sciences procures about 250,000 pounds of webbing, mostly from Tennessee Webbing, for use off-shore; this was the company's first (and very successful!) attempt at sending some fabricated products back to the country of origin.

Puerto Rico pups steal the show

Amid the latest fabrics, equipment, technology and services for the specialty fabrics industry, four puppies—Lorenzo, Lilo, Lolo, and Lulo—stole the hearts of attendees. The three-month-old mixed breed pups from Puerto Rico were available for cuddles and adoption, right on the show floor. With donations going to the Industrial Fabrics Foundation and the Pet Alliance of Greater Orlando, attendees delighted in play time with the pups, and took home collars and leashes.



IFAI Expo 2019 Keynote Thom Singer



'Choose people' to make effective connections

Thom Singer, the keynote speaker at IFAI's annual meeting on Oct. 2, at IFAI Expo, is clear about one thing: People want to do business with people they know, like and trust. And that connection won't happen through second-hand tools offered on social media or other electronic sites.

Singer, a consultant to executives and the author of 12 books, refers often to his father, born in 1914, who died just short of turning 100 years old. Singer's father worked in sales his whole life and, until shortly before he died, often remarked that people haven't changed over the years. Singer pointed out his father would say, "Look at the Bible. The stories about lust, greed and politics are the same."

Singer's father always recommended that he "choose people": That meant closing the newspaper and turning away from the distractions of media when a family member entered the room. The distractions of modern devices—mobile phones, tablets and computers—may seem like necessities; but the truth is, these conveniences often block authentic, direct human interactions.

Building personal connections

Singer discussed the human traits that he most admires, all of which help people connect with each other: being enthusiastic, master of one's career, authentic, open to learning, part of solutions, tenacious, respectful of others, and active in building and serving relationships within one's community.

"People are drawn to people like themselves, but I'm a huge fan of diversity, even political diversity," he says, adding: "You are the sum of the five people you spend the most time with. If you want to make friends, go out and be a friend to others. You have to take the time to look up from your phone."

Singer acknowledges that social media is a business necessity, but each of us must remember, "We're ambassadors of human engagement. If you don't choose people, there won't be a baseline of people who reach out to you when you need others."

Making a difference

Eventually, we all have life problems that require the care and concern of others. Singer shared the example of his baby daughter who was born with bones fused in her head, preventing normal growth. When he and his wife were making the stressful decision of choosing a surgeon, a colleague who wasn't even a close friend contacted him at one in the morning with the name of an experienced doctor. Singer was surprised to hear from this somewhat distant contact, who ended up presenting a viable option. That experience was an excellent example of never knowing what benefits may come of good human connections.

Singer's daughter, now 17, had the surgery and has done well in school. Singer and his wife have since set up the foundation that contributes funding to research in facial cranial disorders: The Kate Singer Endowment For Craniofacial Research.



325
EXHIBITORS



33
MARKET-SPECIFIC
CLASSROOM SESSIONS

4,412
SHOW PARTICIPANTS

12
ADVANCED TEXTILES
CLASSROOM SESSIONS

IFAI **EXPO**
by the numbers



6
SHOW STOPPER
WINNERS

28
CAMPFIRE SESSIONS
ON THE SHOW FLOOR

68
INTERNATIONAL
ACHIEVEMENT
AWARDS

1
INNOVATION
AWARD
WINNER



85
FILLED PENCIL
POUCHES
FROM THE "MANUFACTURING FOR
GOOD" DEMONSTRATION AREA
FOR "A GIFT FOR TEACHING"

83
EDUCATIONAL
SESSIONS



PERFORMANCE PLUS

Rewarding innovation



The Industrial Fabrics Foundation (IFF) has awarded **Propex GeoSolutions**, Chattanooga, Tenn., first prize in the 2019 IFF Innovation Award competition for its **PETROMAT® Enviro engineered paving fabric** (at left).

PETROMAT Enviro was developed to solve the milling and recycling issues associated with traditional paving fabric: It offers the installation

flexibility, superior stress absorption and moisture protection of a traditional paving fabric, and is nearly indistinguishable in recycled asphalt pavement (RAP) once milled. Milled PETROMAT Enviro comes in sizes up to one inch in diameter, allowing it to pass easily through recycling machines. Unlike brittle glass-based geosynthetic interlayers, Enviro can be placed directly on a milled surface without fear of breaking or tearing, and allows for smooth, wrinkle-free installation, even around curves.



Gerber Technology, Tolland, Ct., was awarded Honorable Mention for its **MCT Cutter digital finishing system** (at left), a versatile, robust, accurate and easy-to-use flatbed cutting table featuring a variety of sizes, a universal tool head with 12 interchangeable tools and high-powered laser, and industry-leading print-to-cut capabilities to finish

digitally printed textiles with a clean, sealed edge.

Innovation is the heart of creating a specialty fabrics industry that will inspire technology in the 21st century. The IFF Innovation Award transforms that idea into action, working to foster the next generation of specialty fabric industry innovators.

The Industrial Fabrics Foundation is a nonprofit 501(c) (3) organization dedicated to education and research in specialty fabrics. For more information, contact Linden Wicklund, IFF Managing Director, at llwicklund@ifai.com, or visit www.indfabfnd.com.

Recognizing excellence

For seven decades, IFAI's International Achievement Awards (IAA) competition has recognized excellence in design and innovation, highlighting truly spectacular work in the specialty fabrics and technical textiles industry. IFAI's goal is to promote awareness of the specialty fabrics used in thousands of products and applications in the growing, \$130 billion-plus global fabrics marketplace.

This year, IFAI received a total of 255 entries from 24 countries in 42 categories. Sixty-eight winners were selected based on complexity, design, workmanship, uniqueness and function. Judges included industry experts, editors, architects, educators and design professionals.

Judges also selected the "Best of Category" winners in each of the six major award categories (earning the highest total scores among the Award of Excellence winners within that major category). The winners:

Fabric Structures: **Taiyo Europe GmbH Sauerlach**, Germany, for Testing Tower, Rottweil, Germany; *Awnings and Canopies:* **SHADE Industries Inc.**, Phoenix, Ariz., for McKesson GORILLABrellas; *Fabric Environments:* Transformit, Gorham, Maine, for Serpentine; *Marine Fabrication:* **Chicago Marine Canvas**, Chicago, Ill., for A "Skater" with Style; *Tents:* **Eventstar Structures**, Medley, Fla., for Ralph Lauren 50th Anniversary; *Geosynthetics:* **Hallaton Environmental Linings**, Sparks, Md., for Temporary Lined Stone Cofferdam.

For more information on all the winners and other entries, with photos and detailed project descriptions, visit iaa.ifai.com. The 2020 IAA competition will start accepting entries in March, 2020.



Transformit, Gorham, Maine, won a Best in Category 2019 IAA Award for "Serpentine."

Behind the scenes at Disney World

Disney World is celebrating its 48th year of operation in an environment of old-fashioned customer service and ever-evolving new technology. Expo attendees who registered for a day-long tour got a look at how costumes, audio animatronics, laundry and other logistics stay on track at the world-famous theme park, and how the employer of 76,000 "cast members" keeps visitors both entertained and safe.

A special highlight for attendees took place at the Creative Costuming building: guests toured the CAD room where patterning and cutting take place, and then visited the sewing area where 50 sewing specialists work their magic. Costumes were displayed showing examples of 3D printing and hundreds of fabric swatches, buttons and embroidery samples. The only organization that requires more costumes than Disney is the U.S. military, with its use of uniforms, linens and technical fabrications.

At the Textile Services Plant, three miles of track hold hundreds of slings loaded with sorted laundry bound for washing, drying, folding and ironing. Each sling holds 150 pounds of laundry, and it takes 30 minutes



to wash and dry each load. Each costume has an RFID tag sewn into it so laundered items can be sorted and returned to the correct cast member. Each performer has five costumes, to ensure clean clothes for upcoming performances. No performance costumes are allowed off site; this prevents a rogue Disney princess from showing up at an unauthorized private birthday party.

<<< SPECIAL ADVERTISEMENT >>>

IFAI EXPO 2019 FROM THE **ORLANDO SHOW FLOOR**

Whether you're looking to enhance your post-Expo experience or are seeing these companies for the first time, use the information below from IFAI Expo exhibitors to learn more about the products and services they provide.

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IFAIexpo.com

**100
YEARS
OF TEXTILE
INNOVATION**

ADVANCED TEXTILES

New products, new markets, new theory, new applications, new opportunities and a drive to standardization and commercialization: Dozens of educational opportunities in advanced textiles markets were spread over the three days of the show, in addition to a full afternoon on Tuesday as part of the pre-show events. The Advanced Textiles portion of IFAI Expo this year included educational sessions, show-floor “campfire” sessions and demonstrations; hundreds of exhibitors—many of them part of the advanced textiles industry—also offered plenty to see on the show floor.

ATP ACTION AT EXPO

Advanced Textiles Products (ATP), a division of IFAI, works to keep members informed about trends, innovations and opportunities through education and member programming throughout the year. In addition to focused programming at IFAI Expo, the Smart Fabrics Summit, in partnership with the U.S. Dept. of Commerce, offers an intensive conference on emerging trends in research, technology and public policy. The next event will be held in Washington D.C., April 16-17, 2020. (See www.smartfabricssummit.com.)

This year’s open meeting at the show was led by its new chair, Chris Semonelli, vice president, sales and marketing for E-Squared, Newport, R.I. Semonelli expressed the particular need to reach young people to interest them in the business of textiles. “We have a lack of a pipeline in our industry,” he added. ATP has 200 members “and people from all facets of the industry,” and offers real opportunity for young people as they prepare for their future industry careers.

SUCCESS IN MILITARY BIDS

The U.S. government is the largest buyer of goods and services in the world, creating opportunities for everyone, said Jennifer Fennell, CPM, director of procurement for Polo Custom Products, Topeka, Kan. Fennell and Jeff Papalia, textiles program manager for the National Industries for the Blind, outlined the steps to successful military contract bidding.

Military contract bidding can look complicated when starting out, Fennell said, but becomes easier as you become more familiar with the application sites and military specs.

Papalia and Fennell walked attendees through the Federal Business Opportunities (FBO) website, FedBizOpps.gov. Searches can be set up, saved and scheduled by key word or key words; “Quick searches” can be run without logging in, but there are numerous benefits to creating an account, according to Papalia. He also recommended setting up multiple searches to avoid missing opportunities.

Textiles’ critical role in NASA’s missions

NASA was among the exhibitors that also provided presenters at IFAI Expo 2019, where NASA representatives stressed the importance of textiles used in the International Space Station (ISS) and for future space missions.

Molly Harwood, soft goods designer at NASA, commented: “The need for soft goods is everywhere.” Everything that goes to the ISS goes in a fabric bag. There’s also a push to make fabric products that can become something else once aboard the ISS, and inflatable devices are especially useful.

The stakes, of course, are unusually high: materials, how the end product is assembled, product life cycle and use must all be carefully considered.

Challenges in zero gravity

One of the challenges in zero gravity is sweat. The careful thermal balance that’s possible on earth is interrupted in space, because there’s no convection (hot molecules rising and cold falling). As Mary Hakam, technical advisor with NASA, explained in a campfire session, the moisture on the skin simply stays there.

The Hohenstein Institute is working on a solution for the problem of sweat. Senior scientific expert Jan Beringer presented a session about the results of the company’s experiments on the ISS. Spacetex-1 in 2017 and Spacetex-2 in 2018 collected data about three shirts made from fabric with proprietary formulations. One shirt was found to be considerably better at keeping the moisture off the astronaut’s skin. This technology may also be useful on earth for garments in extreme environments.



NASA representatives provided demonstrations of the Robo-Glove, with potential applications on earth in construction, manufacturing, medical uses and other market areas.

More to come

The problem of odor has yet to be conquered. Evelyne Orndoff, senior textiles engineer, NASA, also discussed the issue of sweat and clothing—and odor control. “Polyester always smells, treated or not,” Orndoff said, so NASA is now considering merino wool because “you buy a little more time.”

Orndoff also described specific challenges related to NASA’s planned return to the Moon in 2024. The surface of the Moon has a very fine dust—.05 microns—that she described as “tiny razor blades that cut everything.” Spacesuits for this mission must be designed with textiles that can withstand this hazard, an issue Orndoff puts in the hands of the experts. “We don’t make anything,” she said. “We rely entirely on the textile industry, and it should be that way forever.”

STUDENT DESIGN CHALLENGE WINNERS

More on the floor

→ **ChroMorphous** patent-pending technology, developed at the University of Central Florida, Orlando, is an active, color-changing e-textile that allows the wearer to control the color and patterns of clothing or accessories with a smart phone. When the technology is incorporated into a fabric product, each thread can be activated, making a variety of different colors and patterns possible. As with a traditional fabric, it can be cut, sewn, washed and ironed. The company is working with manufacturers to commercialize the technology.
www.chromorphous.com



↓ **SOL-LUX®** displayed its solar-powered, smart window awnings. Battery-powered and charged by sunlight, the awning will automatically extend and retract in response to the sun. With no electrical wiring, it's simple to install and costs nothing to operate.
www.sol-lux.com



→ **A+ Group** showed its line of quick-release buckles for harnesses, backpacks and other gear that makes it possible for a soldier, for example, to remove heavy clothing or gear to escape quickly from a hazardous situation that requires shedding weight or bulk. The company also makes quick-close and release closures that replace zippers in backpacks.
www.aplusproducts.net



← **Consew®** now has available a sewing machine that “does everything,” according to the company, and is economically priced.

The Model 2206RB-14-7DD has fully automatic functions with display, a large workspace and a variety of improved user-friendly functions.
www.consew.com

→ **Franz Barta GmbH** elastofix® transfer print technology is designed to be durable and extremely stretchable, making it well suited for traceability and individual marking of products, as well as QR codes. A complete bond to the material results in a smooth surface for good abrasion.
www.barta.at

The Advanced Textile Products and Narrow Fabrics Institute, divisions of IFAI, recently selected the **winners of the 2019 Advanced Textiles Student Design Competition**. University of Minnesota-Twin Cities students **Ian Harris, Warda Moosa and Mary Xiong** took first place honors for their project “Emergency Avalanche Transceiver Garment.”

The garment was developed for skiers and snowboarders in the backcountry to provide an all-in-one solution as an avalanche beacon harness and jacket, used in an emergency to locate and rescue people caught in an avalanche. The most common cause of death is a lack of oxygen, so finding a buried victim in 15 minutes or less is critical. Because electronic devices like cell phones can interfere with the signal of the beacon, and gear such as a shovel can partially block the signal or create spikes, there was a need to create a device to overcome these issues.

The inside of the jacket incorporates an integrated harness system to keep the beacon pocket and jacket secure on the body, using adjustable elastic straps and plastic buckle clips. Fabrics used included heavy Nylon Ripstop with a GORE-TEX membrane, lightweight Nylon Ripstop, knit jersey, cell signal-blocking Faraday Defense material and clear plastic to make the cell signal pocket waterproof.

Patagonia Inc. was the sponsor for this project brief and provided materials to aid in research testing and prototyping. The team won a prize package worth more than \$6,000, which included a trip to IFAI Expo 2019.

Second place was awarded to **Marina Lee, Farah Alfayruz and Fatimah Alfayruz** from the University of Wisconsin-Stout for their project “Hamayh Suit.” The garment, designed with safety, comfort/ease and functionality in mind, was developed for gas station attendants and gas pipeline workers who encounter some of the most hazardous and harshest work environments.

Third place went to students **Jessalyn Bennett, Susanna Bordelon and Cecily Ripley**, also from the University of Wisconsin-Stout, for their project “Anti-Malaria Dress.” The garment incorporates a unique design that stands out from other current malaria protection products, and includes features such as portability, non-chemical mosquito repellency and accessibility for mothers to breastfeed.

The Advanced Textile Products Student Design Challenge is an annual contest established to encourage college and university students of design, textiles engineering, and allied curricula to solve safety and protection problems using technical textiles and narrow fabrics in functional designs. For information, visit <https://advancedtextiles.ifai.com/resources/student-design-challenge>.



FIRST PLACE: First place was awarded to the Emergency Avalanche Transceiver Garment, created by University of Minnesota-Twin Cities students Ian Harris, Warda Moosa and Mary Xiong.



SECOND PLACE: The Hamayh Suit, created by Marina Lee, Farah Alfayruz and Fatimah Alfayruz from the University of Wisconsin-Stout, earned second place. The suit is designed to protect pipeline workers and gas station attendants.



THIRD PLACE: Third place was awarded to the Anti-Malaria Dress created by Jessalyn Bennett, Susanna Bordelon and Cecily Ripley, also from the University of Wisconsin-Stout.

SPECIALTY FABRICS

Automation, productivity and efficiency were top-of-mind for attendees at IFAI Expo 2019 in Orlando—plus the need to work together with suppliers, manufacturers, government agencies and educators to take textile theory to profitable practice. Thousands of show participants took advantage of the educational opportunities to learn about what works, what doesn't, how to find new products and markets and the trained and talented staff to make things happen. From shade products to space products, face-to-face information exchange means real-world opportunity.

INDUSTRY 4.0

What does it mean for you?

Industry 4.0 is a German initiative that began in 2011. The loose definition focuses on four main areas: interconnection (sensors, machines and devices), information (free-flowing information), assistance (robots/technology making a worker's job easier and more efficient), and better decisions.

Jonathan Palmer, CEO of Autometrix Inc., presented the session "Industry 4.0 for Small Businesses," at the show, saying that Industry 4.0 has not yet been achieved; today's industry ranges somewhere between Industry 3.7 and Industry 3.9. According to Palmer, issues that stand in the way between the industry of today and Industry 4.0 include: the high costs of upfront investments for new systems, software and technology; every business has to create a new business model; ROI is unclear; and there is no agreement about the "buzzwords" associated with Industry 4.0.

Industry 4.0's idealized process goes beyond today's standard process and will rely heavily on digital elements such as CAD software, cloud computing and e-commerce.

Large corporations have the capacity to make upfront investments for high-tech solutions; smaller businesses will find it more challenging to prepare for the future. Palmer suggested companies not wait until Industry 4.0 has arrived, but instead identify principles to apply, recognize that technology will continue to evolve, and choose to partner with companies that can support their business goals and build toward the future.

Don't overlook overhead

Awning Tracker's Gary Westlund knows what he's talking about when he says, "Overhead is a real cost. Unless you properly account for overhead on job bids, you are just guessing." Westlund gave a straight-talk presentation on Oct. 3, telling attendees he has owned and operated his own awning business for 25 years, driving an increase from \$400,000 to \$6 million in annual revenues. He has since sold the business and now works as a business coach to other awning companies.

He recommends that business owners accurately identify the true costs of a job: including costs of goods, direct and indirect labor costs and overhead. Using a simple pricing strategy of costs of materials times three is not good enough, he cautions, adding: "Learn to tailor pricing to the job and avoid bad jobs, if you can."

Westlund discussed common methods of estimating jobs: percentage of project costs, cost multipliers and the billable hours methods. The billable hours method is what he recommends, which involves dividing the total cost by billable hours.

To build a successful company, Westlund suggests, "Stay out of trouble by doing what you do best; avoid jobs that you sense will be trouble." And don't try to price match your competitors; instead, build alliances and outsource tasks when it makes sense—such as with digital printing.

His three take-aways: Calculate overhead accurately, price jobs with confidence, and focus on achieving your profit goals.

Developing effective PPE

Marc Mathews recalls his time as a Marine stationed in Iraq, where he wondered about the design and origins of the personal protective equipment (PPE) he wore. "Who made this?" he wondered. "Who thought this was a good system? Did they test it?"

Mathews is a research associate with the Textile Protection and Comfort Center (TPACC) at North Carolina State University, and is now part of a team that researches, tests and evaluates the comfort and protective performance of textile materials, garments and ensemble systems.

The global market for protective clothing was valued at \$8.8 billion in 2019 and is projected to reach \$11.9 billion by 2024, he said. In particular, the smart PPE market is expected to see a 16 percent compound annual growth rate (CAGR) from 2019 to 2023. North America is the largest market.

In a market with high stakes and complex architectures, a product may have many parts or layers; the design must balance protection with comfort; and interfaces, such as where a glove meets a suit, are critical to effectiveness. It can be difficult to capture all user needs.

An effective process draws from an engineering-based approach for complex systems, such as an aircraft carrier, and applies the process to the development of protective clothing. This helps to reduce overall technical and acceptability risk, reduces costs, systematically defines technical requirements, makes informed decisions earlier in the process, and better optimizes performance trade-offs, such as comfort verses protection.

Mathews offered an overview of the approach, and noted that one of the many challenges is that change can be difficult for the end user. Users often have the most specific information that developers need, and bringing them into the process early helps to avoid late-stage revisions. "Users are very willing to tell you what you are doing wrong," he said. A developmental approach also helps to capture unspoken user expectations. The goal is always to make better systems, more efficiently, at lower risk, and give the end user protection, function and performance.





BETTER BUSINESS THROUGH SOFTWARE

The importance of software technology for the manufacturing industry was highlighted during a pre-conference education session presented by Bob Fatahee, owner, and Mike Falahee, president, of Marygrove/Sun Protection of Florida. Technology has helped Marygrove grow significantly—and has allowed it to better compete with companies that offer quick services and delivery, like Amazon. Software technologies that Marygrove utilizes include:

- A software platform accessed by consultants through iPads that includes a presentation on the company's products and also collects on-the-spot customer information.
- An awning simulator accessed on an iPad that shows a client what a particular awning would look like on the client's house or business. The simulator also includes a product selection section, awning size determination section, installation accessories page, and a confirmation/checkout tool.
- A customer portal that all Marygrove customers can access to track their purchases and view an installation video to show the installment on their property was done correctly.

Through these and other software technologies, Marygrove has been able to implement same-day contact with customers, has reduced its number of giveaways and discounts, and now experiences higher close percentages and better upsells.

SALES SUCCESS ADD A DOSE OF PASSIVE AGGRESSION

Chris Semonelli, vice president, sales and marketing, E Squared, and president of Coated Technical Solutions, said he has "a philosophy of being assertive with passive aggression" when it comes to sales. "You need to have a deadline with customers and R&D, and make frequent visits. Emails and faxes are great, but you can't look customers in the eye and find out about opportunities," advised Semonelli at a campfire session at Expo 2019.

Semonelli recommends developing tactical steps to plan quarterly trips, detailed enough to reflect personal obligations like doctor appointments and vacations as well as trade shows and customer meetings. He notes strategic objectives in this calendar as constant reminders of goals he's driving toward, and also develops a trip report for each week: including an action plan, a key customer list and follow-up tasks.

Semonelli also has a list for actions that a particular territory will require, including sending out samples and thank-you notes, setting deadlines, documenting promises, making frequent visits and frequently reminding people in your organization about their assigned tasks.

These tactics, said Semonelli, will "force the organization to follow your cadence. In the end, you're the one who needs to come through."

IFAI ON STAGE

New leadership for IFAI

Each year, the Leadership Development Committee of the Industrial Fabrics Association International (IFAI) follows a detailed process outlined in association bylaws for electing new board members. Joining the IFAI board of directors:

- Elected to their first three-year director terms: **Ron Houle**, president of Pivot Step Consultants LLC in Washington, D.C.; **Jonathan Palmer**, president and CEO of Autometrix Inc. in Grass Valley, Calif.; **Marc Shellshear**, general manager of Value Vinyls Inc. in Grand Prairie, Texas.
- **Amy Bircher** has been elected as new first vice chairman/chairman-elect. Bircher is president of MMI Textiles Inc. in Westlake, Ohio.
- **Roy Chism** has been elected as second vice chairman. Chism is president of The Chism Company in San Antonio, Texas.

Kathy Schaefer, IFM, is now IFAI's 52nd board chair. Schaefer is COO of Glawe Tent and Awning Company in Fairborn, Ohio, and is interviewed on page 22 of this issue.

Ending their terms on the IFAI board of directors: **Brian Rowinski**, vice president, Rainier Industries Ltd; **Dennis Bueker**, national sales manager, Miami Corp.; and past chair **Katie Bradford**, MFC, IFM, owner, Custom Marine Canvas.

2019 CHAIRMAN'S AWARD WINNER Scott Campbell, Rainier Industries

The Chairman's Award (originally, the President's Award) is an honor bestowed by the chairman of IFAI to an individual that has had an extraordinary and meaningful impact on the association. It is rarely given, and awarded at the sole discretion of the IFAI chairman. At IFAI's annual meeting at IFAI Expo 2019, IFAI chairman Steve Ellington, president of Trivantage, presented the highly respected award to Scott Campbell, CEO of Rainier Industries Ltd. in Tukwila, Wash.

"Scott has been chosen to receive this award for the leadership and guidance demonstrated during last year's search for IFAI's new CEO; for his willingness to always step in when the association needs his help (he graciously volunteered to sit on the IFAI board of directors as past chairman when we needed him); he served on the Industrial Fabrics Foundation board of directors for several years, and is always a steadfast and true advocate for IFAI and for all of the members of the association," said Ellington. To see a list of previous recipients of the Chairman's Award, please visit www.ifai.com/chairmans-award-recipients.



IFAI's 2019 Outstanding Volunteer Awards

IFAI's Outstanding Volunteer Awards recognize members who generously give of their time to serve on different boards, task forces and committees, judge competitions and provide education and leadership to others in the industry.

This year's winners: **Amy Bircher**, president, MMI Textiles Inc.; **Jonathan Chakales**, national sales manager, Marlen Textiles; **Valerie Cuchna**, MFC, Material Resources Liaison, Fabric Images Inc.; **Wendy McBay**, marketing, Tensar Intl. Corp.; **Brian Richardson**, president, L & A Tent Rentals Inc.; **Eric Sevy**, production manager, Sugarhouse Industries.

The Outstanding Volunteer Awards were created in 2012, designed to recognize volunteers who have regularly gone above and beyond to help, guide and advise. Since 2012, 33 people have received this award.

SHADE AND WEATHER PROTECTION

From awnings and canopies to fabric structures and tents, shade is another form of personal protection that has been a mainstay of the specialty fabrics industry for more than a century. Even in this traditional market, however, progress in fabric and fabrication technology mean any kind of fabric product can have the high-tech advantages that consumers are coming to expect. At IFAI Expo in Orlando, visitors gained access to experts across the field.

DESIGNING SHADE FOR HUMAN PROTECTION

Australia has a very high rate of skin cancer, so it's not surprising that the country has led the world in the development of shade cloth, Chris Nolan told attendees. "Even in the temperate areas where most people live, we have an outdoor lifestyle," said Nolan, managing director of Nolan.UDA Pty Ltd, New South Wales, Australia. "The issue is that we have a very high UV index seven months of the year."

The Australian standard AS 4174:1994 was the first standard worldwide specific to shade cloth and its outdoor applications, said Nolan. A 2018 revision introduced a subsection "Human shade protection fabrics," which included:

- A new rating measure termed "Ultraviolet Effectiveness"
- Performance requirements for the resistance of the fabric degradation by light, including limits on strength loss and color fading.

Terminology for rating the degree of solar protection offered by shade cloth includes shade factor or shade coefficient, UVR block, ultraviolet effectiveness or UVE, cover factor, PAR (the percentage of photosynthetically active radiation that passes through a fabric) and ultraviolet protection factor or UPF.

Shade factor or **shade coefficient** is the percentage of normally incident radiation between 290nm and 700nm (both UV and visible light) not transmitted through the material.

UVR block is similarly defined, but with a narrower wavelength band between 290nm and 400nm (both UVA and UVB).

Ultraviolet effectiveness or **UVE** is similar to UVR block, but the calculation puts more weighting on the biologically damaging UVB radiation (that is, wavelengths between 290nm and 320nm).

Although determined by the degree of radiation penetration of the specific wavelength 350nm, **cover factor** is designed to be a relative measure of the percentage area of the cloth comprising yarn and fiber, or density, rather than shading effectiveness.

Ultraviolet protection factor, or **UPF**, is a measure similar to solar protection factor (SPF) of sunscreens. Basically, it's the duration of exposure required to accumulate a sun-burning does of radiation relative to no protection.

In addition to a shade cloth's protective ratings, the design of the structure itself must be considered when determining the effectiveness of a structure to protect people from harmful doses of sun, Nolan said. Designers should consider the location and angles of the sun during the summer months and the times of day that the structure will likely be in use. For example, a school playground is more likely to be in use during morning and mid-day hours, so the location of the sun's rays and the shadows cast by the structure in those hours would be key to a protective structure.

2019 Fabric Structures Student Design Competition winner

The Fabric Structures Association (FSA), a division of IFAI, announced the winner of the 2019 Fabric Structures Student Design Competition, in which students were challenged to design a fabric structure that provides shelter and architectural interest for a public or commercial site.

First place went to Omar Fabricio, Avellandea Lopez and Ramon Sastre for their project "Vertex Pavilion" (photo above). The Vertex Pavilion is a structure of deployable arches of 90 square meters built, light, modular and transformable; part of a doctoral research project on deployable structures with articulated straight bars and maximum control of movement. Construction was supported by the Manufacturing Laboratory of the School of Architecture, Art, and Design at the Tecnológico de Monterrey, in Barcelona, Spain. Students had the opportunity to fabricate the arches using wood and built the joints with PVS pipes. The arches were constructed in the courtyard of the School of Architecture.



Knitted shade

Shade has been a requirement since ancient times, but very little technological development occurred until the last 30 to 40 years, said Andrew Nasarczyk, senior manager, research and development, GALE Pacific Ltd., Braeside, Victoria, Australia.

HDPE (High Density Polyethylene) knitted shade fabric offers high strength, good UV resistance, and is recyclable. Nasarczyk walked attendees through the processes of fiber extrusion, warping, knitting and heat-setting of two HDPE types, monofilament and tape yarn, along with the advantages and disadvantages of each type. The fabric lends itself to shade structures with interesting shapes and colors, and is both durable and easy to clean. As the market matures, shade fabricators will continue to push the limits of design, he said.

Common testing parameters include fabric weight, tensile strength, tear resistance, burst force, biaxial stability and flame retardancy. The fabric's Achilles heel, Nasarczyk said, is that because it is an oil-derived product, its inherent flammability isn't ideal. Different jurisdictions have different requirements for flammability tests, which makes it challenging to figure out if a fabric is in compliance with local codes. Flame retardants are also a "tricky additive," he said. The retardants themselves are an environmental contaminant, impact UV life, and affect color, so manufacturers have to adjust their own pigment to account for that fact.



AVOID EXPENSIVE MISTAKES WHEN APPLYING GRAPHICS

Bill McSpadden's session on graphics for small-to-medium fabricators focused on avoiding expensive mistakes that turn profitable projects into unprofitable ones. McSpadden owns Capitol Awning, located in Richmond, Va.

Sign permits are one example. When is an awning a sign? When letters and logos are applied. In these cases, the awnings will fall under a local jurisdiction's sign regulations.

McSpadden's takeaways for avoiding expensive mistakes:

1. Know what a sign permit is.
2. Consider putting a sign on the awning, rather than having the awning being the sign.
3. Attract attention with color and design.
4. Choose the right method for the graphic and substrate.
5. Standardize and test.
6. PROOF.
7. Consider purchasing a vinyl cutter and software.
8. Retracing is okay, and vectorizing is okay.
9. Consider purchasing an air brush.
10. Set up reasonable customer expectations.

FIRE RETARDANCY REQUIREMENTS AND SOLUTIONS

David Dean, director of research and development at Glen Raven/Sunbrella, led the campfire session, "Fire Retardancy in Shade Structures: Requirements and Solutions." According to Dean, there are currently no federally-mandated fire retardancy (FR) regulations for shade structures in the U.S. The few regulations that have been passed include those at a state level (California and Florida), county level and city level (Las Vegas). The reasoning behind this lack of federally-mandated regulations: in the U.S. there has never been a fire where an awning was the source of ignition.

The federal government is now beginning to move toward implementing more FR regulations, especially for shade sails, PVC screen windows, car ports, playground structures and umbrellas. Dean recommends that businesses become more aware of current FR regulations, especially for commercial buildings, schools, hotels and restaurants. The regulations businesses should be familiar with include: ASTM E84, NFPA 701, California Title 19, CPAI 84, International Maritime Organization regulations and Canadian and European requirements.

Dean recommends contacting the local fire marshal or fire department, manufacturer or distributor, and associations like the Industrial Fabrics Association International or the Professional Awning Manufacturers Association.

IFAI EXPO Show STOPPER WINNERS

All the best from Florida: The eighth annual Show Stopper competition was designed to showcase the best of the best in the industry, from fabrics, equipment and chemicals to services and end products.

Designed to recognize the most popular new products each year from our exhibitors, the Show Stopper Awards acknowledge the newest, most innovative, useful and exciting, effective, efficient and economical entries, as well as the most environmentally sound products at the show. Entries were submitted by exhibitors and displayed on the show floor, with winners selected by a committee of industry experts.

A list of all of the 2019 Show Stopper participants can be viewed online at <https://ifaexpo.com/show-stoppers>.

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Equipment & Tools | InSight Projection System

Autometrix Inc. • www.autometrix.com

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Fabrics, Fibers & Films | Sunbrella® Horizon

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Sunbrella Horizon is a new synthetic leather upholstery product available in two embossed patterns and 30 colors. A three-year warranty against pink staining and a five-year overall warranty are offered.



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Services to Manufacturers | Miller CONNECT

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