



Good IDEAs, Great Products

Social context is a big factor in this year's IDSA Industrial Design Excellence Awards

By Robert Grace

Asian design continues to gather strength, electric and personal mobility is a hot sector (in part due to the risk factors of shared, enclosed public spaces caused by the COVID-19 pandemic), and sustainability is lagging as a core element of many newly designed products. Those are a few of the observations of Jonah Becker, jury chair of this year's global design competition by the Industrial Designers Society of America (IDSA).

Becker, senior vice president of design at San Francisco-based Fitbit Inc., shared his insights in a phone interview with *Plastics Engineering*. The topic of discussion was this year's crop of 124 winners chosen by 40 jurors from more than 1,800 entries that were submitted by designers from 25 countries and regions.

Dubbed the IDEAs (International Design Excellence Awards), the jury had to assess the entries remotely for the first time due to the COVID-19 pandemic, rather than convening as usual at the Henry Ford Museum in Dearborn, Mich.

As for the rise in Asian design entries, Becker notes the tradition of quality design in South Korea and the history of strong brands in Japan, but says China, Taiwan, and others in the region are increasingly flexing their design muscles. This is being driven by the shift in many of these economies from being simply manufacturers and service providers to maturing into global players with their own quality brands and products.

Asia's interest in the IDEAs is borne out by the numbers. In 2020, mainland China submitted 778 entries, South

Korea 324, Taiwan 71, and Japan 26. The U.S. had 519 entries. The number of Chinese entries surpassed those of the U.S. for the first time in 2018, IDSA says, and Asia now accounts for about two-thirds of all submissions.

"Design firms in China continue to make tremendous inroads in visual design excellence and the related mastery of materials and processes selection. This is happening across multiple industries and product price points," says juror Lou Lenzi, a professor of practice at Indiana University's School of Informatics and Computing in Indianapolis, and the former design director for GE Appliances.

Sustainability Lacking

As regards sustainability, Becker says he found this year's group of entries a bit "disappointing." Yes, there were exceptions, and some incorporated recycled materials into their products. But overall, sustainability seemed to take a back seat to other innovations, he says. The consumer electronics sector with its high-performance demands, Becker notes, continues to trend toward making sealed components, which discourages



Fitbit's Jonah Becker, this year's IDEA chair, stressed the importance of social context in winning designs. Courtesy of IDSA

disassembly and reuse. There is more work to be done in this area, he suggests.

When it comes to judging new products and designs, "Context is very important," Becker says, noting that the current environment involves not only coping with a pandemic but a heightened social justice movement. The factors of inclusion, diversity, and equity, therefore, "influenced a lot of the conversations we had."

Valuing Design



Juror Lou Lenzi sees the results of designers having greater input in the products and features they develop.
Courtesy of IDSA

"On one level, this year's entries continue to advance our profession in terms of delivering visual design excellence," says Lenzi, a 36-year, award-winning design veteran.

He notes that firms are focusing on how visual presentation can have an impact on customers. "They realize how investing in a product's visual design attributes and conveyance of ease-of-use can positively impact their customers' overall impression of a brand," he says.

Designers are finally having a "seat at the table," he says.

"The winning design entries contain elements of innovation in product definition, manufacturing efficiency, distribution channels, and sustainability that clearly have the fingerprints of the designer's creative problem-solving process," he adds.

The following is a list of notable award winners whose designs meet IDSA's criteria for innovation and application performance, and which in many cases address sustainability as well.

Gold and Jury Chair Award

ClickCheck

The issues of equality and accessibility played a role in Becker choosing ClickCheck, an entry by TEAMS Design, for his Jury Chair Award. TEAMS developed an affordable vision-screening system for use in developing countries.

More than 2.7 billion people live with uncorrected poor vision and its social and economic consequences, according to eyecare giant Essilor Group. Some 90 percent live in developing countries and lack access to basic vision-care solutions, making poor vision the most widespread disability in the world, according to the World Health Organization.

That prompted TEAMS Chicago to participate in a "See Change Challenge" organized by Essilor Group. The result was ClickCheck, a self-screening solution that costs under \$5 to produce--making it affordable enough for non-governmental organizations (NGOs) to provide for free--and is designed to be passed from person to

person, thus propagating awareness as it goes. It needs no training to use. The ultra-simplicity and low cost of this solution, TEAMS says, makes it a success where other vision-screening apps or kits fail.

The small, telescope-shaped device is injection molded from polycarbonate (PC) and acrylonitrile butadiene styrene (ABS) and has a couple of components of acrylic. "The choice of plastics played a huge role in our design because their properties are integral to many of the functions," explains Paul Hatch, a partner at TEAMS Chicago.



TEAMS Design's ClickCheck, using mostly ABS, PC, and acrylic, offers an affordable vision-screening system for developing countries. Courtesy of IDSA

"For example, the cap that protects the lens at the top needed a little flexibility in order to snap into open and closed positions, and semi-transparency to block the vision of the second eye (when lid is open) but still provide light to it. Tests show that we get an improved reading if enough light gets into the other eye, but it is not in focus," he says.

The body and end cap also needed to be transparent, he explains. "We needed some of the body to be perfectly clear where the numbers are read from the inside and frosted elsewhere to hide the distracting mechanicals and still allow enough light to enter in the right places. Again, testing revealed how much light we needed around and behind the object to get an accurate reading, even when the user wraps a hand around it," he says.

Hatch notes that one part that was more difficult to choose the right plastic for was the long, gross-threaded shaft that the target travels along. It had to have enough tensile strength for the length, be molded cleanly for the thread, and provide self-lubrication to avoid jamming. The team uses a mostly acetal formulation for these requirements.

In the end, because the device uses various plastics, TEAMS designed the product for easy disassembly for recycling and avoided using non-recyclable or contaminate materials.



AWARDS

People's Choice Award and Silver/ Medical and Health

Welch Allyn RetinaVue 700 Imager



Hillrom's easy-to-use smart camera won People's Choice honors. It automates imaging to make retinal exams simple and affordable for healthcare providers. Courtesy of IDSA

In online voting, people selected the Welch Allyn RetinaVue 700 Imager as their favorite entry. Medical technology company Hillrom's Front Line Care business designed this latest model in the company's imager family, with a view to making retinal exams simple and affordable for primary healthcare providers.

This easy-to-use smart camera automates retina imaging with auto-

alignment, auto-focus, and auto-capture features. The device offers flexible workflow options, including connecting with electronic medical record systems and wi-fi, enabling efficient information transfer and seamless integration into a clinical workflow.

The imager can be incorporated in a RetinaVue care delivery model to help primary healthcare providers increase access to diabetic retinal exams to improve patient outcomes while lowering healthcare costs. While not offering specific material details, Hillrom says the product incorporates unspecified injection molded plastic, silicone, magnets, and milled aluminum in its design.

Curator's Choice Award

"i'mnot" Music Instruments

Each year, Marc Greuther, chief curator and senior director of historical resources at the Henry Ford Museum, gets to choose his favorite IDEA entry. This year he also opted to highlight inclusiveness with his student design pick called "i'mnot"—music instruments for non-musicians. Designed by Peggy Li a student at ArtCenter College of Design in Pasadena, Calif., i'mnot is an open-ended musical instrument and subscription service that allows non-musicians to experiment with sound.

It expands the musical instrument market from professionals to non-musicians so that they can play music without knowing music. The i'mnot set includes a DJ mixer, theremin, piano, violin, water phone, xylophone, and erhu, along with an app and monthly



Designed by student Peggy Li at ArtCenter College of Design, this concept—dubbed "i'mnot"—enables non-musicians to create music. Courtesy of IDSA

subscription service. The philosophy of i'mnot is to bring the concept of play back to playing instruments. The electrical components are packaged in injection molded polypropylene (PP) and each small packaging box is made with recycled cardboard.

Best in Show

BESPOKE Refrigerator and Family Hub UX

Samsung's Digital Appliances Design Team earned top honors in the contest for its BESPOKE line of modular, colorful, and customizable refrigerators, which also incorporate user-friendly interaction via its Family Hub UX high-definition touchscreen mounted on the door. The lineup consists of seven versions, from one-door to four-door models, that the user can mix and match, allowing consumers to grow or shrink the refrigeration space they need. Housed in an aluminum frame, the brightly colored external panels are glass,



Samsung won Best in Show for its colorful, modular, customizable refrigerator lineup and interactive Family Hub UX touchscreen. Courtesy of IDSA

while ABS, PP, and polystyrene are used in interior components.

Gold/Student Designs

HanDo Prosthetic Arms

HanDo is a unilateral, below-elbow limb prosthetic designed for child amputees. To accommodate a child's fast-growing body, HanDo makes possible the replacement of individual parts of the prosthetic via its modular design and 3D printing technology to extend the prosthetic's life span and thereby reduce the costs for families, explains Yang-Kun Ou, PhD, an associate professor at Southern Taiwan University of Science and Technology.



This Taiwanese student design of the HanDo prosthetic arm leverages 3D printing and modular components to reduce cost and increase user access. Courtesy of IDSA

Dr. Ou said the team used polylactic acid (PLA) filament to 3D print many of the parts, noting that its structural capacity is more than enough to support a child's everyday use. 3D printing also allows for ease in personalized adjustments and rapid, affordable production.

Components such as the fingers are printed from a soft thermoplastic elastomer (TPE), which gives them the flexibility to easily grasp things, and all parts in contact with the user's skin, especially the socket area, were made using anti-allergenic filaments. The team reinforced the hand-grip cables with Teflon tubing for stability and to reduce rubbing against other components, and all HanDo tapped holes have embedded nuts to keep the material from wearing out during future replacement of individual parts, he adds. These measures not only reduce costs, but save the environment by increasing product lifespan and reuse.

HanDo users can purchase additional kits to accommodate their own needs, and the product app allows families to browse and purchase prostheses. The app's planned augmented reality fitting function will allow parents and children to choose and customize the prostheses together, changing the color, design, and installation. The app will use screenshots and video recordings to

show children what they will look like when wearing the prostheses.

Bronze/Student Designs

T.E.A.R. Mask



A student team at Virginia Tech developed this foldable T.E.A.R. Mask to protect peaceful protesters from tear gas. Courtesy of IDSA

A four-member team from the School of Architecture and Design at Virginia Polytechnic Institute and State University developed a design concept they call the Temporary Ear and Respiratory (T.E.A.R.) Mask that covers the wearer's eyes, nose, and mouth. It is designed to protect individuals from tear gas, and hence their right to peaceful protest.

For the mask they use clear, 2-mm-thick polyvinyl chloride (PVC) sheet, similar to what is used in the rear windows of soft-top convertible cars, explains Alexander Munro, a senior in the industrial design program. "The plastic part is cut from a single sheet and folded and glued with tabs to create the 3D form of the mask," he says. They also used polyurethane foam for the seal around the mask, an injection molded high-density polyethylene gasket cover, a rubber gasket for the exhalation valve, elastic strap, and a chemical-grade filter. The PVC's foldable geometry creates a semi-rigid structure that keeps the mask from collapsing when the user inhales.

Compact enough to fit into a pocket or purse, the mask (including a small carry pouch) weighs just 1.1 ounces. Munro says it is intended to be distributed by relief organizations, such as the Red Cross, so it would be free to users.

Fellow students Ian Annis, Claudia Hasenfang, and Cole Powell worked with Munro on the project.

Gold/Sports, Leisure and Recreation

Awake RÄVIK

There were various electric vehicle (EV) entries in the



AWARDS

competition, among them a Bird Two electric scooter, Dart electric ride-share bike, and a portfolio of six EV concepts by BRP Inc. aimed at demonstrating the viability of electric power in non-traditional applications such as powersports vehicles. BRP, based in Valcourt, Quebec, makes recreational products such as Ski-Doo snowmobiles, Sea-Doo watercraft, and all-terrain vehicles. Sony Corp. even earned a Silver award for its Vision-S prototype electric sedan. But perhaps the most unusual use of electric power came from Sweden's Ride Awake AB, with its Awake RÄVIK electric surfboard. The company says it is built for use by novices and extreme sports enthusiasts alike. "Powered by a patent-pending drive system, the RÄVIK is propelled through any water and over waves with unparalleled efficiency," it claims, and is able to go from zero to 31 mph in just four seconds, with a top speed of nearly 35 mph (30 knots). RÄVIK's unique throttle comes with its own induction charger.



The Awake RÄVIK electric surfboard from Sweden incorporates carbon fiber for light weight, strength, and beauty. Courtesy of IDSA

Most motorized surfboards are gasoline powered. RÄVIK has an interchangeable battery pack that delivers a mixed riding time of around 40 minutes and is easily exchanged with a fully charged battery pack. Watertight seals, together with the water the user rides on, eliminate the need for internal coolants, which minimizes maintenance time.

Philip Werner, one of Ride Awake's three founding partners, created the first electric surfboard company before helping to start Awake. And, while gas-powered "jetboards" have dominated the sector for the past 10 years or so, the company expects electrics

"will most likely overtake them by storm in the next few years."

The dark carbon fiber body uses white paint and black deck padding for visual contrast, though the company notes, "when carbon fiber is skillfully applied in a product, it can be quite beautiful. That is one reason the board is not painted in its entirety, which would be easier out of a production perspective. The main purpose of the exposed carbon fiber and the paint line is to encourage a perception that the board is thin and

light." The company does not reveal details about the carbon fiber in use, other than to state: "Made by hand with a composite construction, the board's hull is built to last."

The RÄVIK board comes with the Awake app, which allows the rider to choose a power setting that best matches his or her skill level for optimal safety. The electric drive has the added advantage of reducing noise and water pollution.

Silver/Lifestyle and Accessories

WellBeings CBD Nano Mist Inhaler

WellBeings CBD Nano Mist Inhaler is a product that meets the demand for user-friendly devices that deliver cannabidiol (CBD), a chemical compound extracted from cannabis and hemp plants. This combustion-free delivery device, with its pocketable form factor, delivers a precise dose that is said to allow up to eight times more bioavailability than standard CBD. The result is a highly effective, non-burning delivery method with near-immediate absorption, onset, and effect.



MINIMAL designed this CBD inhaler using Eastman's Tritan copolyester resin for the chamber and silicone for the mouthpiece. Courtesy of IDSA

Designed by Chicago-based MINIMAL Inc. for Loop Labs, the device uses Eastman Chemical's Tritan copolyester

resin for the chamber of the inhaler and medical-grade silicone for the removable/cleanable mouthpiece. The inhaler's design "eliminates the social stigma with which inhalers are often associated," according to MINIMAL, and "without being overly clinical, the product creates a sense of legitimacy and trust."

Becker praised the device's "elegant design" and commented that this is "one of many examples of bringing a more premium product and brand approach to the growing CBD/marijuana industry." (See related story on cannabis packaging.)

Gold/Medical and Health

REAL Immersive System

More than 3.3 percent of Americans live with the consequences of stroke, which often seriously impairs motor and cognitive skills. Studies show virtual reality (VR) could be a valuable tool in helping to rewire neural pathways, but no one has commercialized a hardware/software product solution tailored to the needs of rehab patients with a low-cost/at-scale product. The REAL Immersive System has been developed for such needs, according to those who conceived it.



The REAL Immersive System designed by Delve is a simple, portable rehabilitation tool to help stroke patients. Courtesy of IDSA

Delve design studio of Madison, Wis., worked with California medical device maker Penumbra Inc. to develop REAL, a simple, portable rehabilitation tool that can be used at a patient's bedside, in a therapy gym, or a mobile health location. The system is radically different from other rehab technologies because of its versatility and mobility. Its components are a VR headset, sensors, and a tablet with an app that allows a clinician to administer and monitor a therapy session.

REAL uses multiple body sensors and a unique headset designed specifically for patients with limited strength and mobility. To make rehab fun, the immersive activities employ all the tricks of game design to engage and motivate patients. Because the system is wireless, a therapist can help with a patient's movement. The

patient will see an avatar moving as if it were his own body, which encourages development of new neural pathways.

Therapists see what the patient sees on the tablet, which they use to select various activities, adjust activity parameters, and monitor the patient's experience. Data from the patient's movement are securely saved for easy documentation, and long-term trending information can guide recovery.

Chris Strahm, Delve's lead project engineer, says the housings are molded from a PC/ABS blend, for its "good moldability, finish, and durability."

Silver/Home

Bottle Bath

The designers of Bottle Bath say they created it with the goal of helping make parenting life easier. This three-in-one device washes, sterilizes, and dries baby bottles and related accessories with the touch of a button. Parents no longer hand-wash bottles, sterilize them, and let them air-dry. Bottle Bath does all three in a single process, in less than an hour, that saves water as compared with handwashing.



Bottle Bath washes, sterilizes, and dries baby bottles and related accessories in one step at the touch of a button. Courtesy of IDSA

The product was designed by two dads from Perth, Australia: Ricky Hee, a management consultant and father of three, and Alex Djojoutomo, a property consultant with two kids of his own. Hee and Djojoutomo spent more than four years developing the product and did so in conjunction with Singapore's Stuck Design Pte. Ltd., and Malaysia's Orca Creation Sdn. Bhd. The product's entry says it is made of "BPA-free plastics." That often refers to Eastman Chemical's Tritan copolyester resin, but attempts to confirm that before deadline were unsuccessful.

The device features a clear plastic dome, sitting atop a molded base. One can load up to four baby bottles and related accessories into the system's upper and lower trays. When a parent presses "start," upper and lower high-pressure rotating water jets clean gently yet thoroughly in wash and rinse cycles. High-temperature steam helps sterilize bottles and accessories. An air vent ducting system introduces warm air into the main dome, drying bottles and parts in the shortest time possible, the developers advise. Through the dome's circular design, a vortex airflow is created, maximizing the 360-degree coverage of Bottle Bath's drying capability.



Commercial production began this summer, with products due to ship later this year. Retail price is U.S. \$499.

Silver/Office and Accessories

Scotch Clip and Twist Tape Dispenser

3M Co. developed a new type of tape dispenser called Clip & Twist that it says can “go anywhere, clip to anything, and quickly transform any area into a space for doing projects.” The aim was to create a more compact tape dispenser that could be stored off a desktop.



3M Co. aims to reinvent the basic Scotch tape dispenser with this form factor that clips to vertical or horizontal surfaces. Courtesy of IDSA

Designed by the 3M Design + 3M Scotch team, the clip functionality of the lightweight, portable product allows the dispenser to be mounted on vertical or horizontal surfaces. A dual-axis cutting arm enhances adjustability and the dispenser affords users easy, one-handed dispensing. The fact that the dispenser isn’t free-standing and hence doesn’t need to be weighted and can be reused repeatedly helps to reduce the product’s carbon footprint.

The components are injection molded of ABS, with a second TPE shot and a rubber handle.

Bronze/Medical and Health

Cuddly Bird

Cuddly Bird is a vibrator that is designed to encourage Asian women, especially Chinese women, to “discover and develop their sexual preferences and set them free from traditional bounds,” according to the designers.

The double-stimulating Cuddly Bird combines the two functions of clitoris massager and vibrator in one compact size. The waterproof device uses both ABS and a two-shot, food-grade silicone, and comes with a



This soft, unthreatening Cuddly Bird vibrator is designed to help Asian women claim more control over their sexuality. Courtesy of IDSA

magnetic illuminated charging base and a clear dome for storage.

Designed by Shenzhen, China-based inDare Design Strategy Ltd., the device aims to attract newcomers by reducing anxiety through its appealing and cuddly appearance, with the soft silicone surface for a pleasant feel. Both the suction and vibration functions are adjustable in four strengths from subtle to rhythmic pulsation.

The manufacturer is Courage and Wisdom, a start-up company in Shenzhen that is part of Shenzhen Youxing Technology Co. Ltd. Cuddly Bird is Courage and Wisdom’s first product. The IDEA entry states that the product is breaking sex toy sales records in China, selling more than 50,000 every month.

Bronze/Home

Midea Wall-Mounted Mini Washing Machine

Adding a mini washing machine in the home can change laundry habits. It washes a small amount of clothes separately from other loads, frequently, and finishes laundry quickly.

Designed by Wuxi Little Swan Electric Co. Ltd., the Midea wall-mounted mini washing machine features a clean and concise design to match the young image of Midea, a home appliance giant in China. The product is designed to be the



Wuxi Little Swan Electric Co. says its Midea wall-mounted mini washing machine can change laundry habits. Courtesy of IDSA

thinnest among competing products. It can be operated directly from the door based on a user's eye level, and a wi-fi function allows detailed operations to be initiated or tracked via mobile phone. The unit claims eco-friendly status by using small amounts of water and electricity.

Wuxi Little Swan says the 25-kg (55-pound) machine is made with ABS, acrylic, and glass.

Silver/Social Impact

Music: Not Impossible



Not Impossible Labs worked with several partners for five years to develop this wearable haptic system that allows deaf people to enjoy live music through vibrations. Courtesy of IDSA

For five years, Not Impossible Labs (NIL) of Venice, Calif., a technology incubator and innovation lab, championed the idea of a wearable “vibro-tactile” system. The resulting product, dubbed “Music: Not Impossible,” enables deaf and hearing fans to experience concerts together by translating music into tactile vibrations. PC Magazine named it one of the “best wearables of CES 2019,”

Music: Not Impossible consists of a vest, two wristlets, and two anklets with 24 actuators linked to different instruments and sounds that distribute vibrations all over the

body. When a drummer hits a bass drum, actuators in the anklets vibrate. The snare drum causes the wristlets to vibrate, and as vocals get louder, vibrations across the tops of the shoulders grow stronger. Wearers can adjust the intensity of the vibrations, which are visually represented via customizable color LED lights.

The product required 220 systems, which would entail designing and manufacturing more than 21,000 injection molded parts, complete with tooling lead time for 15 unique molded parts, as well as six printed circuit board assemblies and miles of wires, on a very tight timeline. NIL teamed with Philadelphia-based Bresslergroup, Portland, Ore.-based Cinco Design, and a diverse team of partners—including experts in user experience, industrial design, soft goods design, and branding—along with electronics distributor Avnet. Bresslergroup noted that the plastic parts consisted mostly of a mix of PC/ABS and thermoplastic urethanes, while the soft goods included many different materials, among them foam, elastic, and a polyurethane liner.

The designers had to consider the visual impact of a device that interacts with nearly the entire body and will be worn in concert environments. In the end, progressive design details and constructions from the sportswear and fashion worlds were combined to create a modern lifestyle aesthetic.

Silver/Packaging

Zero Economy Meal Tray

One concept product that takes sustainability seriously is the zero-economy meal tray for airline use, by London design firm PriestmanGoode. Each year, the firm notes, an estimated 5.7 million metric tons of cabin waste is generated on passenger flights around the world. And the infrastructure is often lacking, especially on international flights, to recycle the single-use plastic waste involved.



To reduce the 5.7 million metric tons of airline cabin waste generated each year, U.K. design firm PriestmanGoode used eco-friendly materials to replace single-use plastic for food-service sets. Courtesy of IDSA

The firm launched an exhibition (from September 2019 to February 2020) called “Get OnBoard: Reduce. Reuse. Rethink” at the Design Museum in London to showcase ideas for replacing single-use plastic in food service with more eco-friendly alternatives. The team explored a range of materials for this product. Each element of the resulting, lightweight tray consists of edible, biodegradable, or commercially compostable materials.

The designers examined a variety of certified food-safe materials, including algae, wheat bran, cork, bamboo, banana leaves, coffee grounds, and coconut wood.

They ended up using coffee grounds and husks mixed with lignin binder for the tray; wheat bran for base dishes; algae or banana leaf for the side dish lid; wafer for the dessert lid; coconut wood for the combination spoon/fork; soluble seaweed for sauces and milk; rice husk with a PLA binder for the outer cup; algae for the cup liner; and bamboo for the main meal lid.



Hoping this exercise helps to encourage consumers to change their behavior, PriestmanGoode says that “since launching the concept in September 2019, we have been working with material and catering suppliers to the aviation industry to take our ideas forward.”

Silver/Student Designs

Illusory Material

The “Illusory Material” project, developed last year by Jiani Zeng and Honghao Deng while they were researchers at the Massachusetts Institute of Technology, is a design methodology and computational workflow that allows every designer to play with color, materials, and finishes, or even with material properties that never existed before, in the design process. The project, which became Zeng’s master’s degree thesis, uses the most advanced 3D printing technology in the world: multimaterial voxel printing. Their client is Stratasys, a supplier of 3D printers and technology.



Two designers at MIT used multimaterial voxel 3D printing and a computational workflow they devised to create Illusory Material, which enables designers to realize and manipulate color and texture in physical items. Courtesy of IDSA

“We invented a lenticular 3D printing framework that enables the designer to create dynamic color and texture in a controlled manner,” explains Zeng, who together with Deng separately cofounded a firm in San Francisco named Butlr. (Butlr, an MIT Media Lab spinoff, combines machine-learning software with low-cost Internet of Things device integration to allow commercial properties to analyze customer behavior without violating their privacy.)

With Illusory Material, “we aim to push past the limitations of traditional design, removing the need to simply replicate materials that already exist, creating dream-like material expressions that only exist in the digital world,” she says.

Traditionally, voxel printing requires users to do a lot of coding and computation (using software such as Matlab). “But our method,” Zeng says, “is derived from the traditional 3D modeling process of industrial design, so that every designer who is familiar with CAD modeling can try voxel printing, without any knowledge about coding.”

They say that the process they’ve created “brings freedom to create 3D digital materials into the physical world.”

“With Illusory Material, we propose to get away from surface limitations in object and industrial design by adding another dimension to the material interface,” Zeng says. “By embedding information into three-dimensional matter (voxel), we’ve introduced a material organization that responds directly to user intervention and the environment. With multimaterial 3D printing, we envision a future in product development where the design of surface detail, texture, and refractivity can finally merge with the overall product composition from the beginning of the design process.”

In one application example called “nseen,” Zeng notes that they have developed totally clear, transparent packaging (in this case, for a perfume bottle). But then, through use of lenticular printing, one can tilt the bottle 20 to 30 degrees to view essential text information.

Gold/Home

Triple Care Dishwasher

The compact, countertop Triple Care Dishwasher by South Korea’s SK Magic Inc. not only washes and dries dishes but looks like a cabinet where dishes are stored and displayed. It has UV sterilization and ventilation functions, and a special feature for washing and sterilizing baby bottles. Through the large glass front, a consumer can check on dishes without opening the door, but the half-mirror finish partially hides the dishes from view so as not to clutter the kitchen.



This compact countertop dishwasher from South Korean appliance firm SK Magic drew high praise from juror Lou Lenzi, who previously was design director for GE Appliances. Courtesy of IDSA

The product impressed juror Lou Lenzi, the former GE Appliances executive. “Based on my experience in the major appliance industry,” he says, “we have seen a

number of manufacturers attempt to create products for smaller, urban living spaces. Most of these attempts are uninspired efforts, simply rescaling existing platforms and componentry, shrinking their volume but doing nothing to address the specific needs of the customer in terms of features, functionality, or aesthetics.”

He praises the Triple Care design team for taking a comprehensive look at the use-case and associated operating constraints of a small-space dish cleaning and care appliance. What results is a product that is highly functional, convenient to use, and visually pleasing while residing on a kitchen countertop. “That the solution did not come from one of the big major appliance incumbents made the win even more impressive,” Lenzi says.

The product uses PC, ABS, and PP resins, as well as stainless steel.

Silver/Commercial and Industrial

Cisco Meraki MV Security Cameras



Design firm Whipsaw altered the profile of this Cisco Meraki commercial security camera to make it more elegant and less industrial. Courtesy of IDSA

Though public security cameras are ubiquitous, they are often poorly designed and intimidating eyesores, notes design firm Whipsaw Inc. of San Jose, Calif. Its client, Cisco Meraki, wanted an elegant and “friendly” line of smart cameras for enterprise use. “We flipped the standard security camera form by designing a low-profile bowl shape,” Whipsaw explains

The lens bubble appears as a glassy black liquid, contained by the white bowl, differentiating the brand from the industry standard dome camera. The bubble melts into the bowl, creating a distinct look that blends with enterprise environments. The product line is said to offer robust physical security, flexible mounting, and lens adjustment. The construction is efficient, with structural PC/ABS parts fastened to the inside of the lower bowl, capped by the twist-and-lock lens bubble.

Silver/Consumer Technology

Blackmagic Pocket Cinema Camera 6K

Blackmagic Design, a digital cinema company and manufacturer in Port Melbourne, Australia, says its latest offering, the Pocket Cinema Camera 6K, is the world’s lightest and most affordable professional 6K digital film camera. It is designed for independent filmmakers, TV, and web broadcasters.



Australia’s Blackmagic Design uses a carbon fiber composite body to make this 6K digital cinema camera ultra-lightweight. Courtesy of IDSA

Its carbon fiber composite body has the strength and rigidity of die-cast steel at half the weight and cost, with refined ergonomics for secure one-handed shooting. The camera weighs just under 2 pounds.

Blackmagic Design says the Pocket Cinema Camera 6K, with its 5-inch touchscreen display, allows independent filmmakers to get professional outcomes that, due to financial and technical constraints, were previously difficult if not impossible to achieve.

Priced at U.S. \$2,495, the camera is said to offer the image quality needed for seamless integration into Hollywood workflows indistinguishable from cameras costing five times as much.

To view a gallery of all this year’s IDEA winners, go to: www.idsa.org/awards/idea/preview.

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