2009 40 Under 40 Winners

The 2009 40 Under 40 winners are among some of the best and brightest minds in our industry. They've created innovative systems to solve difficult engineering problems, both in North America and abroad. These young geniuses have won awards and risen quickly to the top in their fields. They've worked hard to bring their projects—and their companies—into the spotlight.

BY DAWN REISS, CONTRIBUTING WRITER, AND AMARA ROZGUS, SENIOR EDITOR MAY 1, 2009

The 2009 40 Under 40 winners are among some of the best and brightest minds in our industry. They've created innovative systems to solve difficult engineering problems, both in North America and abroad. These young geniuses have won awards and risen quickly to the top in their fields. They've worked hard to bring their projects—and their companies—into the spotlight.

But each person is more than just an engineer or a building professsional. They give their time to local charitable organizations and groups, mentor budding young engineers, and work to enhance the industry by thinking differently. These winners have been molded by their upbringing and their mentors, and will pass that resource on to younger professionals. This year's crop of winners is very diverse: they're musicians and athletes, seasoned travelers and thrill-seekers, mothers and fathers, writers and entertainers.

The ultimate Edge Computing handbook

The following pages will make you think outside the box, remind you of what you can do to help others, and push you to be the best in your profession—no matter what your age.

To nominate a young engineer next year, visit www.csemag.com/40under40 .

Christian Agulles, PE, LEED AP, 38

Vice President, WSP FLACK+KURTZ, Las Vegas
New York Institute of Technology, BS Mechanical Engineering
Engineers are known for being resourceful, and Agulles certainly knows how. To put his sons, C.J., 3, and 17-month-old Charlie to sleep, he sings Motown "lullabies" of Al Green and Sam Cooke. When he's not crooning, Agulles, a rabid Jets fan, is overseeing a team of 17 as WSP FLACK+KURTZ's Vegas office director. As the team project manager for the newly dedicated U.S. Embassy in Berlin, Agulles put his ingenuity to work again. The 200,000-sq-ft C-shaped $125 million embassy was rebuilt on the historic site of the original U.S. Embassy near the famed Brandenburg Gate. "Because of the constraints of the historic site, this embassy did not match any of the standards applied to other embassies," he said. "It was completely custom." German fire codes, which focus on constantly moving airflow to help keep trapped people safe, completely contradict American codes that prevent the migration of smoke from where the fire starts, forcing Agulles to create a hybrid of both. He's also served as the lead HVAC engineer on projects like Miami's American Airlines Arena, Dallas' American Airlines Center, and Coliseo de Puerto Rico. Outside of work, Agulles, who has competed in Olympic-distance triathlons, likes to hike in the Red Rocks of Las Vegas with his sons, vizsla dog Barcley, and wife Suzy.

Kelly Altes, PE, 31

Senior Structural Engineer, KJWW, Des Moines, Iowa

Iowa State, BS Civil Engineering

"My job can be very high stress," said Altes, the structural department supervisor who enjoys kickboxing. "So I like to take a punching bag and go to town kicking it." Her other way to de-stress: watching reality and gossip shows. "I just can't get away from it, because it's like watching a train wreck," she said with a laugh. An avid skier with her husband Jonathan, Altes also enjoys showing middle and high school girls the fun in structural engineering with gum drop and spaghetti-stick towers science experiments. One of her biggest technical challenges came with the two-story, 130,000-sq-ft expansion and 144,000-sq-ft renovation of Des Moines Valley High School. The school had multiple floor elevations and existing drawings from previous renovations, making it difficult to update ramps and stairs with their numerous reference points. The biggest surprise came when the contractors, digging in the school courtyard—the future site of the addition—found two old heating fuel tanks. Because the fuel tanks were close to the school gym, significant shoring of the existing gym footings had to be completed prior to removal of the existing fuel tanks. Altes also played a pivotal role as the lead structural engineer for the Manifold Building, a part of the $200 million, 255-bed Sherman Hospital that included a 2,400-ton lake-coupled geothermal system.

Sachin Anand, PE, LEED AP, 36

Co-Owner, Principal, dbHMS, Chicago

Delhi College of Engineering (India), Bachelor of Mechanical Engineering; Oklahoma State, MS Mechanical Engineering

Anand came to the United States in 1994 with a scholarship and $1,500 in his pocket to pursue a master's degree in engineering. Fifteen years later, Anand runs his own heating and cooling design company—which he started at the age of 33—growing it from a firm of five to 35 in 3 years. "Everyone outside of the United States talks about it being the land of milk and honey," he said. "I was fascinated and wanted to see it." Anand, the son of a civil engineer who worked for India's Army Corps of Engineers, now specializes in creative energy modeling, finding "simple and elegant solutions for complex problems." "It's about bringing back the old ways of doing things by using new technology to optimize it," he said. Anand, an adjunct architecture professor at Illinois Institute of Technology, designed Christy Webber Landscape's LEED Platinum certified Chicago office, the first building in Illinois to earn the $1.80/sq ft federal tax credit for achieving 50% energy reduction over ASHRAE 90.1. Anand said the key to success is being "open, frank, and honest with your opinions." Although Anand grew up playing cricket, he now enjoys cooking for wife Deneace and son Siddharth, 6, and frequently volunteers.

Oliver Baumann, LEED AP, 38

President, Ebert & Baumann Consulting Engineers Inc., Washington, D.C.

Technical University of Munich (Germany), Bachelor of Mechanical Engineering, Masters in Mechanical Engineering (Dipl.-Ing.)

At one point, Baumann considered becoming a professional musician. "I'm glad I made the decision I did," said Baumann, who can play the trombone and tuba. Instead, he now strums the guitar to unwind after work and to serenade his wife Cindy Cogil, one of last year's 40 Under 40 winners, with Billy Joel's "Piano Man" and Eric Clapton's "Tears in Heaven." Three years ago, the German-born Baumann moved to the United States to start his own company, growing it from a one-man show to a firm of eight with more than $1 million in revenue. Baumann and his firm are working on 10 possibly LEED Gold and Platinum rated buildings in Germany, Russia, Slovenia, and Turkey, including the "Green Towers," nicknamed Deutsche Bank. Baumann also served as the mechanical project manger for the $20 million Gerhard-Mueller School in his hometown of Biberach, incorporating thermal insulation, daylight harvesting, and groundwater for heating and cooling to make it one of the most energy-efficient schools in Germany. Other projects include the Dubai Pearl and Moscow's Mirax Federation Tower. Baumann serves on two technical ASHRAE committees as well as on an advisory panel helping to develop a research program for achieving net-zero energy buildings.

Neal Boothe, PE, 38

Vice President, X-nth, Maitland, Fla.

Georgia Institute of Technology, Bachelor of Electrical Engineering
When it comes to extremes, Boothe, a father of two, takes it to the top. He's gone skydiving with his wife Leigh, recently ran the Marine Corps Marathon, and likes to rock out on the electric guitar with his company band X-credibles to classics by Pink Floyd, Jimi Hendrix, and Eric Clapton. At work, Boothe oversees production for four offices in major U.S. markets as the principal-in-charge of X-nth's East Coast technical market sectors (healthcare, mission critical, and science), coordinating project managers and manpower in projects that range from renovations and additions to master planning and designing new construction. Projects include: Madison County Medical Center, Medical College of Georgia Dental School, and Physician's Regional Medical Center in Naples, Fla. Boothe's biggest project is the $1.6 billion (estimated) Qatar Petroleum Complex. As X-nth's MEP project coordinator, he oversees 70-plus employees for the MEP design of the 3.5 million sq ft of building space and 2 million sq ft of parking structures that are spread out over 160 acres and includes everything from office space and medical facility to a 1,000-seat soccer stadium. Boothe, who specializes in power distribution, emergency power systems, and lighting, traveled throughout Florida and Mississippi following a string of hurricanes, including Katrina, to help restore power at area hospitals.

Virginia Charter, 25

Consultant, Rolf Jensen & Assocs. Inc., Las Vegas
Oklahoma State University, BS Fire Protection and Safety Engineering Technology
Every engineer needs down time. For Charter, that means a little outdoor action. The former college lacrosse athlete, who founded Oklahoma State's club team, loves wakeboarding, snowboarding, off-roading on ATVs, hiking, and camping with her husband Dustin. Already, Charter, who was named Oklahoma State's Engineering Technology Student of the year as a senior, has distinguished herself as a leader. At RJA, she earned the annual manager's award in 2006 and has been appointed a team leader, supervising two "in-training" fire protection engineers. As a fire protection consultant, Charter works with owners, contractors, architects, and other engineering disciplines to ensure facilities meet building and fire codes and the design intent of the project. As the project manager for the Westgate Planet Hollywood development, she is in charge of creating the facility's fire protection report, developing the master exiting drawings, and assisting in the commissioning of the smoke control systems. She serves a similar role with the multiple-use casino-hotel-residential, 17.5 million sq ft Project CityCenter in Las Vegas. Charter volunteers with Adopt-A-Trail and her church, and serves on a new educational building committee when she's not playing with her dogs, Guinness and Bailey.

Michael Chow, PE, LEED AP, 39

Principal, Senior Electrical Engineer, Metro CD Engineering LLC, Worthington, Ohio
Ohio Northern University, BS Electrical Engineering
This maverick can recite any line from the movie "Top Gun." His favorite: "Talk to me, Goose." (And the three engineers he manages all know it well.) Chow's other passion is working on reducing light pollution. A licensed PE in 18 states, this former Marathon Oil employee is juggling nine LEED-certified projects. "It's about educating everyone on why this is important," he said. "And showing them how it can be a win-win situation." Chow is part of a growing "dark sky" movement: The goal is to have light shine only where it is wanted and needed, to help save energy and also benefit nocturnal animals whose body rhythms can be thrown off by brightly lit buildings and parking lots. To do so, Chow is trying to convince businesses to reduce their interior lights between 11 p.m. and 5 a.m., with occupancy overrides. "Why are we wasting energy?" he asked. "It is expensive to throw light out everywhere." An avid tennis player, Chow has made it his mission to meet professionals like Andre Agassi, Pete Sampras, and Steffi Graf when he's not helping 7th- and 8th-grade girls use their engineering, math, and science skills. He also enjoys spending time with his wife Heidi and their 3-year-old daughter Lily, who has affectionately nicknamed everyone in the family after the Seven Dwarfs in the Disney classic. Chow's other daughter, 2-month-old Ella, is now called "Sneezy."

Mike Ferreira, PE, 39

Senior Fire Protection Engineer, Hughes Assocs., Baltimore
Worcester Polytechnic Institute, BS Mechanical Engineering, MS Fire Protection Engineering
Ferreira needs outdoor adventure, or maybe it's just that the outdoor world needs him. When he's not scuba diving in underground caves or exploring places like Cambodia's famed temple complex, Angkor Wat, or Peru's Machu Picchu, Ferreira is improving fire safety standards to protect others during a disaster. Ferreira has done full-scale smoke tests for nuclear attack submarines for the U.S. Navy and worked on the World Trade Center Investigation team as a subcontractor who helped write a report for the National Institute of Standards and Technology. He's also worked on nontraditional fire protection projects like the Pentagon Shield system to help ward off biological, radiological, and chemical attacks. He's also developed an innovative approach—by incorporating fire behaviors within a traditional building air flow model to examine smoke spread in a building via computer modeling. The method has been used in high-rise office buildings and hotels in the United States. A huge New England Patriots fan, Ferreira enjoys spending time with his wife Mary with whom he's gone rappelling down waterfalls and zip-lining with in Costa Rica, and their 3-year-old daughter Elena.

Phil Friday, PE, 35

Principal, Senior Fire Protection Engineer & Fire Investigator, Harrington Group, Duluth, Ga.
University of Tennessee, BS in Chemistry; University of Maryland, MS in Fire Protection
Friday's love of fire—and learning how to extinguish it—started early. As a child he'd go into the woods and start a campfire or set a tire on fire. During college, he lived at the Tri-Community Volunteer Fire Station while working as part of a team of 30 firefighters. He also spent time as a forest services wildland firefighter working at the North Rim of the Grand Canyon and in Washington's Wenatchee National Forest on the East Slope of the Cascade Mountains. As a fire protection engineer and fire investigator, Friday now designs fire protection systems for mission critical facilities and acts as a forensic engineer. His projects include the Keesler Air Force Base fuel cell hangar that services C-130 Hurricane Hunters in Biloxi, Miss., and a new hangar that will house nine training aircraft at the Naval Air Station in Pensacola, Fla., the home base of the Blue Angels. He also serves as the president of the Greater Atlanta Chapter Society of Fire Protection Engineers. Friday, a former rock climber, and his wife Jennifer enjoy snowboarding.

Andrew Gorton, 31

Associate, Papadimos Group, San Rafael, Calif.
Columbia College, BA Audio and Acoustics; University of Cincinnati, MS Mechanical Engineering
Maybe it comes from being a classically trained pianist. As a noise and vibration consultant, Gorton notices the smallest, softest sounds that most people miss. He tries to control the imperceptible movements within a building. In doing so, he helps ensure that sensitive equipment, like MRI machines, CT scanners, and electron microscopes, have accurate readings and images, down to the atomic level. "In this business, any type of disturbance is a big disturbance," said Gorton, who specializes in noise and structural vibration, noise control, and acoustics. His projects include Arizona State University's School of Journalism TV studio space, which needed to buffer itself from outdoor traffic; and Penn State's Millennium Science Complex, which contains nano-scale research instrument labs within a challenging L-shaped building that is cantilevered out 150 ft in two directions. An avid triathlete, Gorton is training for his first half-Ironman and enjoys chopping wood by hand. He works with organizations like Engineers without Borders, where he taught people in Tanzania how to create water filtration systems out of found materials like a bucket, hose, sand, and rocks.

Tony Hans, PE, RCDD, LEED AP, 35

Principal, Electrical Engineer, CMTA, Louisville, Ky.
University of Louisville, BS Electrical Engineering, MS Engineering
On and off the volleyball court, Hans knows how to get things done. Hans specializes in sustainable design, in particular "high-performance schools," including Richardsville Elementary, the first Net Zero Energy Public School in the country, which has the largest solar photovoltaic system in Kentucky. He was also the project manager for Twenhofel Middle School, the first LEED-certified school in the state. A licensed engineer in 33 states, Hans manages projects in Kentucky, Texas, Ohio, California, Indiana, and New York. He is the principal-in-charge on Houston's Spring Elementary School, which is going for LEED Gold certification with its solar panel roof, geothermal HVAC system, wind turbines, and rain harvesting attributes. The 6-ft-4-in. athlete and father of three girls enjoys adventure racing in 6-hour multisport outdoor tournaments. He met his wife Erica, a fellow University of Louisville volleyball athlete, in college and still plays in three-on-three beach tournaments. In 2006, Hans played on a team that won the Kentucky Derby Festival Classic, the largest outdoor tournament in the United States, and had a chance to play against professionals.

Chris Hewitt, CEng, PEng, LEED AP, 35

Partner, SMS Engineering, Winnipeg, Manitoba
University of Sheffield (U.K.), Bachelor of Engineering
Hewitt loves playing with fire. "Ninety-nine percent of the time I'm behind a desk, but there are times when I'm up to my elbows in mud at a hog farm or at a fire in a house or factory," he said. "We just roll up our sleeves, get dirty, and figure out what happened. If a fire investigator doesn't understand what caused a fire, they usually blame the electrical system, and that's where I come in." As a forensic investigator, Hewitt looks for the tiniest pieces of evidence. He once traced a semitrailer truck accident to a loose nut under the dash, where a small wiring problem led to several major events. Mostly, he designs buildings as an electrical engineer. As the lead electrical engineer, he is overseeing the $250 million, 500,000-sq-ft new terminal; a four-story, 1,600-space parking garage; and upgrades to an existing utility building (powerhouse) at the Winnipeg International Airport. For another project, Hewitt was dropped in the middle of the Thailand to work on a $750 million General Motors assembly plant. "The locals would routinely catch and fry up snakes," he said. "And I don't eat snake." Hewitt, who is British, likes Thai food and hates flying, ended up meeting his Canadian wife Shauna at a German bar in Thailand. They have two children, Ben, 5, and 21-month-old Charlotte.

Craig Hofmeister, PE, LEED AP, 38

Vice President of Engineering Technology, Rolf Jensen & Assocs., Cary, N.C.
Worcester Polytechnic Institute, BS Civil Engineering; MS Fire Protection Engineering
As a child, Hofmeister would light plastic toys on fire to see how they burned. He now balances his inner pyromaniac by watching ice hockey, in particular the Carolina Hurricanes. "If I had the opportunity, I'd watch hockey every night of the week," said Hofmeister, who played hockey in high school, college, and men's leagues. At RJA, Hofmeister oversees the communication among 22 worldwide offices about ideas and technology initiatives including green building and BIM programs. As the technical leader, Hofmeister worked on a fire modeling study for NASA's massive vehicle assembly building in Cape Canaveral, Fla., to predict and help prevent damage if a solid rocket motor ignited in the building during the assembly process. Because rocket motor fuel is metal-based and doesn't require oxygen to burn, Hofmeister had to adapt a fire model to mimic the unique burning characteristics of the fuel to find usable data for heat release and smoke movement within the facility. Hofmeister, a father of three, has been married for more than 15 years to wife Dorothy. He volunteers with Cub Scouts, teaches Sunday school and ushers at his church, and has ridden a camel at the pyramids in Egypt.

Tom Hudson, PE, LEED AP, 32

Technical Consultant, Green Building Services, Portland, Ore.
Oregon State, BS Mechanical Engineering
It's nearly impossible to live in Portland and not be involved in cycling. For Hudson, a recreational cyclist who doesn't own a car, it meant creating a Roman-esque chariot out 16-in. kid bike tires and the frame of an old Kenmore washing machine welded together. The reason: the Ben Hurt III Chariot Wars, an event in Portland's Mini Bike Winter festival. Hudson, the chariot "steed," pedaled while a friend fought off other competitors as a gladiator. For work, Hudson commissions new construction mechanical equipment and verifies and analyzes equipment performance in existing buildings, to help optimize energy usage. At the First Unitarian Church in Portland, Hudson oversaw LEED commissioning for one of the first faith-based LEED-Certified Gold buildings in the United States. He required the design-build contractors to include carbon dioxide sensors in each classroom and provided suggestions for direct digital controls programming, which improved ventilation to each classroom without sacrificing energy costs. Hudson, who helped two orphanages in Mexico install a farming irrigation system, spent 6 months delivering Domino's pizzas in Ireland on a 90cc Yamaha motorcycle.

Erin Inman, PE, LEED AP, RCDD, 38

Senior Vice President, Primera, Chicago
Auburn University, Bachelor of Electrical Engineering; MBA DePaul University
The Batman movies made Chicago's Wacker Drive famous. Inman quickly learned how difficult it is to navigate in real life. As the project director for the power service to the 48-story 155 N. Wacker building in downtown Chicago, Inman had to route cables on the bilevel street through 65 manholes in the middle of the night to avoid rush hour traffic. "It took a year and a half of planning to coordinate everything," she said. "And we had to come out of a manhole and route a 3-by-4 ft concrete duct bank underneath the building and into the electrical room without hitting piers or bending it more than 270 degrees." This, of course, happened while avoiding loading docks and elevator shafts and piers that supported the building. As the fast-track project began, the crew found abandoned piers on lower Wacker Drive. "It was a nightmare," said Inman, who also helped build a school and home on a mission trip to Haiti. "We had to go through more than 1,000 drawings to make sure the piers weren't being used anymore." A self-proclaimed "foodie," Inman is a Food Network junkie and enjoys gourmet cooking, wine tours in Napa Valley, and watching Auburn and Bears football games with her husband Bill, son Austin, 12, stepdaughter Maggie, 14, and stepson Kyle, 10.

Scott Jenkins, EIT, 31

Associate Electrical Engineer, Spectrum, Salt Lake City
University of Utah, BS Electrical Engineering
Jenkins decided to show his appreciation for his wife Jamie this past Valentine's Day in a unique way: he got a temporary tattoo airbrushed on. "It was a tramp stamp, a Valentine's heart with her name in it," he said laughing. "Another engineer and I went. I just couldn't pass it up. It was too funny." Jenkins is certainly known for his sense of humor and his love of technology and gadgets. As an electrical engineer, Jenkins helped Westminster College Science Building achieve LEED Gold Certification by adding daylight harvesting in all classrooms. His other projects include The Center for Advanced Energy Studies, a public/private partnership composed of Idaho State University, private industry, and the Idaho National Engineering and Environmental Laboratory that is researching energy solutions, and the Dixie Regional Medical Center Pavilion. It is a LEED-Gold Certified building. Jenkins started using a tablet PC, demonstrating at a staff-wide meeting how Spectrum could reduce its paper consumption and expenses, and create "on-the-fly" annotation of drawings for clients. The father of two also serves as a Boy Scout troop leader, volunteers at the Utah food bank, and enjoys—much to the delight of his son Jaxson, 3, and daughter, Paige, 1—flying remote-controlled helicopters around the house.

Danna Jensen, PE, LEED AP, 31

Senior Associate, Electrical Engineer, ccrd partners, Dallas
Kansas State, BS Architectural Engineering
Jensen is the type of woman who will get the job done no matter what, even if it means running a half-marathon while pregnant. "I was 26 weeks into my pregnancy so I had to stop and go to the bathroom a lot," she said. "Luckily there were a lot of port-a-potties, but I probably ate up 10 minutes of my race time waiting in line to go to the bathroom." As an electrical engineer, she's worked on many health care facilities, office buildings, parking garages, religious facilities, and telecommunications and data centers. Jensen's accomplishments include working as the project coordinator for the 900,000-sq-ft hospital for Fort Wayne, Indiana's Parkview Regional Medical Center and the 1.1-million-sq-ft C.S. Mott Children's Hospital and Women's Hospital in Ann Arbor, Mich., that is seeking LEED certification. ccrd named her Engineer of the Year, and she is the company's go-to person for sustainability education, helping her co-workers become LEED Accredited Professionals. "As a woman in this male-dominated industry, you still have to prove yourself," she said. "But it forces me to stay on top of everything in case anyone questions me." Jensen, who had first child Kaitlyn on March 14, also enjoys singing bad karaoke, rollerblading, and wakeboarding and snowboarding with her husband Michael.

Shaun Landman, PE, LEED AP, 38

Associate Principal, Arup, San Francisco
University of Cape Town (South Africa), BSc Electrical and Electronics Engineering
Being a team player and leader comes naturally to Landman. Born and raised in Africa, Landman grew up playing rugby, playing in college and in the 1995 and 1999 World Cup Qualifier tournaments on Zimbabwe's National Team, which he represented for 8 years during his early years as an electrical engineer. To see firsthand, find a PlayStation 1 Rugby game that has an action figure named after him. Now, the father of four enjoys fishing with his boys and his wife Mandy, who was his high school sweetheart. Landman leads the electrical team in Arup's San Francisco office, where he served as the project manager for Wal-Mart's experimental stores, incorporating sustainable ideas from cogeneration systems, radiant floors, wind turbines, and photovoltaic panels. Landman got his start in Zimbabwe's capital, Harare, on the Eastgate Office and Retail Complex, the largest commercial development in the country at the time, and the first in southern Africa that used passive cooling to such an extent. Landman's design capitalized on the diurnal temperature swings to create a non-air conditioned, mixed-use building that stored nighttime temperatures in exposed concrete and vaulted ceilings and exhausted heat during the day.

Stephen "Steve" Lieber, PE, 31

Mechanical Project Engineer, Westlake Reed Leskosky, Cleveland
University of Arizona, BS Mechanical Engineering
Lieber likes to joke that had he might not be working as an engineer today had he made a $1 million half-court shot during half time of an Arizona basketball game while he was in college. "It was straight on, but an inch or two from the rim," said Lieber, who never played organized basketball. Instead, he's coaching his 8-year-old son's T-ball games and bowls in a weekly league, where his highest score is 273. Lieber's work accomplishments includes renovating the historic Hanna Theater and the Cleveland Clinic's new Center for Autism, a benchmark for environmental design to improve behavioral and sensory progress of people with autism. As the project mechanical engineer for The Maltz Museum of Jewish Heritage in Beachwood, Ohio, Lieber, the son of a Rabbi, creatively reconfigured the HVAC unit, which couldn't be put inside the building because of budget constraints but needed to be hidden from the public's view despite the low-lying building. To do so, Lieber put in less expensive units, hid the ductwork under the ground, and put a screen wall above and around two units to conceal it from visitors' rooftop views. The father of three enjoys cruising with his wife Nicole and their four generations of extended family.

Abby Lipperman, PE, 29

Associate, Electrical Engineer, ccrd partners, Dallas
Kansas State, BS and MS Architectural Engineering
Lipperman likes to joke that she is a "classic engineering nerd" who enjoys getting in touch with her inner kid. "I even have an ant farm on my desk," she said with a laugh. "And I've named a couple of them after people in the office." When Lipperman isn't planning her next birthday party at Medieval Times, she is busy designing electrical systems for hospitals and volunteering with the Dallas-affiliate ACE mentoring program. Lipperman recently served as the lead electrical engineer on Texoma Medical Center, a new 360,000-sq-ft hospital in Denison, Texas. Not only did Lipperman design the entire distribution system for the center, but she and a team of architects and contractors read the book "The Toyota Way" as part of a Lean design process, and attended an eight-week book club to brainstorm ideas to streamline building a full-service hospital from the ground up. "I look really young and being a female electrical engineer sometimes catches other engineers off guard," she said. "But I enjoy proving myself." Lipperman, who was married at the Bellagio Hotel in Las Vegas 3 years ago, is expecting her first child in June with husband Brody.

Brandi McManus, CEM, 32

Global Energy Services Manager, Schneider Electric Buildings Business (TAC), Dallas
Oklahoma, BS Environmental Engineering; MBA Southern Methodist University
Any time McManus travels internationally, she goes with a pre-scripted joke: "I know I'm an American talking about energy efficiency and we really are the bad boys of the planet." She hopes to reduce the amount of energy buildings use by recruiting and training "energy champions" who will help Schneider Electric customers make better choices and reduce building operating costs by doing so. "It's such an important field. Buildings use one-third of all energy," said McManus. "So there is a huge opportunity to reduce carbon emissions." Armed with a PowerPoint presentation, McManus travels the world to places like India, China, Australia, and the United Kingdom, preaching the "eco gospel." McManus delivers webinars about the return on investment of energy efficiency, government regulations, and other energy topics with easily implemented examples, like how much using an efficient compact fluorescent bulb can save a company over its lifetime of use. The Mustang (Okla.) High valedictorian is a voracious Oklahoma football fan and loves Sudoku and her dogs, Monty and Einstein. She escaped nearly being abducted in Paris while watching fireworks.

Kevin Miller, PE, 35

Project Manager, ccrd partners, Dallas
Kansas State, BS Architectural Engineering
Miller lived in Dallas and his future wife lived in Denver when they met in Las Vegas. "And that's where I like to stop the story," Miller said with a laugh. Now they enjoy making horseradish until "we are both bawling." Miller won't release the recipe's secret ingredient, but will passionately talk about duck hunting with his chocolate Labrador Coco. "I tell my wife (Sandra) that I work hard to put food in the dog's bowl so I can go out hunting to put food on the table." Miller, a senior mechanical engineer, oversees a staff of 18 engineers and designers, and served as the project manger and senior mechanical engineer for the MEP design at the 1.2-million-sq-ft C.S. Mott Children's Hospital and Women's Hospital in Ann Arbor, Mich. He designed a mechanical system with high-efficiency filtration and high-plume exhaust fans that could quickly convert an entire patient wing into a regional infection control unit where 100% of the air can be exhausted to the outside to protect other patients from an airborne infection in case of a pandemic outbreak from a disease like SARS. Miller earned ccrd partner's Engineering Professional of the Year award in 2007 and is an ASHRAE member of the Dallas chapter.

Conrad Miller, 21

Mechanical Designer – CAD Operator – BIM Specialist, Ron George Design and Consulting Services, Monroe, Mich.
The University of Toledo, BS Mechanical Engineering, December 2010
By far the youngest of the 40 Under 40, this college junior makes the 45-minute drive on the weekends to work at Ron George 20 hours a week. Miller's projects include St. Joseph's Hospital in Ann Arbor, Mich., where he has coordinated mechanical piping for the variable air volume system and plumbing that went to the patients' rooms, while maintaining a 17-credit-hour class load and a 3.57 grade point average. As an assistant project manager, Miller also helped design and oversaw the installation of medical gas at the University of Michigan's C.S. Mott Children's Hospital and Women's Hospital. Miller, the second of four children, helped his father design an addition to the family's barn that sits on 17 acres. "My dad always asks me questions about school, and wants to know everything I'm doing," Miller said. "In return, it makes me more aware of what I'm doing." Miller is a student member of ASME and Campus Crusade for Christ. He enjoys playing handball and paintball, and watching action movies or "stupid comedies like 'Superbad' or 'Step Brothers.'"

Jim Nonnenmann, PE, 32

Plant Mechanical Department Manager, Stanley Consultants, Muscatine, Iowa
University of Illinois, BS Mechanical Engineering
If it weren't for Nonnenmann, "The Pearl" might be another mirage. Qatar's 400-hectare man-made island uses one integrated district cooling plant. Nonnenmann was the project manager who oversaw the design of that plant, the largest chilled water facility in the world that produces 130,000 refrigeration tons. He developed hydraulic gradients to show the chilled water pumps weren't going to over-pressurize the piping system at any point. One cultural difference: "In the United States things are accepted at face value," said Nonnenmann, who served as president of the Mississippi Valley Chapter of ASHRAE for 2007-08. "Abroad they aren't. You have to prove yourself and back up your study." Because water is scarce in the Middle East, Nonnenmann had to use other water sources, like sewage effluent and reverse osmosis for the plant, while building on a limited amount of space since land on an island is at a premium. Nonnenmann, a father of four, is active in his Catholic church and enjoys escaping by float plane to Red Lake in Ontario, where he can fish for walleye, northern pike, and lake trout with his family.

Raj Patel, 37

Principal, Acoustic Consultant, Arup, New York
University of Southampton, BEng Engineering Acoustics and Vibration
For Patel, just listening to music isn't enough. It's about experiencing it, like music in motion that creates a dynamic 3-D experience. As the lead consultant, Patel designed one of the world's greatest concert halls, The Sage Gateshead in Gateshead, U.K. The complex includes a 1,600-seat concert hall and a cutting-edge 500-seat multipurpose hall that can quickly adapt with a wide range of musical or electronic instruments and performance modes, allowing up-and-coming artists to have a chance to perform or record at a facility with an "arts for all" mantra. Patel has collaborated with well-known artists at Miami's famed Art Basel, Whitney Museum of American Art in New York, and London's Tate Modern. He's guest lectured at the Royal College of Art in England and consulted on various Olympics endeavors including the National Stadium and Aquatics Center for the 2008 Summer Games in Beijing. For Iain Forsyth & Jane Pollard's CD "Silent Sound," Patel engineered a binaural recording of a mix-media classical orchestra at St. George's Hall in Liverpool that listeners can experience in 3-D on headphones. When Patel's not playing the trumpet, bass guitar, or harmonica, he is cultivating bonsai trees and cruising around Brooklyn with wife Jennifer on their yellow Vespa.

Brad Schaap, PE, LEED AP, 29

Corporate Director of Sustainability, Structural Engineer, Leo A Daly, Omaha, Neb.
Washington University in St. Louis, BS Civil Engineering; University of Texas, MS Engineering
Schaap knows the stakes are high, even when he's not playing Texas Hold'em. This skilled player's job is to make "sustainability champions" by educating Leo A Daly employees and clients about sustainability issues and design strategies. Schaap's goal: develop and achieve the 2030 Challenge, an international call-to-action to reduce fossil-fuel-based, greenhouse-gas-emitting energy consumed by new buildings to 50% today and for carbon neutrality in 2030. As a lead structural engineer and sustainability coordinator, Schaap is retrofitting the 1960s Aberdeen E2100, a four-story, 67,000-sq-ft laboratory on the Army's Maryland-based Aberdeen Proving Ground to achieve a LEED Silver certification. Schaap improved the building's capacity against anti-terrorism and force protection loads and potential seismic and progressive collapse, while reducing the energy consumption by 15% of the 2004 codes. The walls and roof will be buffered with 6 in. of insulation, low-flow plumbing fixtures will reduce toilet water consumption by 40%, and changing the six company showers to a 1.6 gpm rate will decrease water use by 75%. The father of two, Schaap volunteers with many student groups. He and wife Amy mentor a sixth-grade student whose mother was shot by gang members.

Michael Schwarz, PE, LEED AP, 31

Associate, HVAC Engineer, KlingStubbins, Philadelphia
Penn State University, Bachelor of Architectural Engineering
Schwarz admits that winning a Lego-building contest at age 6 might have paved his way to success in architectural engineering. Now the former high school wrestler designs mechanical systems, with an emphasis on sustainable design and data centers. "Data centers use 1% of all energy in the United States," said Schwartz, who leads KlingStubbins' energy modeling plan, "which doesn't sound like much, but it really is." For a "confidential client" in Bridgewater, N.J., Schwarz created a new "7+" reliability center to support science and medical affairs. He also designed data centers for JPMorgan Chase and security design services for the Smithsonian Institution's offices and museum. Schwarz is so passionate about sustainability that he's trying to find solutions on his own, outside of work. He's collaborating with an inventor to develop a new wind turbine design and writing a chapter in a new book about sustainable laboratory design. Schwarz, a passionate Nittany Lion football fan, watches a lot of documentaries with wife Kristin, even if they have a hard timing agreeing. "When it comes to movies, we argue about what we want to watch, but we can always agree on Phillies baseball," said Schwarz, who has a 1-year-old son, Ryan.

Tina Schweizer, PE, LEED AP, 31

Mechanical Engineer, PEDCO E&A Services Inc., Cincinnati
University of Cincinnati, BS Mechanical Engineering
It started with a new project. Schweizer was the lead mechanical engineer for a 225,000-sq-ft Cincinnati Children's Hospital Medical Center Liberty Campus. "They really live and breathe the outcome of the children's lives," she said. "They use that philosophy at every level. They are very detail-oriented." One example: the hospital requested HEPA filtration throughout the entire facility to go beyond typical code requirements and improve infection control. When the hospital announced it would host Cincinnati Walks for Kids to help offset the costs of building the Liberty Campus and an on-site playground, Schweizer decided to walk and get coworkers to join her. For the past 3 years, Schweizer has led a team of colleagues in the charity walk. Last year they raised $6,800 to finish eighth in a field of 400 fundraising teams. In her off time, the former high school shooting guard coaches a girls' basketball team at her alma mater, North West High School, and enjoys playing tennis and golf or watching almost any sport with her husband Dave, except NASCAR, "because I don't think it is a sport since they drive a car," she said.

Crista Shopis, LEED AP, 36

Project Engineer, Taitem Engineering, Ithaca, N.Y.
Cornell University, BS Civil and Environmental Engineering
A former collegiate rower, Shopis spent 2 years in the Peace Corps helping rural communities in Paraguay earn grants and build running water systems. As a result, the village children saved 3 to 4 hours a day that had previously been spent hauling water. This allowed the children enough time to go to a school Shopis started, when she wasn't playing D.J. with her eight-tape rotation on a Paraguayan radio station. Now the mother of two is busy developing a new air conditioning system that doesn't require compressors or refrigerant and has the possibility of a zero-carbon footprint. The theory: split the airstream, heat one airstream by passing over a solar-heated coil, and then transfer moisture from the nonheated airstream to the heated airstream, effectively changing the dew point of the heated airstream to be able to cool and dehumidify with groundwater. Shopis spends much of her free time home-schooling her children while running a nonsectarian home schooling organization called The Northern Light Learning Center and raising urban chickens in her backyard.

Mark Skidmore, 29

Vice President and Manager of Engineering, American Solar Electric, Scottsdale, Ariz.
Arizona State University, BS Mechanical Engineering
Most people probably expect a good meal, maybe a football game, and interesting conversation during a family holiday. For Skidmore, every holiday means a family home improvement project. One Christmas, it was building a staircase for his parent's home; on other holidays Skidmore and his extended family poured a patio slab and fixed a car. "It is about getting together and working toward a common goal," he said. It's a reality Skidmore, who reads only nonfiction, prefers. Working in the solar industry is something Skidmore's college professors told him was totally unattainable and would never become a reality in his lifetime. "People just assume solar is too expensive, because that's what we're taught," said Skidmore, who manages 10 people at American Solar Electric. Instead, Skidmore has made it his personal mission to change that philosophy. He installed 12 solar panels on his roof in Scottsdale, which saves him approximately $400 a year. He served as a project manager for Frito-Lay's installation of 200 kW solar panels on its 120,000-sq-ft distribution plant in Phoenix. As a Habitat for Humanity volunteer, Skidmore helped install panels on five homes. "Money can be mismanaged and is relatively anonymous," he said, "There is nothing like giving your time to someone."

Jeff Staub, 35

Application Engineering Manager, Danfoss, Baltimore
Virginia Military Institute, BS in Mechanical Engineering
To put himself through college, Staub hitchhiked through Alaska. He arrived at the Anchorage Airport with $100 in his pocket and started working as a deck hand on a "Deadliest Catch"-style 42-ft deep-sea ship fishing for salmon in the Gulf of Alaska. Sleeping two or three hours a night, Staub would work for weeks, returning for a day or two in port. Thankful those days are gone, Staub now oversees a team of 12 application engineers who work to make refrigeration and air conditioning systems more reliable and energy-efficient in everything from vending and ice machines to supermarket refrigeration racks to commercial rooftops. Staub recently built an environmental climate chamber from the ground up to test air conditioning and refrigeration equipment. As a technical support manager in Monterrey, Mexico, Staub trained a team of six engineers who were launching a new product: thermostatic expansion valves that can increase energy efficiency in residential split air conditioning systems by 30% over the government rating. Staub get his edge these days by riding a Honda Shadow Saber, hiking, and fishing in the Chesapeake Bay with his wife Kristin and their three children.

Rich Stump, LEED AP, 38

Vice President and Project Principal, Stanley Consultants, Muscatine, Iowa
University of Illinois, BS Architecture; Massachusetts Institute of Technology, Masters of Architecture
For Stump, it's all about finding balance and a way to kick-start the day. "For some people it's coffee," he said. "For me it's Tai Chi. If I don't do it every morning, I'm not focused." With the seven-day-a-week schedule Stump typically keeps, he certainly needs it. He's already been to 53 countries, many of which he has drawn on his sketch pad. His other way to relax: singing karaoke classics like "Hotel California." The former Air Force captain has helped his company drastically expand its client base; re-enter Yemen, a country Stanley hasn't worked in since the mid-1980s; and win new contracts in Italy, Japan, Guam, and the United Kingdom. Stump has led his company's efforts to provide infrastructure design and construction management services to the Libyan government as part of its ambitious $70 billion countrywide program. "When you get a chance to meet a person from another country, face to face, it helps break down barriers," he said. "It's very easy to stereotype and label people until you've worked with them and become friends."

Robert Sty, PE, LEED AP, 34

Project Manager and Senior Mechanical Engineer in Technology Studio, SmithGroup, Phoenix
University of Illinois-Chicago, BS in Mechanical Engineering
This second-degree Judo black belt knows how to get into the game. In college, he competed in Division I diving and then went on to be a two-time Pan American Judo Champion in 2005 and 2006. But his real claim to fame: running a herd of thundering bison in South Dakota and winning a pair of Phoenix Sun tickets in a three-man dance-off where he topped off his old-school moves by jumping into the air and landing in the splits. For a "confidential client" in Tempe, Ariz., Sty helped master plan an existing 56,000-sq-ft mission critical data center that needed to "build-out" its facility. Sty specializes in HVAC and mechanical piping systems in addition to providing business development for the Technology Studio. He contributed to the addition of Banner Page Hospital's eight-bed, 10,000-sq-ft emergency department addition as well as Papago Gateway Center, a six-story 267,000-sq-ft mixed-use building, which is slated to be the first building in Arizona to receive LEED-CS Silver certification. Sty also served as the 2006-07 president for the ASHRAE-Central Arizona Chapter, is an active volunteer for the Phoenix Zoo and MDA's Jerry's Kids, and works in the ACE mentorship program. He is engaged to the "love of his life" Jennifer Mahoney, with a wedding scheduled in October.

Paul Switenki, PE, 38

Associate, Mechanical Engineer, Arup, San Francisco
Penn State University, Bachelor of Architectural Engineering; University of Colorado, MS Civil Engineering
Though he lives in California, Switenki knows how to stay cool under pressure. He's played hockey since age eight and has coached youth teams since his college days. As an engineer, the Mound-Westonka (Minn.) High valedictorian has made a name for himself designing, integrating, and coordinating low-energy HVAC systems within the healthcare and arts and culture industry. As the project mechanical engineer, he oversaw design and construction of the 97,000-sq-ft 1,800-seat multipurpose Mondavi Center for the Performing Arts on University of California-Davis's campus and the construction of the new California Academy of Sciences building in Golden Gate Park. The LEED Platinum Certified facility incorporates exhibit space, aquariums, planetarium, rainforest dome, laboratories, and offices. He's also helped Arup deliver a templated hospital design for Kaiser Permanente. Currently, he's the lead project mechanical engineer for the University of California San Francisco's Mission Bay Medical Center, which incorporates a 289-bed acute care hospital, a 180,000-sq-ft outpatient building, and a state-of-the art energy center. Switenki met his wife Birgit on a sea kayaking trip in 2004. They now enjoy exploring playgrounds with their toddler Andre.

Brandon Tinianov, 39

Chief Technology Officer, Serious Materials, Santa Clara, Calif.
Tulane University, BS of Mechanical Engineering; University of Texas, MS of Mechanical Engineering; Colorado School of Mines, PhD Engineering Systems
Tinianov jokes that he was raised by wolves. By the time he was 15, Tinianov had moved out of his home and was bouncing around, living with "anyone who would take me." Helped by scholarships, Tinianov put himself through college by waiting tables at New Orleans's famed Louis XVI Restaurant in the French Quarter. "I was the only one who wasn't a professional waiter," he said. After college and a brief stint as a mechanical engineer at a job he hated, Tinianov drove around the country for six months in a 1973 AMC Jeep, reading books and camping outside. He now has his doctorate and is a product and technology strategy specialist. He led the development and commercialization of QuietRock drywall, the construction industry's leading soundproof drywall in North America. Tinianov also developed EcoRock drywall, which uses 80% less energy in the manufacturing of its core than gypsum drywall and uses 85% post-industrial recycled content. Additionally, Tinianov worked on the first LEED-Certified low-income community housing complex in San Jose, Calif. He is married with two kids and hasn't owned a TV in 10 years.

Ari Tinkoff, PE, 36

Vice President, X-nth, Maitland, Fla.

Penn State, Bachelor of Architectural Engineering
It's a good thing Tinkoff chose the profession he did. "My mom wanted me to be a doctor, but I hated chemistry," said Tinkoff, who nearly passed out after watching doctors perform open heart surgery. It's also good that he tried sneaking through a Secret Service brigade only once. President Ronald Regan was coming to Tinkoff's high school in Vienna, Va. "I was told 'don't go behind the blue curtain,' but I didn't want to carry my book bag any longer, and my locker was only four lockers behind the curtain," he said. "So I started to put my backpack away and two guys stopped me and searched me and my locker." These days Tinkoff, a father of two, enjoys going to the Disney theme parks with his wife Deb and kids. He serves as the Director of Business Development for X-nth's healthcare market and worked as the project manager for Epic Systems Corp. Learning Center in Verona, Wis. Originally, the fast-tracked building was supposed to be 250,000 sq ft. But the size swelled, changing five different times over the course of construction to 800,000 sq ft to meet growing needs. The other challenge: typically 1,500 people work in the building, but for two weeks every year, user groups from all over the country converge and the building population swells to 10,000. That meant adding air valves to the dedicated outdoor air system that could modulate the amount of outdoor air according to the occupants in the building.

Mike Walters, PE, LEED AP, 31

Sustainable Market Leader, Affiliated Engineers (AEI), Madison, Wis.
Milwaukee School of Engineering, BS Architectural Engineering
You could say Walters was sparked by science at any early age. He was 10, playing basketball out in the evening rain, and went to adjust a light to see the court better. "I was standing in water when I grabbed the light fixture and electrocuted myself," he said with a laugh. "I didn't understand, and I wanted to know why." These days Walters is focused on a Climate Action Plan project, helping Cornell University—which produced 320,000 metric tons of carbon in 2008—conceive a carbon neutral campus. How? With five main initiatives: go green on all new development, transition from fossil fuels to a mix of renewable fuel, comprehensive energy conservation efforts in existing buildings, and a transportation demand management program and consideration of carbon offsets. "It's a lofty goal because of the scale of Cornell's research facilities and the need, literally, for every person on campus to contribute," Walters said. "It can't just be a technology fix." A fan of the Milwaukee Brewers, Walters enjoys going to national parks with his wife Hilary and their two children. Despite living in Wisconsin, he likes the Washington Redskins, not the Packers.

Jeremiah Watson, PE, LEED AP, 34

Associate, Plumbing Engineer, TRO Jung|Brannen, Memphis
University of Memphis, Bachelor of Science
Watson jokes that when he passed the PE exam he thanked God in his driveway for a long time. Now he's using that engineering knowledge to help others. Watson oversaw the plumbing and fire protection for the Salvation Army's Ray & Joan Kroc Community Center in Memphis. The 95,000-sq-ft facility, which is seeking LEED Silver certification, includes pools, a chapel, exercise area, theater, classrooms, and more. Watson's biggest challenge was trying to collect rainwater from the building to reuse in a gray water system for the toilets. "I was trying to do something new and innovative and it wasn't in the code book," he said. So Watson had to creatively route the piping halfway through the ceiling and below ground to spread it out to achieve the proper slope. Watson, the son of a single mother, Antoinette, is the president of his college fraternity's (Omega Psi Phi) Shelby County alumni chapter where he raises awareness and funds for the National Kidney Foundation, the NAACP, St. Jude Children's Research Hospital, Habitat for Humanity, and the Mid-South Food Bank. He is active in the youth ministry at Shiloh Baptist Church and tutors low-income students about school and life. He jokes: "Most people say I'm the most outgoing engineer they've ever met."

Nate Wittasek, PE, LEED AP, 36

Associate, Fire Protection Engineer, Arup, Los Angeles
Worcester Polytechnic Institute, BS Civil Engineer, MS Fire Protection Engineering
When it comes to work and play, Wittasek embraces a scattershot lifestyle. The former collegiate rower loves kayaking, running, and skiing. He's also writing a book, and growing grapes in the hopes of making his own wine. If that isn't enough, Wittasek, a self-proclaimed "big picture guy," also loves to cook, play the piano, and grow orchids. "I look at science as more of an art," Wittasek said. "My dad was a physicist and astronomer who became an artist who made ceramics. I learned from him that you can do both." As the Los Angeles Fire Discipline Leader, Wittasek is trying to create a culture change with the advent of firefighter-assisted emergency evacuation elevator systems that can be used during an emergency. Wittasek, who has worked as the fire/life safety engineer on projects like the Guggenheim Museum in Abu Dhabi, and J. Paul Getty Museum in Los Angeles, is using this new concept in West Hollywood's Pacific Design Center Red Building. "It's a major step forward," Wittasek said. "But it is controversial. Our whole lives we've been told not to use elevators in a fire. But having elevators designed like this will dramatically help people get out by cutting the evacuation time in half."

Curtis Yokoyama, SE, 38

Principal Technical Specialist, Fluor Corp., Aliso Viejo, Calif.
California Polytechnic State University, San Luis Obispo, BS Architectural Engineering
Yokayama jokes that when he comes home from Fluor, the work begins. "I'm Mr. Mom," said Yokoyama, who has three children—with wife Christi—who range in age from 7 years to 11 months. "My job really starts when I get home; I make dinner and I'm the one who gives the kids their bath and puts them to bed." During the day, he works as the lead structural engineer on large multidisciplinary projects, typically in the energy and chemical industries including power plants, refineries, and nuclear facilities. As the engineer of record, Yokoyama oversaw all design aspects of building a natural phenomenon barrier system at a South Carolina Duke Energy nuclear plant. The barrier will help prevent 300 mph tornado winds and flying automobile debris from destroying the facility. Yokoyama also teaches a four-week, in-house training class for new Fluor hires to ensure they understand building codes and the design of industrial structures. Yokoyama also jokes that he is a tool fanatic who is notorious for starting—but not finishing—projects around the house. After 9 months, he is still trying to rebuild his fireplace, where a patch of concrete now stands.