

Leaders Under

Control Engineering class of 2011

Amanda McLeman, Mark T. Hoske

This generation of manufacturing automation and controls leaders includes 19 young professionals excelling in control system design and teaching others about the fun in engineering, while resolving local and global challenges through smarter applications of automation and control technologies.

Wael Badawy, PhD, 38

President, IntelliView Technologies Inc., Calgary, Alberta, Canada, www.intelliview.ca

Academics: MS & PhD Computer Engineering, University of Louisiana; BS & MS Computer Science & Automatic Control Engineering, University of Alexandria. **Achievements:** Badawy develops video technology and leads IntelliView Technologies Inc.

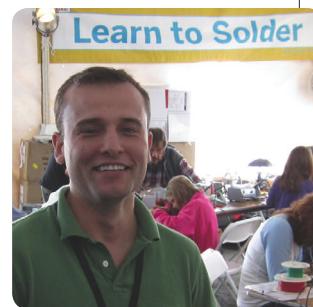
He focuses on research, serves several standard boards, and represents Canada in hundreds of technical meetings and research in video processing for control engineering. In 2008, he co-authored the international video standard, MPEG4/H.264. He received a national excellence award from the Standards Council of Canada Leadership in Review. More than 400 of his papers and presentations have been accepted for publication by the internal peer community. **Also:** Badawy plays and coaches soccer, tennis, and chess and enjoys working with children. He also mentors young engineers through the Canadian Youth Business Foundation, showing that dreams come true through passion and dedication. **Inception:** He gained interest in automated color extraction and mixing technology "when I saw the textile automation process in a family-owned factory."

Brett Beauregard, 33

Director – product development, Control Station Inc., Tolland, Conn., www.controlstation.com

Academics: BS Chemical Engineering, University of Connecticut, Concentration: Process Control. **Achievements:** Beauregard is credited with Control Station's patent-pending modeling of oscillatory process data, which eliminates the need for a steady-state condition prior to performing PID controller tuning bump tests. It earned him an International Society of Automation award. Over three years he has served as the lead engineer behind a growing suite of performance monitoring technologies. Control Station's PlantESP combines PID controller performance monitoring with more traditional conditional system monitoring, based on a data clustering algorithm patented by NASA.

Also: Beauregard added a PID controller to his personal smoker, holding temperature to ± 1 degree, a difference he can taste. A blog details PID and other hobbies at <http://bretbeauregard.com/blog/>. He's had his hair cut in 16 states. **Inception:** The interdisciplinary nature of controls made it an easy choice, he said.





Aaron Crews, 30

Principal control systems engineer, Emerson Process Management, Houston, Texas, www.emersonprocess.com

Academics: BS Chemical Engineering, Texas A&M University. **Achievements:** Crews spent seven years working with distributed control system users to develop control strategies and graphical insights into processes and control, including hot cutovers to a new DCS. He co-chairs a collaboration initiative among Emerson engineering centers. **Also:** On a Kauai vacation, he explored unboundedly by "the perception of what is possible (or impossible)." He said engineers can make a path with technology to "make amazing things happen." He hopes fun projects and trips will help his three children appreciate science. **Inception:** At a fair, he combined engineering, computer science, and design; it's thrilling to click a computer button to trigger something in real life, said Crews.



E.J. Daigle, 38

Academic director – Robotics & Manufacturing, Dunwoody College of Technology, Minneapolis, Minn., www.dunwoody.edu

Academics: AAS Electronics Engineering Technology, Coastline Community College; BS Mathematics, Metropolitan State University. **Achievements:** He teaches and manages the Robotics & Manufacturing Department at Dunwoody College of Technology in Minneapolis, Minn., with 14 direct-report faculty members. He trains students in automation/robotics, electronics, engineering/design, CNC machining, and welding. He served as faculty advisor to a group of automation/robotics and machining students in the First Annual Institute of Navigation's Autonomous Snow Plow Competition at the St. Paul Winter Carnival; a plow moved 2 in. of snow using an Allen-Bradley PLC and ultrasonic sensors to navigate a course. The team placed third among some top Midwest engineering universities. **Also:** As a mentor/coach for two local high school FIRST Robotics teams, he helps with robot design, manual and CNC machining of robot parts, and programming NI CompactRIO using LabVIEW. A PLC-controlled traffic signal in Daigle's garage helps with car parking. **Inception:** He helped commission the submarine, USS Rhode Island (SSBN 740); U.S. Navy work included maintaining digital control computers.

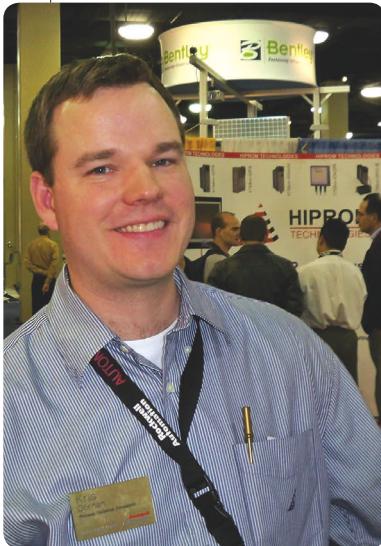


Kris Dornan, 34

Process end-user marketing manager, Rockwell Automation Inc., Mayfield Heights, Ohio, www.ab.com

Academics: BS Chemical Engineering, Case Western Reserve University. **Achievements:** He has spent considerable time creating, acquiring, and editing marketing, sales, and engineering material about automation systems for heavy industries. A wastewater plant demonstration

showed how PlantPAX provides automatic lead/lag pump coordination with effective alarm notification. He led a team to define company value in the automotive industry. "Having a work-life balance is critical to a successful career." **Other:** As a first-time dad, he devotes most time away from work "helping my wife raise our 2 1/2-yr-old daughter," working hard "to be the person that I want her to be." Dornan and his twin brother, a lifelong friend, competed on report cards, scout merit badges, and dean's lists. Piano playing brings joy to Dornan. **Inception:** In college, a co-op position at The Foxboro Company allowed him to use and expand talents in computer programming, understanding of units of operation in chemical engineering, and social skills.



What's in a number? Leaders Under 40

Among the 19 Control Engineering Leaders under 40, Class of 2011:

- 13 enjoy various outdoor activities, including canoeing, gardening, skiing, surveying/mapping caves, tennis, volleyball, and two each for biking, hiking, and soccer.
- 9 studied electrical engineering
- 7 are active mentors
- 6 studied chemical engineering
- 5 have contributed to the ISA
- 4 work with robotics/CNC
- 3 have integrated controllers to help with household activities
- 2 have contributed to the IEEE, studied mechanical engineering, and are U.S. veterans

Many civic, fundraising, non-profit, and charitable organizations benefit from winners' efforts, including a handicap skiing program, March of Dimes, and Boy Scouts of America.



Chad Harper, 37

Operations manager, Maverick Technologies, Baton Rouge, La., www.mavtechglobal.com

Academics: BS Chemical Engineering, University of Arkansas. **Achievements:** CAP, PMP certified. At C.F. Picou Associates, Harper focused on advanced process

control in the hydrocarbon industries. One project had a two-day return on investment (ROI). He became program manager of a large Honeywell Experion migration. At Maverick Technologies, he progressed to a regional operations manager, with 78 engineers and control systems specialists, six project managers, and active automation projects exceeding \$25 million. In eight months, Maverick Technologies hired more than 80 people. Harper helped change new graduates' training and mentoring, using automation experts in the field. **Also:** At local LSU Chemical Engineering AIChE meetings, Harper shows students some eye-popping HMI's. He and his wife participate in competitive beach volleyball, playing weekly and in several tournaments a year, even with three children. He cooks "a mean pot of jambalaya." **Inception:** "Skills you develop as a controls engineer are in high demand and make you a better employee."



Levi Hill, 28

I&E technician, Kinder Morgan CO2, Cortez, Colo., www.kindermorgan.com

Academics: U.S. Navy/Marine Corps experience; AS Electronic Technology, Barstow College; BA Business Administration, Colorado Technical University.

Concentration: IT. **Achievements:** During four years with Kinder Morgan CO2 (KMCO2), Hill rose to I&E Tech level 4 and assisted with multiple automation checkouts and SCADA design for two main pump stations on a 500-mile, 30-in. dia. CO₂ pipeline and on two new production facilities. Involved in every KMCO2 expansion project in 4 years, he helps with automation checkouts and network installations, is responsible for a microwave backbone system, is in the SCADA support group, and has influenced a SCADA upgrade. **Also:** He helps friends and family with sprinkler system programming and installations. He helps with a large annual automated residential Christmas light show and loves hunting, fishing, boating, and camping. **Inception:** As a youth, watching films like "Short Circuit" and playing with remote controlled cars and planes sparked his interest in electronics and automation.

Matt Goska, 31

Mechatronics Engineer, Siemens, Elk Grove Village, Ill., www.usa.siemens.com/drives

Academics: BS & MS Mechanical Engineering, Missouri University of Science and Technology. Concentration: control systems. **Achievements:** Goska implements solutions and mentors machine builders and end users about Sinumerik CNCs. To reduce costs and maintain quality code, he creates and implements templates, automating some tasks. System integration, servo optimization, kinematics, volumetric compensation, custom operator interfaces, and programming help make machine functions (and five or more degrees of freedom) transparent to the operator. **Other:** He spends substantial time learning, including "C" programming (during flights) and IT security (which centers on unanticipated conditions). Since college, he has surveyed and mapped U.S. caves, helping local geologic and biologic efforts. When Goska's girlfriend describes damaged work equipment and how it is supposed to function, she knows that he will always volunteer to repair the device. **Inception:** As a youth, he took everything apart, eventually learning reassembly, with interest in "how a spinning motor could drive many forms of motion" and be improved with software and electronics.



Mitch Johnson, 35

President, JMS Southeast Inc., Statesville, N.C., www.jms-se.com

Academics: BA, Duke University; JD, University of North Carolina. **Achievements:** Johnson dropped a law practice to run a family business. JMS Southeast manufactures thermocouples, RTDs, and temperature transmitters, with 100% sensor inspection (compliant with MIL specifications and ASTM, NIST, ANSI, and ISA standards), ISO 9001 certification, no-charge 24-hour customer service, and NIST-traceable calibration. **Also:** Johnson is the father of two children, one born at 23 weeks. He led "Team Will" for March of Dimes to help raise \$32,395, ninth in U.S. fundraising. Johnson developed the JMS SwiftyCalc program for dimensioning thermowells; a 2010 standard added 40 pages of calculations. He is co-authoring a thermocouple book and is a Paul Harris Fellow in the local Rotary Club. **Inception:** The Johnson family has been involved in the field for more than 35 years; JMS was founded in 1980. "I have always wanted to participate and got the chance to do so four years ago. It has been a most rewarding and exciting experience."





Control engineering's cool factor

Some of the *Control Engineering* "class of 2011" Leaders Under 40 tell why they think control engineering is a cool profession.

"It's common for us to create a vision of what our future is like or...the path ahead. Truth is that we can always make our own path, and few careers are better suited to that than those of engineers," said Aaron Crews.

Jamie Schmidt is working on a project in Bangkok, Thailand, and she also trains others on the design and troubleshooting of intrinsically safe control systems: "If you are interested in doing something, don't let anyone stop you. Never be intimidated."

When Graham Nasby was 12 years old, he and his father, hiking in Northern Ontario, knocked on the door of a hydroelectric power station and got an impromptu tour, showing "how water flow was regulated using valves, how the exciter current for generators was created using dynamos, and how generators were automatically synchronized to deliver power to the grid. I was hooked. I knew I wanted to be involved with electrical engineering and automatic control systems."

Brett Beauregard equipped his smoker with a homemade PID controller. "Holding the temperature to ± 1 degree may seem over the top, but I can taste the difference."

Ben Mansfield found himself "constantly thinking about product limitations and trying to understand why a particular feature worked a certain way. It was a great experience; there's nothing quite like successfully finishing a start-up after so many months of work."

Finally, Jason Stoddard said: "I get to do everything from robots to hydraulic controls, and get to play with some cool things while doing it. It is honestly the best job. I can't see how anyone wouldn't want to do it."

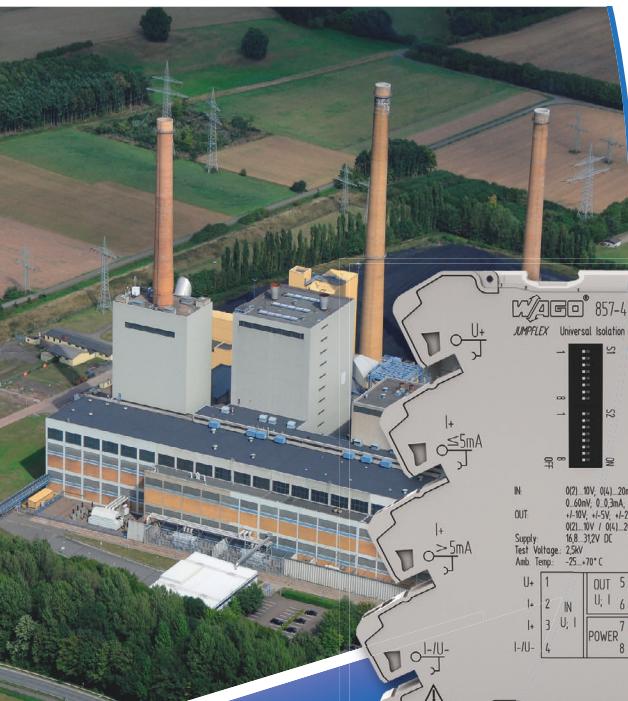


Ryan Kautzky, 29

Electromechanical design engineer, CUI Inc., Tualatin, Ore., www.cui.com

Academics: BS Mechanical Engineering & Manufacturing and Design, Washington State University. **Achievements:** Helped develop AMT 303 Capacitive Encoder (nominated for an award) and the AMT 203 12-bit absolute

encoder with SPI interfacing and quadrature output. **Also:** "I enjoy hiking with my wife and our 16-month-old son. We have found hidden breathtaking views, and it is always fun to teach the little one about the great outdoors," he said. Eager to learn about new technologies, he enjoys fixing things, replaced his car engine, and is remodeling his house. **Inception:** As a youth, he was fascinated by remote control cars and how they could be modified, and his curiosity increased about how things are made. This evolved into understanding manufacturing and design. He called system design and dynamics of the manufacturing process a hidden marvel in large demand.

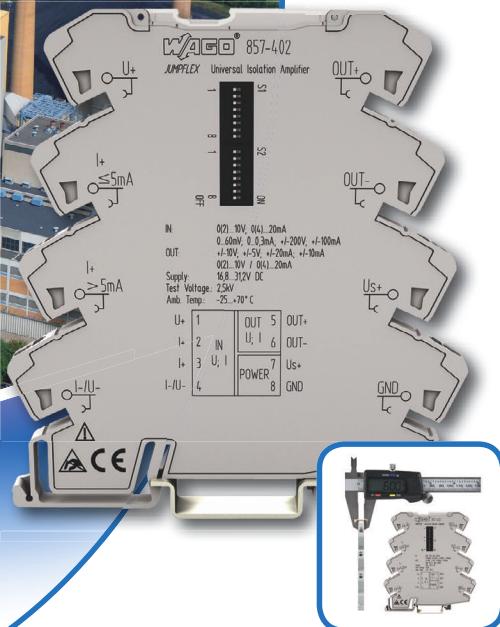


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Jeffrey Kent, 39

Technical associate director
– Global Baby & Toddler Care
Engineering, Procter & Gamble,
Cincinnati, Ohio, www.pg.com

Academics: BS Electrical Engineering, Clarkson University; MAS Aerospace Management, Embry Riddle Aeronautical University.

Achievements: Kent, promoted last year, has held principal responsibility for power, controls, and information systems engineering

in his \$10 billion unit for 4 years. He left the U.S. Air Force 13 years ago and transformed machine control platforms for hundreds of production lines, including simpler machine controls, quality control, and quality assurance, using add-on profiles/instructions and IEEE 1558 synchronization. He advocates simpler, integrated, and intelligent measurements. **Also:** He led a Little League Minors team to a championship, teaching fair play to his son and other youth. At Clarkson University he mentors and inspires students about automation. **Inception:** His father, William, served at Eastman Kodak for 37 years as a controls technician. After working summers with his dad in manufacturing, Kent now considers, “What would my dad say about this application?”

Brady Melchior, 30

President, Rugid Computer
Inc., Olympia, Wash.,
www.rugidcomputer.com

Academics: BS Electrical Engineering, University of Washington. **Achievements:** Melchior works for a small company that designs and manufactures industrial data acquisition and control equipment. He was involved in product concept, design, development, and production for the WiSI (wireless sensor interface). One model of WiSI, an “all-in-one radio, IP67 rated outdoor/weather-proof data acquisition and control device designed for rapid deployment,” integrates a solar panel and super capacitor energy storage, functioning as an RTU, radio, battery, enclosure, antenna, solar panel, and solar regulator. **Also:** Melchior plays soccer year-round on two teams. He purchased two forklifts at auction and, during free-time, fixed various components, including electrical wiring, hydraulic transmission, and propane fuel system. While at Lockheed Martin, he mentored a “Learning for Life” group called Exploring, a subsidiary of the Boy Scouts of America. **Inception:** Also at Lockheed Martin he was part of a team developing a new lithium-ion battery for space vehicles. He helped write software to control the balance of charging of a bank of lithium-ion battery cells.



Ben Mansfield, 34

Manager with PlantPAX Process Automation System,
Rockwell Automation Inc., Mayfield Heights, Ohio,
www.ab.com

Academics: BS Chemical Engineering, Case Western Reserve University. **Achievements:** In managing Rockwell Automation’s DCS he defines future product functionality. “I worked to help define a UPM that provides a cohesive view of seemingly disparate manufacturing data and gives context for relationships among equipment, product, materials, and people. I also researched modeling and simulation solutions that factor in energy and raw materials as variables for optimizing profitability. **Also:** “Last



winter, I took my 3-yr-old daughter skiing for the first time. She had an absolute blast, and we both laughed the whole time.” Being an Eagle Scout “taught me critical leadership skills at an early age and helped establish my love for the outdoors.” **Inception:** With little prior automation knowledge, he accepted a co-op job during college with a DCS vendor. “There’s nothing quite like...finishing a startup.”

Graham Nasby, 33

PE, PMP, engineer, Eramosa Engineering Inc.,
Guelph, Ontario, Canada, www.eramosa.com

Academics: BS Engineering Systems & Computing, Computer Science, University of Guelph; Certificate in project management, University of Waterloo; Licensed professional engineer in Ontario. **Achievements:** He helps municipal water/wastewater clients automate plants. He is in ISA Hamilton Section, ISA’s Water/Wastewater Industry Division; on standards committees for ISA18 Alarm Management, ISA101 Human Machine Interfaces, and IEC TC65 Industrial Process Measurement, Control and Automation; and is the general symposium chair for the 2012 ISA Water/Wastewater and Automatic Controls international symposium.

Also: He rides mountain bikes, raises money for multiple sclerosis research, canoes, camps, and plays clarinet. **Inception:** At 12 years old, toured a hydroelectric power station and was amazed. “I was hooked. I knew I wanted to be involved with electrical engineering and automatic control systems.”





Patrick Marcus, 34

President, Marcus Engineering LLC,
Tucson, Ariz.,

www.marcusengineering.com

Academics: PhD Biomedical Engineering, BS Electrical Engineering & Entrepreneurship, University of Arizona. **Achievements:** Marcus Engineering LLC offers designs for embedded systems, turnkey product development, analog and power electronics, industrial controls, instrumentation automation, and PCB design. **Also:** He creates interactive solar-powered public art sculptures and has received civic leadership awards. "Many companies wouldn't get started without good policy driving grant opportunities, developing incubators, and providing other small business support." When organizing a solar

oven workshop for children, he covered principles and design so they could understand. "There is a lot to be said for the attentiveness of a hungry fifth grader." He serves on the University of Arizona College of engineering young Alumni Advisory Board. **Inception:** With a passion for electronics, he was fascinated by motion,

production, and automation. "Almost all aspects of controls and automation make our lives easier, better, and safer. I get tremendous satisfaction from that!"



Tony Paine, 37,

President and CEO, Kepware Technologies, Portland, Maine,
www.kepware.com

Academics: Electrical Engineering, University of Maine, Concentrations: Computer Software & Hardware Design. **Achievements:** He contributed to Kepware Technologies' growth, from software development in 1996 to president in 2009. His industry standards committee efforts help guide automation. Time with the Maine university system promotes controls engineering, on the Electrical and Computer Engineering Advisory Council, and at student events. **Also:** Involved in the Maine Handicap Skiing program, he assists with his child's lessons and does fundraising. He was first in his family to graduate from college, working >32 hr/wk in high school to save money, maintaining honors, and playing sports. **Inception:** He integrated a donated computer and printer before plug-and-play connections and "knew I wanted to be involved in developing software that controlled hardware."

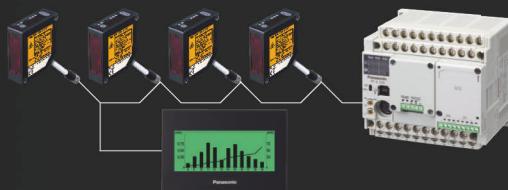
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Chad Schaffer, 37

PE, CFSE, associate process instrumentation & controls engineer, Burns & McDonnell, Kansas City, Mo., www.burnsmcd.com

Academics: BS Chemical Engineering, University of Kansas. **Achievements:** Licensed professional engineer in nine states, Certified Functional Safety Expert (CFSE), active on the Center for Chemical Process Safety (CCPS) and on the Process Industry Practices

(PIP) Process Control Function Team (PCFT), and new member of the ISA S84 Electrical/Electronic/Programmable Electronic Systems (E/E/P) working group. He's served as instrumentation & controls (I&C) lead engineer "for our largest and most technically challenging" process industry projects, from design through start-up. He does I&C department training and mentoring, and was recently elected as ISA Kansas City Section president. Earlier this year while vice president, he presented ways to get process, mechanical, and I&C engineers to collaborate in vessel design and address level-measurement issues earlier. **Also:** "There is nothing like the taste of a garden-fresh tomato...deer and raccoons agree." Schaffer, a proud father of two girls, ages 16 and 3, made his first trip to China in June, "quite an experience professionally and personally." **Inception:** After 6 years as a process engineer, he transferred to the I&C department, "loved it, and 8 years later have combined knowledge of process and I&C engineering to contribute to my greatest professional passion: process safety."

Jamie Schmidt, 38

Lead project engineer, Interstates Control Systems Inc., Sioux Center, Iowa, www.interstates.com

Academics: BS Electrical Engineering, South Dakota State University. **Achievements:** Schmidt did control system engineering, design, and procurement for a sugar beet processing facility, with Allen-Bradley PLC5, ControlNet, and more than 3,500 I/O points (~ 1,200 analog). It won a National Excellence in Construction Award from Associated Builders and Contractors Inc. (ABC). She developed standards and engineered control systems for seven biodiesel plants; one won an ABC Award of Excellence. She documented best practices, made a company standard, and trains others in intrinsically safe wiring for hazardous areas. She designed, engineered, and coordinated with IT on a chemical facility control system containing PLCs, DeviceNet-connected motors and valve controls, Ethernet, Modbus, and wireless connections. She reviews an international engineering team's designs and drawings for a Bangkok, Thailand, pet food manufacturer. **Also:**



Schmidt studies Songahm Taekwondo with her children to help teach discipline, courtesy, self-control, respect, leadership, and confidence. She hosted high school students' job shadowing. **Inception:** An inventor uncle with a brittle bone disease worked with motors, batteries, and switches to her admiration as a youth. "If you are interested in doing something, don't let anyone stop you. Never be intimidated."

Jason Stoddard, 28

Lead controls engineer, Michigan Custom Machines Inc., Novi, Mich., www.michigancustommachines.com

Academics: AS Electrical Engineering, Mott Community College. **Achievements:**

At Michigan Custom Machines, he has "been fortunate enough to write a lot of code," is directing the standard for MCM PLC code and HMI software, and created standard code for robotics. "I strive for excellence and simplicity in my code and control process. Keeping it simple, modular, and reusable" is the goal, so "more engineers will want to use it." **Also:** Stoddard enjoys time with family and motorcycling. He designed and



made a back rest/luggage rack for his father-in-law's motorcycle. He's integrating a "smart-home" system based on an A-B ControlLogix PLC and prototyping a web-based HMI platform for iPhones and Android devices. **Inception:** As a software engineer seeking something more, "Seeing things move and actually 'creating' something was much more appealing than writing queries to databases. Doing controls engineering, I get to do everything from robots to hydraulic controls and get to play with some cool things while

doing it. It is honestly the best job. I can't see how anyone wouldn't want to do it."



At www.controleng.com/awards find more details on these winners and see other ways to gain recognition for engineers of all ages. - Amanda McLeman is managing editor and Mark T. Hoske is content manager, *Control Engineering*, www.controleng.com.