Message from the Director

Welcome to the Summer 2019 Newsletter.

Education encompasses so much of our lives, and through this division, we hope to attract and engage those who have interests in all the different aspects of education. Everyone is invited to participate in this division, including students, instructors, professors, administrators, corporate trainers, and anyone who has an interest in education.

Once you become involved in the division, you will have the opportunity to promote various academic priorities, and faculty/student interests. You will be able to provide expertise in the peer review process, publications, and actively contribute to divisions' symposia.

Educational Initiatives

The Education Division (EDD) aims to promote and advance educational initiatives including automation engineering and engineering technology, automation related courses and programs, and activities related to the mission of the Society. The Division will function as a resource and technical information exchange for students, faculty, education professionals, and others with an interest in education. Members will have the opportunity to share experiences and learn from their peers. The division will work with other groups within ISA to recruit student members and support their retention.

Programs and Courses in Automation Engineering

The Education Division develops and maintains a list of programs and courses related to Automation Engineering and Engineering Technology. If your institution is not listed or the information needs to be updated, please contact me.

Student Sections

We need to hear from the ISA Student Sections. Please send us your current activities and accomplishments. We want to publish your student activities, regardless of your country. Email kte@mst.edu with your news anytime.
Students: Get Recognized!

CAP Associate Recognition Program

Recognition of your achievements is critical when you seek employment. The ISA CAP Associate program will give you third-party, objective assessment and confirmation of your potential to become an automation professional.

The ISA CAP Associate program is a recognition program for individuals that have graduated from (or will graduate from within six months of taking the exam) a four year technical degree program who are interested in working in the field of automation. The CAP Associate program provides recognition of the individual’s interest and knowledge of automation. Although the CAP Associate program is not a certification program, it provides an additional credential for your resume. Individuals who pass the CAP Associate exam will receive one year of “work experience” credit toward the Certified Automation Professional® (CAP®) eligibility requirements. CAP® applicants who have a four year technical degree must document five years of experience in automation. The CAP Associate would be eligible to sit for the CAP exam after four years of work experience in automation.

Professionals: Get Certified!

ISA's Certified Automation Professional® (CAP®)

ISA certification as a Certified Automation Professional (CAP) will provide a non-biased, third-party, objective assessment and confirmation of your knowledge and skills as an automation professional. Automation professionals are responsible for the direction, definition, design, development, implementation, deployment, operation, documentation, and support of systems, software, and equipment used in control systems, systems integration, and operational consulting.

Become a Certified Automation Professional (CAP) and
• document your specialized education, training, and knowledge in automation
• demonstrate your qualification, competence, and potential to current and future employers
• establish career paths and job advancement opportunities
• indicate your commitment to a career in automation

Contact Us

Kelvin Erickson
Director
Phone: +1 (573) 341-4757
kte@mst.edu

Graham Nasby
I & S Department VP
Phone: (519) 767-2638
graham.nasby@grahamnasby.com

Xiaojing Yuan
Education Chair
Phone: (713) 743-1129
xyuan@uh.edu

Randy Buchanan
Special Assignment
Phone: (601) 634-6566
randy.k.buchanan@erdc.dren.mil

Matthew Maynard
Special Assignment
Phone: (405) 717-4914
mmaynard@francistuttle.edu

Alexandre Tizzei
Special Assignment
Phone: 55 019 999627176
atizzei70@gmail.com

Manoj Yegnaraman
Special Assignment
Phone: (972) 239-9949
x44424
myegnaramam@carollo.com

Staff Contact:
ISA Staff Divisions Team
Phone: (919) 549-8411
divisions@isa.org
Call for Student Presentations and Posters
ISA Process Control & Safety Symposium
Nov 4 - 6, 2019
The Westin Houston, Memorial City
Houston, Texas

The ISA Education Division invites student presentations and poster presentations in the upcoming ISA Process Control & Safety Symposium. This event is developed for students currently pursuing post-secondary degrees (e.g., Associate, Bachelor, Master, etc.) in subject areas related to the mission of ISA, including but not limited to automation, mechatronics, electrical, electronic, computer, mechanical, chemical, etc.

Student presentations and posters tentatively on Tuesday, Nov 5

Suggested projects for oral or poster presentations:
- Senior capstone project
- Class/lab project
- Project from internship/cooperative education experience
- Undergraduate or graduate research

Guidelines for Submission:
- 500-word (max) abstract in English submitted by email, indicating preference for oral or poster presentation
- Final presentation must use the official ISA Symposium template
- Abstracts accepted for presentation or poster will require completion of the ISA's Rights and Responsibilities form

Deadlines:
- Abstract: 15 September 2019
- Presentation/Poster: 8 October 2019

Submit your abstract via email to either:
Dr. Kelvin Erickson
Missouri Univ. of Science and Technology
kte@mst.edu

or

Dr. Xiaojing Yuan
University of Houston
xyuan@uh.edu
2019 Energy and Water Automation Conference

ISA Student Membership
ISA Student Membership provides increased career opportunities. From the moment you join, ISA broadens your knowledge and exposure to the world of automation and automation professionals. Membership in ISA indicates to prospective employers that you are a step ahead of the crowd...taking charge and actively involved in pursuing your professional future. Students have two levels of membership to choose from: Student Member and Virtual Student Member.

**Student Member** - An individual who is enrolled as a full-time student in a program leading to an instrumentation, systems, or automation related degree or certificate. Join for only $10.00/year.
- Two free Technical Division Memberships
- Free subscription to digital InTech and Automation Weekly
- Free access to ISA standards
- Free access to pre-recorded web seminars
- Free access to ISA technical papers library
- Student Games
- Mentoring Program

As a special bonus, Student Members may upgrade to Regular Member at the low student membership price for the year following the completion of their training or graduation.

**Virtual Student Member** - An individual who is enrolled as a full-time student in a program leading to an instrumentation, systems, or automation related degree or certificate. Join for only $5.00/year.

This Member grade allows students who do not have access to a Regular or Student Section to participate in ISA through electronic communications. Virtual Student Members have limited benefits and do not receive any mailed correspondence, for instance, InTech magazine. Virtual Student Members cannot participate in the ISA International Student Games.

CAP Associate Recognition Program
The ISA CAP Associate program is a recognition program for students graduating from a four year technical degree program who are interested in working in the field of automation. The CAP Associate program provides recognition of the student’s interest and knowledge of automation. Although the CAP Associate program is not a certification program, it provides an additional credential for the graduating student. Students who pass the CAP Associate exam will receive one year of “work experience” credit towards the Certified Automation Professional® (CAP®) eligibility requirements. CAP® applicants who have a four year technical degree must document five years of experience in automation. The CAP Associate would be eligible to sit for the CAP® exam after four years of work experience in automation.

Request for Participation
The EDD leadership wishes to get you and your colleagues involved with the Education Division and its members. Please consider becoming involved now. Pick up the telephone and call 573-341-4757 or email kte@mst.edu.

Current open positions at time of publication:
- Webmaster
- Newsletter Editor
- Membership Chair
- Director-Elect
When I started as a young control engineer, I was eager to prove myself. I jumped at the first chance to tune a controller. While I had worked in a plant as a co-op, my tuning experience was mostly limited to simulations. It quickly became clear that tuning a control loop was very different from tuning a simulated loop.

The first control loop I tuned was the air to a rotary kiln dryer. The air flow was okay at the low end, but past mid-scale it behaved oddly. I spent several hours trying to improve the loop before an operator suggested that I go look in the field. An inspection with a knowledgeable operator found that the damper vanes were not opening correctly. Once the vanes were adjusted, the loop performed as well as ever.

The next loop was a flow controller that had mysteriously stopped controlling. Again, I spent hours trying to tune the loop before taking a trip to the field. Again, a quick inspection revealed the problem. The old magmeter and piping were on the deck and a new section of line with a new magmeter had been installed. The new magmeter was a different size and had not been completely checked out before the line was put in service. After completing the meter calibration and range change, the loop was returned service without any tuning changes.

The next issue was a failed I/P, then a sticking control valve, a flooded condensate pot, a plugged tap, a cavitation damaged valve, and a frozen level transmitter. The first 10 times I was asked to tune a loop, the problem was not tuning. There usually was a failure or a change in the field that needed to be corrected. On occasion, the process was operating in a state that did not allow the loop to control. Eventually, I learned the lesson; before tuning, lay your hands on the sensor and final control element. That rule has proven to be useful countless times.

Since that first assignment, I have worked in several plants. Most of the time I remember to follow the rule and take a field trip before tuning. Like that first time, it helps to have an experienced operator or mechanic make the trip too. It is their knowledge of the process during normal operation and past problems that often makes the difference. They provide a baseline for comparison. Honestly, sometimes I just don't know what I'm looking at. Of course, other times the answer is as clear as the ice on an impulse line.

Another reason to visit the field is to get a sense of the physical process. The control system console may offer a simplified rendering of the process as a diagram, but the reality is another matter. The lines in the field are not gray, not straight, not labeled where you might expect, and often not very pretty. The process vessels and the instrumentation are not simple shapes and lines either, and physical sizes and distances make a difference. One of the early loops I tuned, and it actually did need to be tuned, was the level controller on a column that cascaded to the feed flow. At first, I made the mistake of tuning the level controller too fast and really hammering the feed to keep the level within a couple of percent of the set point. Once again an operator set me straight. During the next shutdown, an operator took me out to inspect the bottom of the column to see what I was trying to control. The column may have been 10 feet in diameter, but the level taps were 18 inches apart. One percent was .18 inches, a ripple in the level; it was nothing to be concerned with. It never hurts to go to the field and get an understanding of the physical reality of the process.

Not too long ago I was able to pass that early lesson on to a control system technician. The control room operator had identified a problem with a reactor feed control loop. This particular loop was a tough service, a highly corrosive liquid with some solids. The valve had a history of sticking problems that degraded control. Eventually quality was affected and the valve had to be replaced.

On this occasion, the technician tried unsuccessfully to tune the loop. After an hour or so he had made no real progress and called for assistance. We looked at the tune screen trends and the technician pointed out an unusual pattern. The flow changed appropriately when the set point was decreased, but was slow to change when the set point was increased. This was different than the usual sticking problem.

It seemed like a good time to take a trip to the field. I suggested that we check the positioner and the pneumatic line to the actuator. We squeezed past a ladder the insulation crew had just finished using and started the inspection. Sure enough, the air supply line was leaking at a fitting in a horizontal run right next to the ladder. With the turn of a wrench, the control loop was healed and we were done tuning. Once again the field trip was the right tuning method; and it will continue to be the right method as long as insulators use instrument tubing as steps.
About the Author
Nicholas Sands, CAP, is currently a Manufacturing Technology Fellow working for DuPont’s Kevlar®, Nomex®, and Tyvek® businesses, as well as the Global Alarm Management Leader for DuPont. He also serves as the vice president of ISA Standards and Practices. Sands is a Certified Automation Professional. He has written many articles and papers on alarm management, safety instrumented systems, and professional development. His path to instrumentation and control started when he earned his BS in chemical engineering from Virginia Tech.