



International Society of Automation

# 2021

## ANNUAL REPORT

**Creating  
a better  
world  
through  
automation**



*Setting the Standard for Automation™*

## Agility and Determination Yields Success

2021 saw COVID-19 continue to impact ISA and the world. Once again, ISA responded to the situation with agility and determination. Our members continued to look to ISA for support through standards, education, certification, and networking.

Having adapted to the reality of a virtual world, ISA was able to expand event and training programs, with our training programs attracting more than 4,000 students this year.

Our virtual events delivered content on digital transformation, IIoT and smart manufacturing, process industry, and cybersecurity topics to a diverse global audience. We successfully held our first virtual conference tailored to a non-North American market. Digital Transformation Malaysia was an instant success in putting ISA in front of a new group of people. Overall, our event registration numbers grew by 93% and our sponsorship dollars increased by 429% in 2021.

Technical Divisions and Geographic Sections also continued to meet virtually. ISA's Connect infrastructure helped support many of our members in keeping in touch through virtual and online topical discussion. I suspect this will continue to be a key element for ISA going forward.

In September, ISA launched a new certificate for automation project managers. Automation professionals moving into project management, as well as project management specialists taking on

automation projects will benefit greatly from the combined knowledge of the subject matter experts who developed the content based on decades of experience. ISA also began development on a digital engineer education program to provide automation professionals with the skills needed in the Industry 4.0-focused world.

And if the continuing global pandemic was not enough for ISA, we also sorted through several important changes. With a functioning, remote workforce, ISA sold its headquarters building and relocated into a smaller, leased space offering training and collaboration facilities. The staff will continue remote work, allowing ISA to hire for talent versus location. Mary Ramsey also announced her retirement, offering the Board ample time for an executive search and transition. Mary successfully navigated ISA through many challenges during her tenure, and I believe all members wish her well in retirement. Through a rigorous process, the Executive Board selected Claire Ramspeck as the new Executive Director. Joining ISA in November, Claire brings with her a wealth of experience in engineering standards and associations.

Whatever 2022 brings us, we look to the future with enthusiasm and optimism. ISA is ready to respond and continue building a better world through automation.

**Steve Mustard,**  
P.E., Eur Ing, C.Eng, CAP, FIET, GICSP, CMCP  
2021 ISA President



# 2021 Executive Board



President  
**Steve Mustard, P.E.,**  
B.Eng., C.Eng., CAP, GICSP  
National Automation,  
Inc.



President-elect  
Secretary  
**Carlos Mandolesi**  
Trinity College Dublin



Past President  
**Eric Cosman**  
OIT Concepts, LLC



Treasurer  
**Scott Reynolds**  
Johns Manville



**Mark Arkell**  
JMP Solutions



**J. Parsons, P.E.**  
Jacobs



**Ashley Weckwerth, P.E.**  
Burns & McDonnell



**R. Donald Bartusiak,**  
PhD  
Collaborative  
Systems  
Integration



**Mary Ramsey**  
ISA



**Dr. Maurice Wilkins**  
Yokogawa  
Global Marketing  
Headquarters



**Ken Belteau, P.E.**  
Belith Consulting  
Services



**Rajesh Rathi**  
Control Infotech  
Pvt. Ltd.



**Dr. Shari Worthington**  
Telesian Technology, Inc.



**Marty Bince**  
Schneider  
Electric



**Ana Rodrigues**  
Schneider Electric



**Jim Garrison,**  
P.E., CAP, CFSE  
aeSolutions



**Debashis Sadhukhan**  
NASA Glenn  
Research Center



**Claudio Makarovsky**  
Microsoft



**Prabhu Soundarajan**  
Republic Services

2021



## Vision:

**Create a better world through automation**



## Mission:

**Advance technical competence by connecting the automation community to achieve operational excellence**



## Values:

### **Excellence**

We provide industry-leading, unbiased content developed and vetted by a community of experts

### **Diversity and Inclusion**

We are committed to being a global, diverse, and inclusive organization

### **Professionalism**

We uphold the highest standard of competence and skill in everything we do

### **Integrity**

We act with honesty, integrity, and trust, respecting others in all that we do

### **Collaboration**

We seek out opportunities to work together for the benefit of the Society, its members, and our profession



## Industry Reach and Awareness

Establish and advance ISA's relevance and credibility as the home of automation by anticipating industry needs, collaborating with stakeholders, and developing and delivering pertinent technical content.



## Member Development and Engagement

Enhance member value and expand engagement opportunities to nurture and grow a more diverse and global community to advance the automation profession.



## Technical Education and Certification

Become the recognized leader in automation and control education, providing training, certifications, and publications to prepare the workforce to address technology challenges in the most flexible and relevant ways.



## Leadership and Business Skill Development

Create opportunities for members to improve critical leadership skills, to build a network of industry professionals, and to develop the next generation of automation professionals.



**93%** ▲  
Registrations

**429%** ▲  
Sponsorships



**HIGHLIGHTS**

First virtual events focused on markets outside the US:

**Middle East Cybersecurity**

**Digital Transformation Malaysia**

Cybersecurity

**1**  
Webinar

**2**  
Conferences

**2,221**  
Registrants

Digital Transformation

**2**  
Webinars

**3**  
Conferences

**3,694**  
Registrants

IIoT and Smart Manufacturing

**3**  
Webinars

**1**  
Conference

**1,582**  
Registrants

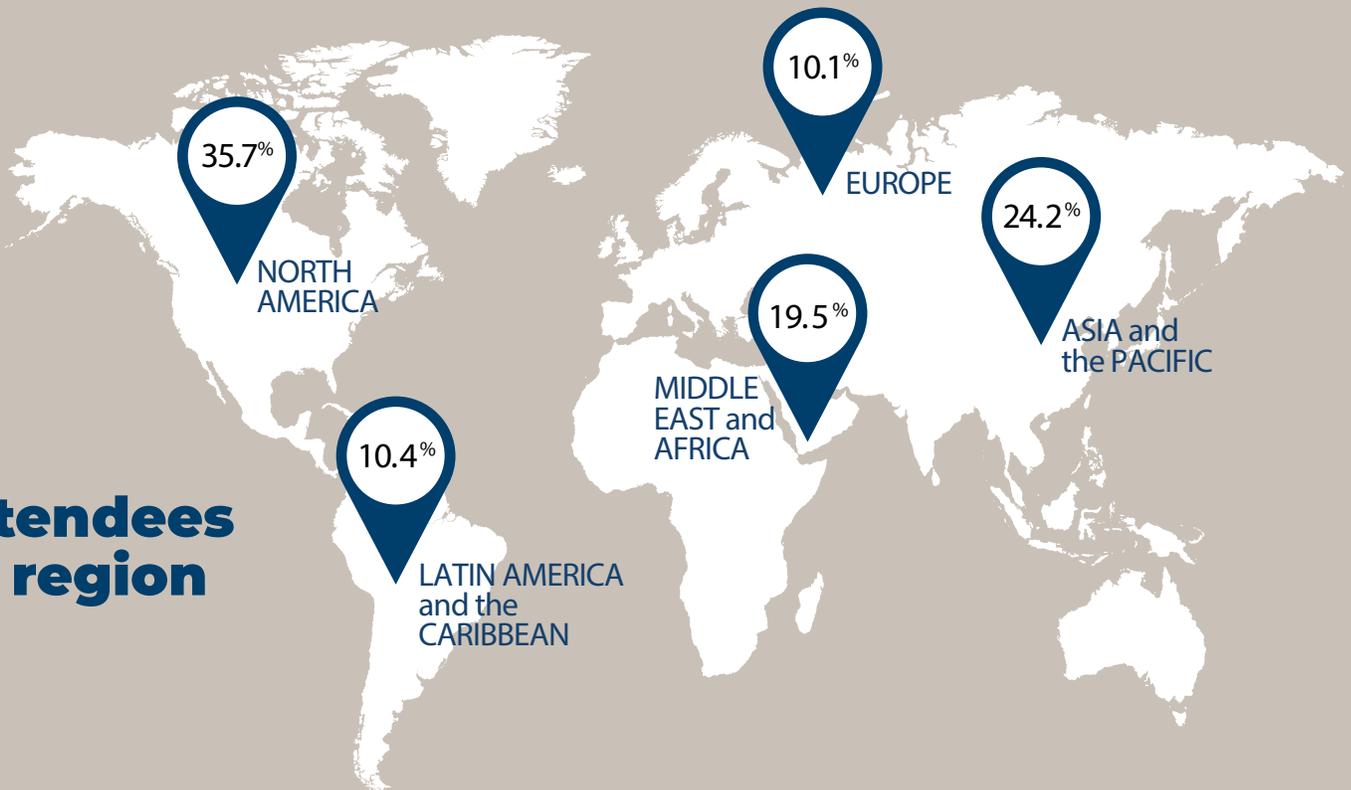
Process Control and Instrumentation

**11**  
Webinars

**3**  
Conferences

**4,573**  
Registrants

**Attendees by region**





## InTech

**6** Issues Published  
(print and digital)

**38,000** subscribers

**170,427** website users

**549,652** page views

## InTech Plus

**22**  
newsletters

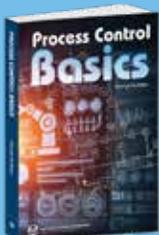
## InTech FOCUS

**3**  
Ebooks



## Books

**3** New books



**Process Control Basics**  
By George Buckbee, PE



**New Directions in Bioprocess Modeling and Control: Maximizing Process Analytical Technology Benefits, Second Edition**  
By Gregory K. McMillan, Christopher Stuart, Rehman Fazeem, Zachary Sample, and Timothy Schieffer



**Ciberseguridad en el Análisis de Riesgos de Proceso: Ciberseguridad Basada en las Consecuencias**  
Edward M. Marszal and Jim McGlone;  
Translated by Gonzalo Curiel Fernández

## Bestsellers



**A Guide to the Automation Body of Knowledge, Third Edition**



**Control Systems Engineering Exam Reference Manual 4th Edition**



**Control Systems Engineering (CSE) Study Guide, Sixth Edition**



**Advanced Control Foundation: Tools, Techniques, and Applications**



**The Condensed Handbook of Measurement and Control, Fourth Edition**



**Control Systems Engineer Technical Reference Handbook**



**Flow Measurement, Second Edition**



**Practical Project Management, Second Edition**



**Troubleshooting: A Technician's Guide, Second Edition**



**Industrial Data Communications, Fifth Edition**



## Newsletters

**26**

Automation Insights

**17**

Factory Automation

**14**

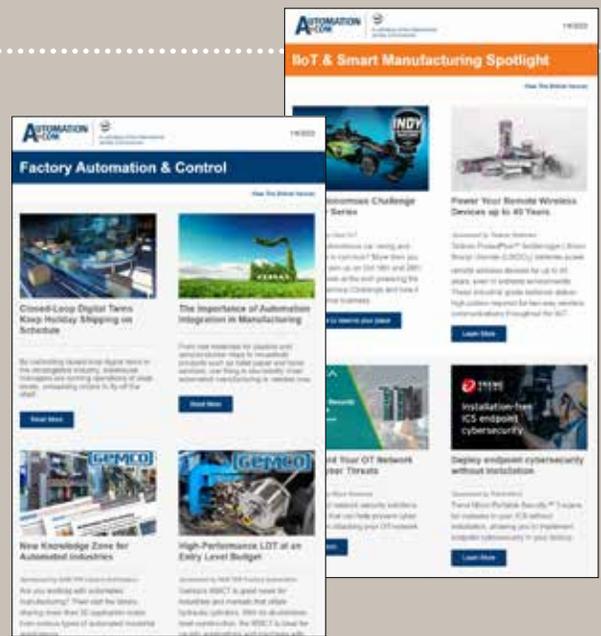
Process Automation

**16**

Connectivity & Cybersecurity

**16**

IIoT & Smart Manufacturing



## Webinars



Cybersecurity

**4 1,062**

Webinars registrants



IIoT and Smart Manufacturing

**5 1,172**

Webinars registrants



Process Control and Instrumentation

**6 1,323**

Webinars registrants

## Website

**1,430,547**

site users

**3,274,581**

page views

**132,000**

subscribers

**2,600+**

news, products, and feature articles

## Ebooks

**6**

Ebooks

**5**

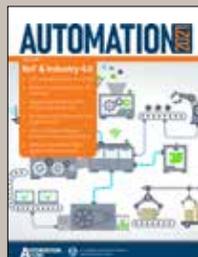
Sponsored Ebooks



IIoT & Industry 4.0



OT/ICS Cybersecurity



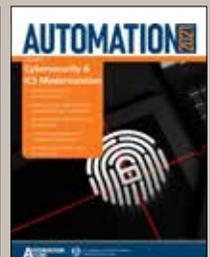
IIoT & Industry 4.0



Control Systems



IIoT & Industry 4.0



Cybersecurity & ICS Modernization



**3,500+**  
Volunteers

**14**  
Standards  
committees

**137**  
Published  
standards

**20**  
Recommended  
practices

**61**  
Technical  
reports

## Published in 2021

- **ISA-84.91.01**, Identification and Mechanical Integrity of Process Safety Controls, Alarms, and Interlocks in the Process Industry Sector
- **ISA-TR84.00.02**, Safety Integrity Level (SIL) Verification of Safety Instrumented Functions
- **ISA-67.02.01**, Nuclear Safety-Related Instrument-Sensing Line Piping and Tubing Standard for Use in Nuclear Power Plants
- **ISA-TR96.07.02**, Framework for Defining Service Conditions and Identifying Related Hazards and Hazard Mitigation of Actuators and Their Accessories

**17,000**  
Online views of ISA standards  
(free to all ISA members)

**Most viewed standard**  
ISA-5.1, Instrumentation  
Symbols and Identification

## ISA Standards are the Foundations of Major International Electrotechnical Commission (IEC) Standards

ISA-18: Alarm  
management  
**(IEC 62682)**

ISA-84:  
Functional safety  
**(IEC 61511)**

ISA-95:  
Enterprise-  
control system  
integration  
**(IEC 62264)**

ISA-99:  
Cybersecurity  
**(IEC 62443)**

ISA-108:  
Intelligent device  
management  
**(IEC 63082)**

### HIGHLIGHTS

- The ISA/IEC 62443 standards, developed primarily by ISA99, were designated as horizontal standards by the IEC, establishing priority across all IEC standards projects on matters pertaining to cybersecurity.
- A letter of intent for cooperation in information exchange and possible collaboration was established between ISA99 and the NATO Energy Security Center.
- The ISA/IEC 62443 standards were recognized in the "Compilation of Cyber Security Regulations, Standards, and Guidance Applicable to Civil Aviation" by the International Air Transport Association.
- New projects were launched on digital information management as it pertains to alarm management (ISA18) and functional safety (ISA84).
- ISA88 and IEC 65A began joint work on updating the widely used Batch Control Standards originally developed by ISA88.



## Top 5 Training Courses by revenue and attendance

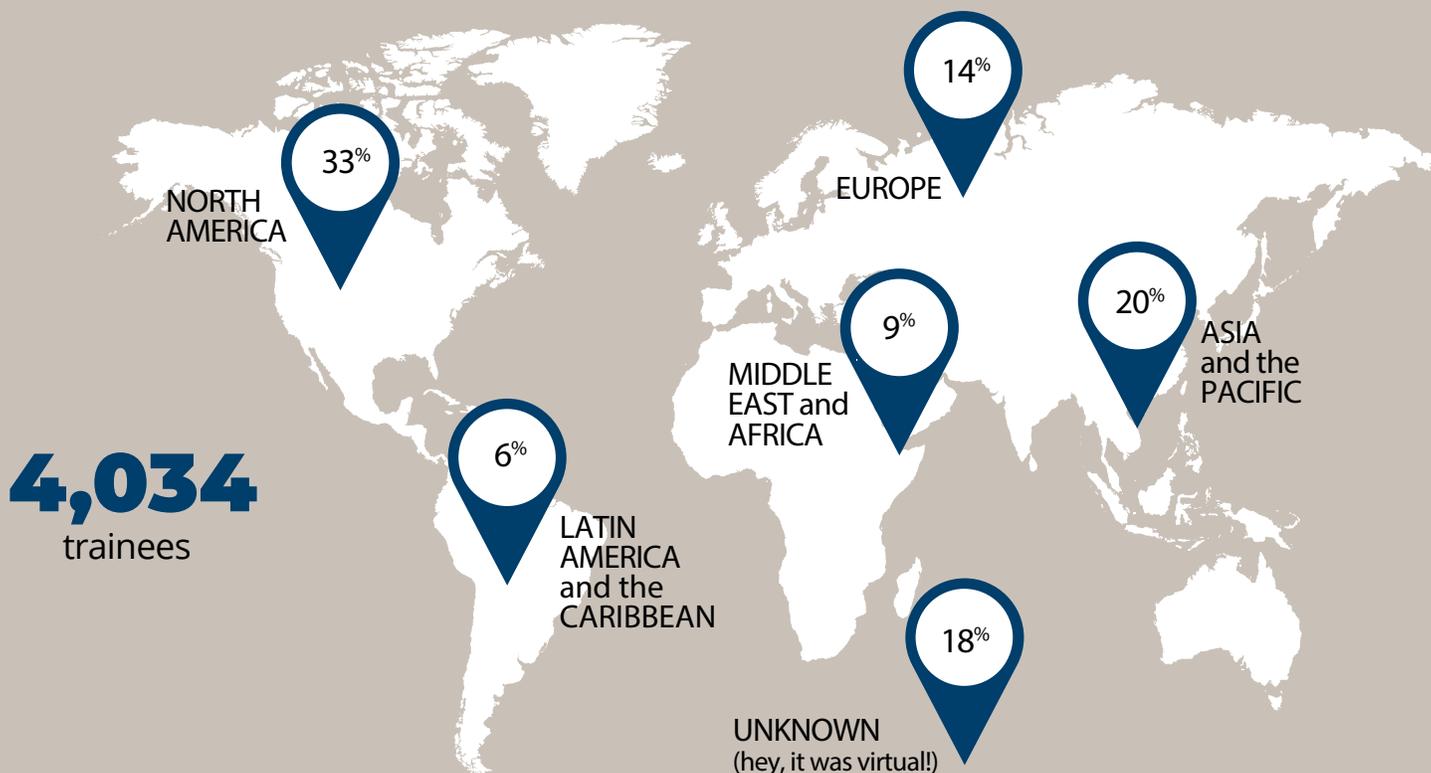
- 1** Using the ISA/IEC 62443 Standards to Secure Your Control Systems
- 2** Assessing the Cybersecurity of New or Existing IACS Systems
- 3** Cybersecurity Design, Implementation & Testing
- 4** IACS Cybersecurity Operations & Maintenance
- 5** Safety Instrumented Systems—A Life-Cycle Approach

### Now Available Digitally

(self-paced modules)

Automation Project Management

Control Systems Technician Associate Exam Review Course



**4,034**  
trainees



# ISA Certified Automation Professional® (CAP®)



Certified Automation Professionals:  
**665** New: **73**



Certified Automation Professional Associate:  
**54** New: **4**

## ISA Certified Control Systems



ISA Certified Control Systems Technician® (CCST®) Level 1  
**1,346** New: **78**



ISA Certified Control Systems Technician® (CCST®) Level 3 - Master  
**370** New: **13**



ISA Certified Control Systems Technician® (CCST®) Level 2 - Specialist  
**409** New: **38**



ISA Control Systems Technician® (CST®) Associate  
**132** New: **3**

## Automation Project Management Specialist



**7**  
Launched in 2021

## ISA/IEC 61511 Safety Instrumented Systems Certificate Program



**215**  
New: **35**



**56**  
New: **14**



**48**  
New: **13**



**113**  
New: **11**

## ISA/IEC 62443 Cybersecurity Certificate Program



**1,375**  
New: **576**



**608**  
New: **272**



**370**  
New: **134**



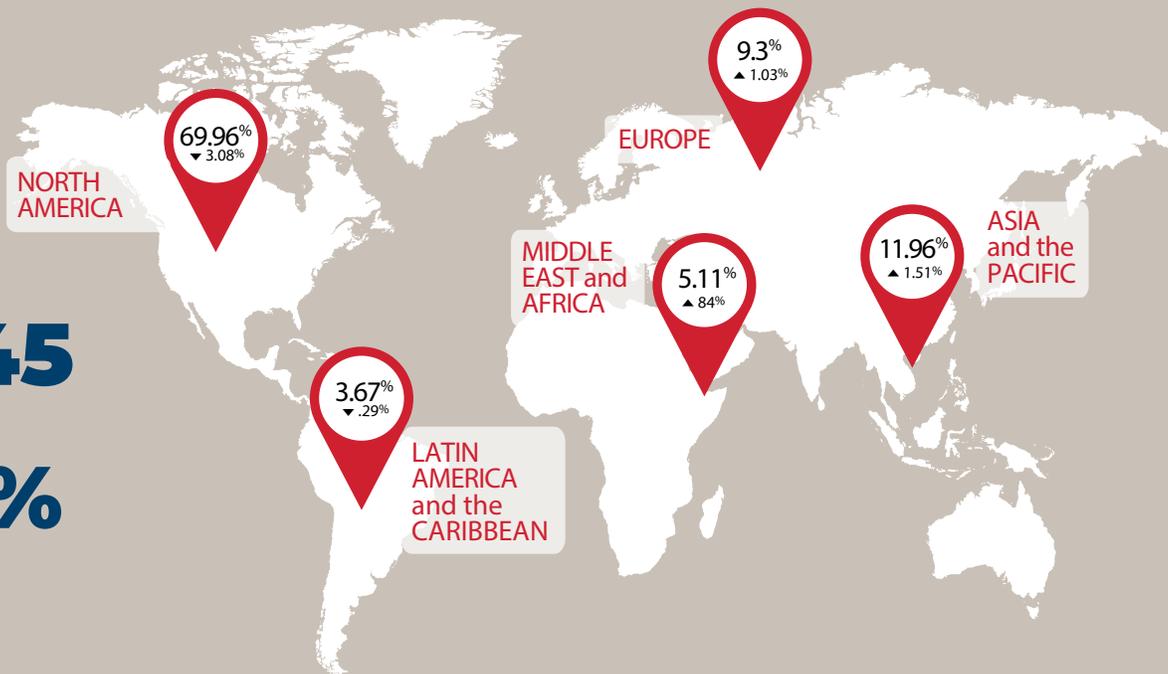
**303**  
New: **111**



**322**  
New: **101**



## Professional members



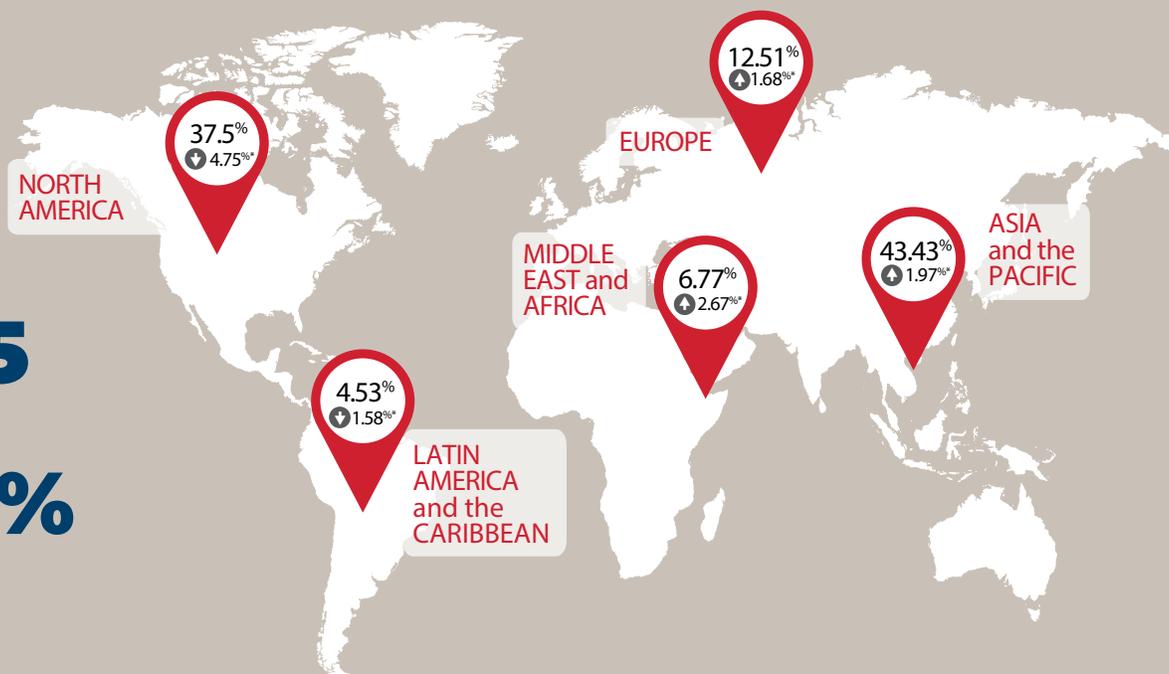
**12,445**

Total

**-2.17%**

Growth Rate

## Student members



**2,405**

Total

**-7.92%**

Growth Rate



### HIGHLIGHT

In understanding that many members may be experiencing lay-offs, furloughs, and salary reductions, ISA offers a hardship waiver by request.

\* This denotes the shift in the percentage of members by area from the previous year.



## Geographic Sections

**113**

Professional Sections

**102**

Student Sections

## Technical Divisions

**16**

Divisions

# Education Foundation



## Scholarships

**USD 33,320**

scholarships awarded

**17**

recipients

ISA Sections awarded

**USD 72,595**





## Fellows



**Peter Fuhr**  
Oak Ridge  
National  
Laboratory



**David Strobhar**  
Beville Operator  
Performance  
Specialists, Inc.



**Jagan Mohan Reddy Yeturu**  
Honeywell  
Technology  
Solutions Labs

## Celebrating Excellence

### Excellence in Leadership



**Jack Nehlig**  
Phoenix  
Contact

### Excellence in Technical Innovation

Endowed by Honeywell UOP



**Fawaz Saleh Al-Hadlaq**  
Saudi Aramco

### Excellence in Technical Innovation

Endowed by Honeywell UOP



**Omar Zayed Al-Zayed**  
Saudi Aramco

### Excellence in Technical Innovation

Endowed by Honeywell UOP



**Fawaz Adnan Al-Sahan**  
Saudi Aramco

### Excellence in Corporate Technical Innovation



**Automation Excellence**  
Private Limited

### Excellence in Technical Presentation



**Ashish Garg**  
Tata Steel  
Limited

### Excellence in Education



**E.J. Daigle**  
Dunwoody  
College of  
Technology

### Mentoring Excellence



**María José Raposo Rodriguez**

### Excellence in Enduring Service



**Chandrashekhar Limaye**  
Supertech  
Instrumentation  
(I) Pvt. Ltd

### Excellence in Enduring Service



**Joseph Provenzano**

### Excellence in Society Service



**Dawn T. Schweitzer**  
Eastman  
Kodak

### Division Leader Excellence



**Sujata Tilak**  
Director of  
the Smart  
Manufacturing  
and IIoT  
Division

### Section Leader Excellence



**Archit Kohli**  
President of  
Mukesh  
Patel School  
of Technology  
Management  
& Engineering  
Student Section

### Standards Excellence



**Graham Nasby**  
City of Guelph  
Water Services

### Volunteer Leader of the Year



**Jacqueline Buskop**



## Followers by platform



**382,293**  
▲ 5.5%



**107,797**  
▲ 8.6%



**22,951**  
▲ 3.85%



**9,869**  
▲ 13.5%



**8,989**  
▲ 12.6%



**4,134**  
▲ 42.5%



**ISA Connect**

**1,700+** posts

### Most Active Discussions

- ISA Digital Twin
- Examples of Local/Remote Control
- Including 62443 Layer 0 and 1 (Purdue Model Layer 1 & 2) nodes on network diagrams
- The problem with troubleshooting is that trouble shoots back.
- ANSI/ISA-5.1-2009 (Instrumentation Symbols and Identification)

### Most Recommended Discussions

- Safety topics for automation professionals to share at start of meetings
- The hardest thing for new operators to get used to in a control room
- Automation Competency Model (ACM)
- Template and Standards on Process Control Narrative (PCN)
- Discrete Manufacturing & ISA



A mechanism for automation professionals to virtually meet and engage in dialogue

**6**

hosted by  
ISA Officers

**9**

hosted by  
Young Professionals

**66**

hosted by  
Technical Divisions



**52**  
member companies  
representing

**31**  
different industries

**80+**  
blog posts averaging  
**4,000**  
views per month

**764**  
individuals supporting  
workgroups

**24**  
meetings with  
government officials

**3**  
bills proposed

**9**  
Virtual events

**10,000+**  
website views

**3,000+**  
articles about ISA/IEC 62443

**6**  
whitepapers  
downloaded  
**13,000**  
times covering  
topics such as security  
lifecycles, risk  
assessment,  
and standards  
implementation

**450+**  
articles about ISAGCA

## GLOBAL CYBERSECURITY ALLIANCE Members





## 2021 Operational Net

Actual: **USD -278,156**      Budget: **USD -939,005**

### Assets

**USD 9,696,680**

Current Assets

**USD 39,759,799**

Marketable Securities

**USD 2,098,135**

Fixed Assets

**USD 1,365,330**

Subsidiary and Other Assets

**USD 52,919,944**

Total Assets

### Liabilities and Net Assets

**USD 9,215,064**

Total Liabilities

**USD 33,822,343**

Net Assets

**USD 9,882,537**

YTD Surplus

**USD 52,919,944**

Total Liabilities and Net Assets

## Revenue by Strategic Initiative



Industry Reach and Awareness

**USD 3,662,063**



Technical Education and Certification

**USD 6,729,743**



Membership Development and Engagement

**USD 952,021**



Leadership and Professional Skill Development

**USD 129,268**