

## BEST IN CONTROL READERS' CHOICE AWARDS BY PROCESS AUTOMATION DISCIPLINE

### BATCH PROCESS AUTOMATION

Emerson	1
Rockwell Automation	2
Siemens	3
Honeywell	4
ABB	5
Yokogawa	6
Schneider	7

### CONTINUOUS REGULATORY CONTROL

Emerson	1
Honeywell	2
Rockwell Automation	3
ABB	4
Yokogawa	5
Schneider	6
Siemens	7

### CONTINUOUS SHEET/ WEB MONITORING & CONTROL

Honeywell	1
Emerson	2
Rockwell Automation	3
ABB	4
Siemens	5
Yokogawa	6
Schneider	7

### SAFETY/EMERGENCY SHUTDOWN

Schneider	1
Emerson	2
Rockwell Automation	3
Yokogawa	4
Siemens	5
Honeywell	6
ABB	7

### SEQUENTIAL LOGIC CONTROL

Rockwell Automation	1
Siemens	2
Schneider	3
Emerson	4
Honeywell	5
Yokogawa	6
ABB	7

### SUPERVISORY CONTROL & DATA ACQUISITION

Rockwell Automation	1
Emerson	2
Honeywell	3
AVEVA	4
Schneider	5
Siemens	6
ABB	7



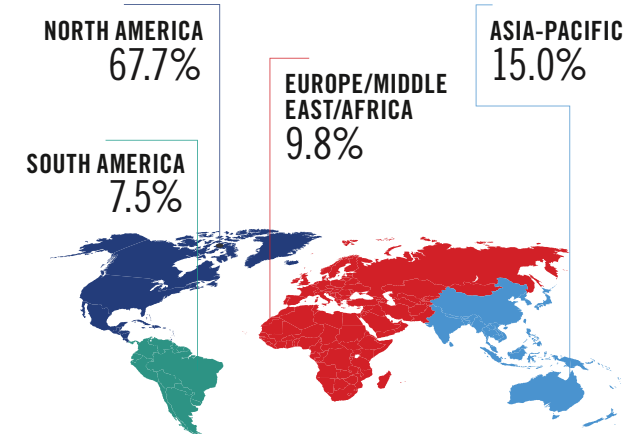
**THIS** year marks the 30th anniversary of our Readers' Choice Awards, a program that broke new ground in the process control and instrumentation arena when our first winners were unveiled back in the January 1993 issue.

Over the past three decades, the awards have morphed a bit. We no longer have a winner for expert systems software or minicomputers. The number of categories has grown from 50 to more

than 80. And leadership by automation discipline was added to acknowledge the all-important application expertise that often transcends a particular product category. Plus, many of the organizations that claimed top honors in 1993 no longer exist—many having been absorbed by acquisition into today's leading solution providers.

But several essential aspects have remained constant. The Readers' Choice

## VOTERS BY WORLD REGION



## VOTERS BY INDUSTRY

Chemicals manufacturing	20.2%
Food & beverage manufacturing	18.1%
Water/wastewater processing	14.9%
Upstream oil & gas	13.8%
Petroleum refining	9.6%
Pharmaceuticals/life sciences	8.5%
Plastics & rubber manufacturing	6.4%
Electric power generation	5.3%
Metals, minerals & mining	2.1%
Pulp & paper manufacturing	1.0%

## VOTER DEMOGRAPHICS

Respondents to this year's Readers' Choice Awards survey are an industrially diverse but North America-centric mix of individuals from across the process industries. Process control and instrumentation professionals from end-user and engineering firms made their voices heard, responding to invitations emailed in late 2021. The tables above summarize their industry and geographic demographics. Those individuals who worked for systems integration and engineering services firms were asked to choose the end-user industry that most closely represents their work.

Awards is perennially among our most popular feature articles. 2021's version was no exception, ranking as the year's most visited story at ControlGlobal.com. Instrumentation and control professionals refer to the Readers' Choice Awards because they represent the collective wisdom of you, our readers, who for the past three decades have taken the time to share your technology and application expertise in products ranging from

annunciators to weighing systems—and everything in between.

We sincerely thank all our readers who participated this year, an eclectic group of process automation and instrumentation professionals representing diverse process industry verticals as well as all corners of the U.S. and, increasingly, the world. (For more information on survey respondent demographics, see sidebar above.)

### Leaders by discipline

Our first grouping of Readers' Choice Awards isn't so much a set of product technologies as it is a set of fundamental control domain competencies—ranging from batch automation to SCADA. (See listing of "Process Automation Discipline" winners.) Not unexpectedly, the readers' vote is concentrated among the "Big 7" global leaders in process automation systems technology: ABB, Emerson, Honey-

well, Rockwell Automation, Schneider, Siemens and Yokogawa.

Emerson got the nod in both Batch Process Automation and Continuous Regulatory Control, while Rockwell Automation took top honors in both Sequential Logic Control and Supervisory Control & Data Acquisition (SCADA). Honeywell took first place in Continuous Sheet Monitoring & Control, and Schneider in Safety/Emergency Shutdown.

## APPLICATION SOFTWARE

### Advanced Process Control

1. Emerson
2. Rockwell Automation
3. Honeywell
4. Yokogawa
5. ABB

### Alarm Management

1. Emerson
2. Honeywell
3. Yokogawa
4. Rockwell Automation
5. ABB

### Asset Performance Management

1. Emerson
2. Rockwell Automation
3. Yokogawa
4. Honeywell
5. ABB

### Calibration Management

1. Emerson
2. Beamex
3. Fluke
4. Honeywell
5. Yokogawa

### Design/Documentation

1. Autodesk
2. Rockwell Automation
3. Emerson
4. Honeywell
5. Schneider

### Human-Machine Interface

1. Rockwell Automation
2. Siemens
3. Emerson
4. Honeywell
5. Schneider

### Loop Tuning

1. Emerson
2. Rockwell Automation
3. Yokogawa
4. Siemens
5. Honeywell

### OPC Connectivity

1. PTC
2. Matrikon OPC
3. Rockwell Automation
4. Emerson
5. Siemens

### PLC Programming

1. Rockwell Automation
2. Siemens
3. Schneider
4. Emerson
5. Mitsubishi

### SCADA

1. Rockwell Automation
2. AVEVA
3. Emerson
4. Siemens
5. ABB

### Simulation & Modeling

1. Emerson
2. AspenTech
3. AVEVA
4. Rockwell Automation
5. Honeywell

AVEVA's presence in the listings resulted from Schneider Electric's spin-off of its industrial software businesses into this separate, independent entity that's still majority owned by Schneider. GE notably slipped from these listings following the sale of its industrial automation business to Emerson and its disinvestment in Baker Hughes.

## Applications expertise

Closely aligned with the process automation discipline awards are those in the category of Application Software. Here, again, a significant amount of market presence and customer preference is focused among the global discipline leaders. (See the listing of "Application Software" winners.)

Technology specialists that made these ranks included Beamex and Fluke in Calibration Management, Autodesk in Design/Documentation, and Mitsubishi in PLC Programming. AspenTech and AVEVA made the grade in Simulation & Modeling, each now representing a software-focused entity that is majority owned by a systems player—Emerson and Schneider Electric, respectively. In the category of OPC Connectivity, PTC edged out Honeywell-owned Matrikon OPC on the strength of its Kepware acquisition.

## Visualization hardware

A further step adjacent to the core process automation disciplines are the hardware devices that provide a local platform for control, compute and visualization—notably annunciators, panel displays, loop controllers, recorders and industrialized PCs. (See listing of "Visualization/Control Hardware" winners.)

## VISUALIZATION/CONTROL HARDWARE

### Annunciator

1. Ametek
2. Rockwell Automation
3. ABB
4. Federal Signal
5. Ronan Engineering

### Industrial Computer

1. Siemens
2. Rockwell Automation
3. Dell
4. Advantech
5. Emerson

### Operator Interface Terminal

1. Rockwell Automation
2. Schneider
3. Siemens
4. Omega Engineering
5. AutomationDirect

### Panel Display

1. Rockwell Automation
2. Siemens
3. Precision Digital
4. Hope Industrial Systems
5. Emerson

### Process Loop Controller

1. Yokogawa
2. Siemens
3. Emerson
4. ABB
5. Honeywell

### Recorder

1. Yokogawa
2. ABB
3. Siemens
4. Honeywell
5. Emerson

As with application software, the global process automation majors earn their share of allegiance in this arena. Notable exceptions include Ametek, whose Panalarm annunciators have long set the standard in the category. Federal Signal and Ronan Engineering also made the list in the Annunciator category.

Siemens earned top honors for its Industrial PCs, and was joined by Dell and Advantech in the top five. In the category of Operator Interface Terminal, Rockwell Automation took top honors with Omega Engineering and AutomationDirect also making the short list. Meanwhile, Precision Digital and Hope Industrial Systems made the Panel Display rankings and Yokogawa received top honors for its Process Loop Controllers and Recorders.

## FLOW INSTRUMENTATION

### Coriolis Mass

1. Emerson
2. Endress+Hauser
3. Krohne
4. Yokogawa
5. ABB

### Magnetic

1. Emerson
2. Endress+Hauser
3. Krohne
4. ABB
5. Yokogawa

### Open Channel

1. Endress+Hauser
2. Emerson
3. Siemens
4. Krohne
5. Yokogawa

### Positive Displacement

1. Badger Meter
2. TechnipFMC
3. Omega Engineering
4. Oval
5. Bopp & Reuther

### Thermal Mass

1. FCI
2. Endress+Hauser
3. ABB
4. Sierra Instruments
5. Kurz Instruments

### Turbine

1. Emerson
2. Badger Meter
3. TechnipFMC
4. Hoffer Flow Controls
5. AW-Lake

### Ultrasonic (closed pipe)

1. Emerson
2. Krohne
3. Endress+Hauser
4. Baker Hughes
5. Siemens

### Variable Area (rotameter)

1. Krohne
2. Brooks Instrument
3. Yokogawa
4. Dwyer Instruments
5. Siemens

### Vortex

1. Emerson
2. Endress+Hauser
3. Yokogawa
4. Krohne
5. Siemens

### Flow Switch

1. Endress+Hauser
2. FCI
3. Ametek
4. Keyence
5. Dwyer Instruments

## LEVEL INSTRUMENTATION

### Admittance/Conductance (continuous)

1. Endress+Hauser
2. Ametek
3. VEGA Americas
4. Clark-Reliance
5. Yokogawa

### Float/Displacer

1. Emerson
2. Ametek
3. Omega Engineering
4. Schneider Electric
5. SQR

### Guided-Wave Radar

1. Emerson
2. Endress+Hauser
3. VEGA Americas
4. Krohne
5. Ametek

### Radar, Non-contact

1. Emerson
2. Krohne
3. VEGA Americas
4. Endress+Hauser
5. Ametek

### Tank Gauge, Inventory-grade

1. Emerson
2. Honeywell Enraf
3. Endress+Hauser
4. VEGA Americas
5. Varec

### Magnetostrictive

1. ABB
2. Emerson
3. Ametek
4. Endress+Hauser
5. Wika

### Radiometric

1. VEGA Americas
2. Thermo Fisher Scientific
3. Endress+Hauser
4. Berthold
5. Tracerco

### Ultrasonic

1. Endress+Hauser
2. Siemens
3. VEGA Americas
4. Krohne
5. Ametek

### Level Switch, Electrical Property-based

1. Ametek
2. Endress+Hauser
3. Emerson
4. VEGA Americas
5. Krohne

### Level Switch, Mechanical

1. Ametek
2. Emerson
3. ABB
4. Endress+Hauser
5. Omega Engineering

### Level Switch, Ultrasonic

1. Endress+Hauser
2. ABB
3. VEGA Americas
4. Siemens
5. Keyence

### Level Switch, Vibratory

1. Emerson
2. Endress+Hauser
3. VEGA Americas
4. Krohne
5. Siemens

### Magnetic Level Indicator

1. Ametek
2. Emerson
3. ABB
4. Krohne
5. Bliss Anand

### Laser

1. ABB
2. Keyence
3. Banner Engineering

## Process measurements

Process analyzers, together with devices for measuring the primary process variables of flow, level, pressure and temperature are the workhorse instruments of the process industries. Indeed, the accompanying four listings include nearly 40 different technologies for sussing out these important variables in a broad variety of challenging conditions. (See listings of “Flow Instrumentation,” “Level Instrumentation,” “Pressure & Temperature Instrumentation” and “Process Analyzer” winners.)

The leaders here include instrumentation heavyweights Emerson and Endress+Hauser, which win or rank highly in the most categories. But ABB, Krohne, Schneider, Siemens and Yokogawa also show a following in multiple instrumentation categories. Again, a range of specialists have managed to hold out against the majors in this realm, including Badger Meter for its Positive Displacement flowmeters and Fluid Components International (FCI) for its Thermal Mass flowmeters and Flow Switches.

In the level realm, ABB carries the day in Magnetostrictive and Laser technology while VEGA Americas is top of the charts when it comes to Radiometric (nuclear) gauges. Meanwhile, Ametek gained the top spot in both Mechanical and Electrical Level Switches, as well as Magnetic Level Indicators on the strength of its recent acquisition of Magnetrol and its sister brand Orion Instruments.

In the realms of pressure and temperature sensing, Emerson carries the day in most categories, with Endress+Hauser often playing second fiddle. In infrared technologies, however, Fluke reigns supreme.

And in the category of analytical instrumentation (see “Process Analyzers” listing), Emerson again takes top honors across the board, with notable second place showings by MSA in Ambient Gas Detection, Vaisala in Humidity/Moisture and Thermo Fisher Scientific in Process Spectrometers. Other high-ranking suppliers include ABB, which ranked in six of seven analyzer technologies and Yokogawa (five of seven).

### PRESSURE & TEMPERATURE INSTRUMENTATION

#### Pressure Transmitter

1. Emerson
2. Endress+Hauser
3. Honeywell
4. Yokogawa
5. Siemens

#### Pressure Switch

1. Emerson
2. Endress+Hauser
3. WIKA
4. SOR
5. United Electric Controls

#### Resistance Temperature Detector

1. Emerson
2. Endress+Hauser
3. ABB
4. WIKA
5. JMS Southeast

#### Thermocouple

1. Emerson
2. Endress+Hauser
3. ABB
4. WIKA
5. Honeywell

#### Temperature Transmitter

1. Emerson
2. Endress+Hauser
3. Honeywell
4. Yokogawa
5. ABB

#### Temperature Switch

1. Emerson
2. WIKA
3. Endress+Hauser
4. ABB
5. Honeywell

#### Infrared Temperature Sensor

1. Fluke
2. Omega Engineering
3. FLIR Systems
4. Calnex Electronics
5. Turck

#### Infrared Imaging/ Thermography

1. Fluke
2. FLIR Systems

### PROCESS ANALYZERS

#### Ambient Gas Detector

1. Emerson
2. MSA
3. ABB
4. Thermo Fisher Scientific
5. Draeger

#### Density/Concentration

1. Emerson
2. Endress+Hauser
3. Krohne
4. Yokogawa
5. ABB

#### Humidity/Moisture

1. Emerson
2. Vaisala
3. Baker Hughes
4. Endress+Hauser
5. Ametek

#### pH/ORP/Conductivity

1. Emerson
2. Endress+Hauser
3. Yokogawa
4. ABB
5. Mettler Toledo

#### Process Chromatograph

1. Emerson
2. Siemens
3. ABB
4. Yokogawa
5. Thermo Fisher Scientific

#### Process Spectrometer

1. Emerson
2. Thermo Fisher Scientific
3. ABB
4. Siemens
5. Yokogawa

#### Stack Gas/Emissions

1. Emerson
2. ABB
3. Siemens
4. Yokogawa
5. Ametek



## Final control elements

When it comes to final control elements, Emerson takes top honors when it comes to control valves, on/off valves and pneumatic actuators. Other high-ranking valve-makers include Baker Hughes (Masoneilan), Flowserve, Samson Control and Neles. Valve Actuator specialists Rotork and Auma also made the grade, with Rotork taking top spot in the Electric Valve Actuator category. (See listing of “Final Control” winners.)

In addition to control valves, electric motors and drives increasingly act together as final control elements across the process industries. Here, ABB retained top honors for its Electric Motor

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technology, while Rockwell Automation ranked highest in the category of Electric Motor Drive. Other top ranking motor and drive providers include Siemens, WEG, Schneider, GE Industrial Motors, U.S. Motors and Yaskawa.

## Infrastructure and essentials

Our final two groups of Readers' Choice Award winners include foundational contributors to the wired and wireless automation infrastructure, as well as role players that serve important process automation

### FINAL CONTROL

#### Control Valve

1. Emerson
2. Baker Hughes
3. Flowserve
4. Samson Controls
5. Neles

#### Control Valve Actuator, Pneumatic

1. Emerson
2. Baker Hughes
3. Flowserve
4. Samson Controls
5. Rotork

#### Control Valve Actuator, Electric

1. Rotork
2. Emerson
3. Auma
4. Flowserve

#### Valve, On/Off

1. Emerson
2. Flowserve
3. Neles
4. Bray International
5. Schlumberger

#### Electric Motor

1. ABB
2. Siemens
3. WEG Electric
4. GE Industrial Motors
5. U.S. Motors

#### Electric Motor Drive

1. Rockwell Automation
2. ABB
3. Siemens
4. Schneider
5. Yaskawa

### AUTOMATION INFRASTRUCTURE

#### Input/Output System

1. Rockwell Automation
2. Emerson
3. Schneider
4. Siemens
5. Honeywell

#### Intrinsic Safety

1. Pepperl+Fuchs
2. Eaton MTL
3. Rockwell Automation
4. ABB
5. Emerson

#### Power Supply

1. Phoenix Contact
2. Rockwell Automation
3. Emerson
4. ABB
5. Acopian

#### Signal Conditioner

1. Phoenix Contact
2. Pepperl+Fuchs
3. Moore Industries
4. Eaton MTL
5. PR Electronics

#### Terminal Block

1. Phoenix Contact
2. Weidmuller
3. Rockwell Automation
4. Wago
5. Siemens

#### Wire & Cable

1. Belden
2. Lapp
3. Southwire
4. Leoni Kerpen
5. Nexans

#### Wireless Infrastructure

1. Emerson
2. Cisco
3. Honeywell
4. GE
5. Yokogawa



## ELSEWHERE IN THE FIELD

### Data Acquisition System

1. Rockwell Automation
2. Emerson
3. Yokogawa
4. Siemens
5. Honeywell

### Enclosure

1. nVent
2. Rittal
3. Hammond Manufacturing
4. Saginaw Control & Engineering
5. ABB

### Portable Calibrator

1. Fluke
2. Emerson
3. Beamex
4. Siemens
5. Honeywell

### Remote Terminal Unit

1. ABB
2. Rockwell Automation
3. Emerson
4. Honeywell
5. Siemens

### Vibration Instrumentation

1. Baker Hughes
2. Emerson
3. Metrix
4. Rockwell Automation
5. SKF

### Weighing System/Load Cell

1. Mettler Toledo
2. Rice Lake
3. Avery Weigh-Tronix
4. Hardy Instruments
5. Siemens

### Instrument Fittings

1. Swagelok
2. Parker Hannifin
3. Emerson
4. Hoke
5. Hy-Lok

### Purge System

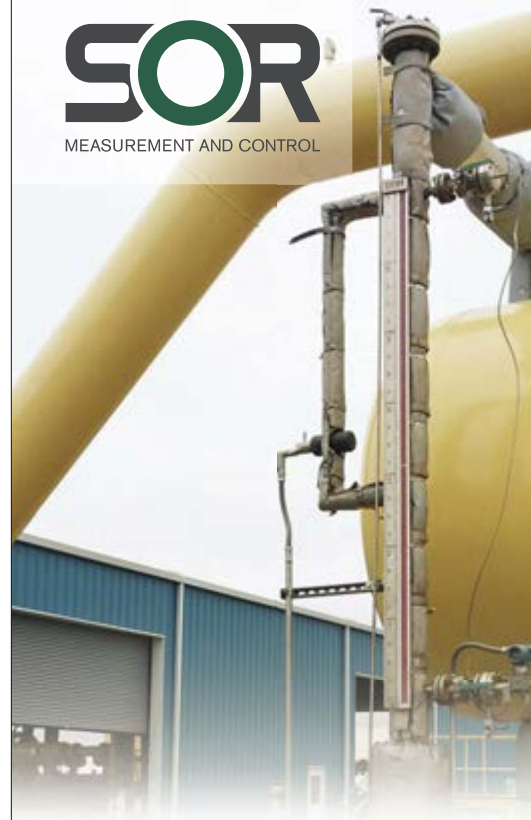
1. Pepperl+Fuchs
2. nVent

functions, but frankly just didn't fit cleanly within any of the other award groupings. (See "Automation Infrastructure" and "Elsewhere in the Field" listings.)

Input/output (I/O) modules, along with terminal blocks, signal conditioners, intrinsic safety barriers and power supplies, work seamlessly together to reliably gather, digitize and distribute the many electronic signals required to run a modern process facility. In this arena, Rockwell Automation was ranked highest for its I/O Module offering, while Pepperl+Fuchs received top votes for its Intrinsic Safety capabilities. Meanwhile, triple threat Phoenix Contact placed first in the Terminal Block, Signal Conditioner and Power Supply rankings. Belden placed first when

it came to Wire & Cable, and Emerson led the field in Wireless Infrastructure.

Winners in our last grouping of other essential product technologies (see "Elsewhere in the Field" listings), are primarily specialists in their respective domains. Two notable exceptions are Rockwell Automation in the category of Data Acquisition Systems, and ABB that gets the nod for its Remote Terminal Units. Leadership in Instrument Fittings went to Swagelok, Portable Calibrators to Fluke, Weighing Systems/Load Cells to Mettler Toledo and Vibration Instrumentation to Baker Hughes (Bentley Nevada). In the arena of field enclosures, nVent (Hoffman) edged out Rittal, and Pepperl+Fuchs carried the day in enclosure Purge System. ∞



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